Intellectual Property

Valuation, Exploitation, and Infringement Damages

Gordon V. Smith

Russell L. Parr

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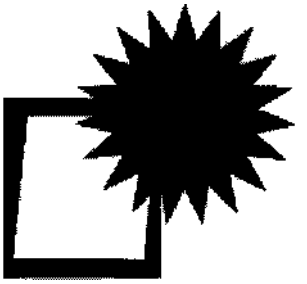
Russell Parr would like to thank his mother Dorothy Parr. She gave me the most valuable intangibles in the world, and I have subsequently attained great professional and personal success because of her. Thank you, Mom.

For Nancy Bunker Smith, my wife and partner of nearly five decades, and for the wonderful family we enjoy so much, Craig and Susan, Tracy and Lee, Sam, Carlye, Molly, and Jamie.



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Highlight assignments conducted by Mr. Parr have included the valuation of the Dr. Seuss copyrights and the patent portfolio of AT&T. Mr. Parr also has conducted valuations and royalty rate studies for communications technology, pharmaceuticals, semiconductor process and product technology, automotive battery technology, lasers, agricultural formulations, biotechnology, computer software, drug delivery systems, medical products technology, incinerator feed systems, camera technology, flowers, consumer and corporate trademarks, motivational book copyrights, and cosmetics. His opinions are used to accomplish licensing transactions, acquisitions, transfer pricing, litigation support, collateral-based financing, and joint ventures.

Mr. Parr has written 24 articles that have been published in various professional journals. He has spoken at over 30 conferences regarding the value of technology, including those sponsored by the World Intellectual Property Organization in Singapore and Lima, Peru. He also has testified about the value of companies and intellectual property over 40 times at deposition, trial, or for arbitration.

Mr. Parr has a master's in business administration from Rutgers University (1981); a bachelor of science in electrical engineering, from Rutgers University (1976); coursework toward Ph.D. in the International Business Management Program at Rutgers University. His professional designations include Chartered Financial Analyst (CFA) from the Association for Investment Management and Research and Accredited Senior Appraiser (ASA) of the American Society of Appraisers.

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His Wiley books include: *Valuation of Intellectual Property & Intangible Assets*, *third edition*: *Intellectual Property*: *Joint Venture and Profit Strategies*, *second edition*; *Intellectual Property Infringement Damages*: *A Litigation Support Handbook*, *second edition*; *Investing in Intangible Assets*; and *Corporate Strategies for Maximizing Value*.

His books published by IPRA, Inc. include: *Royalty Rates for Pharmaceuticals and Biotechnology*, *fifth edition*; *Royalty Rates for Technology*, *third edition*; and *Royalty Rates for Trademarks and Copyrights*, *second edition*.

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We continue to learn about the world of intellectual property from our clients, colleagues, and students and wish to recognize those who have come forth to contribute to this book.

Anna L. Johns, Esq. is a senior associate with the prestigious law firm of Dewey Ballantine. She is a lawyer and accountant. Her intellect and tenacity reduces mountains of information into clarity. Trade secret damages are complex, and she brings her skills to bear in a chapter at the end of this book that greatly contributes to damages calculations.

Robert Goldscheider, John Jaroz, and **Carla Mulhern** have grappled with the complex controversies of the *25% Rule*. Their work on this topic has left the entire licensing industry in a much better position. We are very pleased to include their exhaustive study in this book.

Patrick H. Sullivan, Sr. is founder of ICM Group. He is dedicated to the maximum extraction of value from all forms of intellectual property and intangible assets. He is rightly dedicated to bringing these assets to the forefront of executive management mindsets. His abstract thinking can cause headaches but always leaves you better off.

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CONTENTS

PREFACE

When this book was first published 16 years ago, it was the first work devoted to the valuation of intellectual property and intangible assets. Through the following three editions, we have expanded and refined our presentation, building on our experiences as consultants in the real world of business and valuation. We, separately and together, have authored other books focused on the economic aspects of intellectual property.

This fourth edition is really four books within a single cover, and again builds on our consulting experiences, together with our research and lecturing, and combines that with these books of the John Wiley & Sons Intellectual Property Series:

- *Intellectual Property: Licensing and Joint Venture Profit Strategies* (third edition), Smith and Parr
- *Intellectual Property Infringement Damages: A Litigation Support Handbook* (second edition), Parr
- *Trademark Valuation*, Smith

The contents of these books and the third edition have been extensively updated and revised to reflect the most current thinking in the field. Even some of the basic valuation theory chapters have been revised to reflect what we have learned in teaching undergraduate and graduate-level courses. We have added a discussion and an appendix covering diffusion and forecasting models available to develop some of the difficult inputs in the valuation of early-stage technology. To make information-seeking easier, this book is divided into four major sections:

- Valuation
- Licensing
- Infringement Damages
- Appendices

This edition introduces the concept of the "virtual transaction." We think this is a useful way to conceptualize a valuation, licensing analysis, or damages estimate. When we study and opine about these situations, we are, in essence, describing what we believe would have been the results of a transaction that never took place. When we describe the parties to that transaction and the facts surrounding it, we are stating the assumptions we have made to develop our conclusion. Our opinion of the result is what we believe the parties to the transaction would have agreed upon, had they made it.

Ever since we started writing and lecturing a question has been posed about the absence of elaborate case studies in our materials. Many have the desire to observe this sort of information because it provides a "road map" or "recipe" for intellectual property valuation, licensing, or damages estimation. The fact is that there can be no case study that covers all of the nuances of a valuation, licensing, or damages analysis. Therefore, we feel it is better not to tempt a reader into thinking that he or she has found a model that will meet all needs. If this were a book on landscape photography, we could describe the types of equipment needed, how camera settings produce different effects on film, and so forth. We could not, however, give the reader a checklist that, if followed, would produce a striking photograph every time. Every scene that the reader prepares to photograph will be unique in some way, and the elements of photographic technique required to capture it will be different as well. All of this is also true for the analysis of intellectual property.

We have observed the intellectual property consciousness that appeared and grew during the 1980s. We saw the beginnings of the e-commerce business model, watched as the bubble grew, and felt its burst. We now are witnessing the incubation of intellectual property in locations all over the

world, especially in Asia. The new business model is "outsourcing" praised by some, decried by others, but further evidence of the development of intellectual property in "nontraditional" places.

Throughout this period, the crucial importance of intellectual property has grown without wavering. Increasingly, the understanding of intellectual property has become a critical input to business decision making. This growth has fueled a worldwide thirst for knowledge about its role in business and commerce and how its impact can be quantified. We are very pleased that our books have been received so well in the legal, licensing, and financial professions, and that business, professional and government persons around the world have found them helpful. We maintain our objective of providing practical, practice-based information with enough theory to give the larger picture.

October 2004

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PART I

VALUATION

This is the first major section of this book because it is here that the reader will find the principles that are the foundation of the sections that follow. In order to quantify the value of intellectual property and intangible assets, it is necessary to fully understand their nature and economic characteristics. It is clear that these assets do not create value by themselves. They must be teamed with other assets in order to be economically exploited. Therefore, we discuss the relationship between intellectual property and intangible assets and the business enterprise in which they reside, or in which they will be placed for exploitation.

Valuation is not a "crystal ball" exercise. It is firmly based in investment-rate of return principles, and so this section presents these underpinnings before moving on the specific valuation techniques. With that grounding, we then proceed to discuss some finer points that apply to special business situations, embryonic technology, and international issues.

CHAPTER 1

INTELLECTUAL PROPERTY AND INTANGIBLE ASSETS IN THE WORLD TODAY

Intellectual property is the central resource for creating wealth in almost all industries. The foundation of commercial power has shifted from capital resources to intellectual property. In fact, the definition of capital resources is shifting. No longer does the term "capital resource" bring to mind balance sheets of cash or pictures of sprawling manufacturing plants. Capital resources are now dominated by intellectual property such as technological know-how, patents, trademarks, copyrights, and trade secrets.

Corporations once dominated industries by acquiring and managing extensive holdings of natural resources and manufacturing facilities. Barriers to entry were high because enormous amounts of fixed asset investments were required to displace well-entrenched players. Today companies that once dominated industries are finding themselves fighting for survival. Upstart companies are creating new products and services based not on extensive natural resource holdings or tangible property but on intellectual property resources. Management of these properties will distinguish the winners from the losers in the decades ahead.

Intellectual property has attained an extremely important status within the fabric of our society and livelihood. Enterprises, and even whole industries, are built on an intellectual property foundation. We depend on intellectual property in our businesses and careers; a significant portion of us earn our living creating and maintaining intellectual property; we are entertained by it, educated by it, communicate with it, and are made and kept healthy by intellectual property.

1.1 SOME HISTORY

Intangible assets have been with us throughout human history. It required a merger between innovations and the rule of law before intellectual property could be identified as a special form of intangible, but the creativity has always been there.

In the world before the Industrial Revolution, early humans moved away from a hunter-gatherer economy to an agricultural based economy. Early humans roamed across large expanses in search of animals to hunt. Self-sufficiency dominated this model. A major shift occurred when early humans decided to stay in one place and grow the materials needed for survival. As an enterprise, agriculture employed virtually everyone in the world and used them in a series of repetitive tasks, done sequentially every season: preparing the ground, seeding, tending, harvesting. Then the cycle was repeated. In the agricultural paradigm, the amount of sun, rain, and temperature were vital to a successful season. People

became accustomed to dealing with cycles measured in terms of days and seasons. Most farms were small and capable of supporting only one family, reinforcing humankind's desire to be self-sufficient. Over time, however, it became clear that the agricultural society was constrained by two key elements: labor and land. Farming at a higher level of output—above mere subsistence—required more land and more labor. Expansion of the agricultural economy required collective work and abandoning elements of self-sufficiency.

The Industrial Revolution created a new paradigm. Fueled by a worldwide affluence and an expanding population, the Industrial Revolution was triggered by technology and the realization that some products could be mass-produced and sold much more cheaply than similar handcrafted products. The new paradigm of economic behavior evolved into one requiring large amounts of capital for the purchase of buildings, machinery, and equipment. Companies were formed to raise the needed capital, and individualism took another step backward. The new companies soon learned not only that the cost of producing their goods meant controlling the manufacture of products, but also that vertical integration enhanced cost controls and profits. Soon large companies were acquiring the suppliers of coal, suppliers of rail transportation, and finally the retailers that sold the manufactured products. The new megacompanies sought to become entirely independent with regard to all of the functions required to obtain raw materials; produce subassemblies, component parts, and finished goods; and retail them to the consumer. Self-sufficiency once again stirred but this time the collective took the shape of megacompanies.

Today, the Intellectual Property Age is on us. Although the new paradigm is yet to be played out fully, clearly the trend again continues away from independence and toward a vital need for the talents of others. Interdependence is at the root of the paradigm shift that is taking place. Technology management in the future will center on leveraging technology that is owned to gain access to technology that is needed. Sharing technology is a concept many will find difficult to accept, but accept it they must. As Denis Waitley writes in *Empires of the Mind*, "The leaders of the present and the future will be champions of cooperation more often than of competition. While the power to maintain access to resources will remain important, 'the survival of the fittest' mentality will give away to survival of the wisest, a philosophy of understanding, cooperation, knowledge, and reason."[1] Access to vital resources has changed because fixed material assets no longer make up the most important resources. Gaining access to technology means cooperating with other companies, even competitors, in order to gain access to their knowledge-based resources. Independence is again being replaced by interdependence. Waitley succinctly explains, "The future leaders will only get what they want by helping others get what they want."

Part of the changes brought about by intellectual property has been the creation of new institutions and ways of doing business.

The mix and makeup of the intellectual property that supports us is continually changing, for example, the Internet, itself resting on communications technology, computer power, and software, enabled by the extreme proliferation of personal computers. The Internet has reminded us once again how moveable and perishable intellectual property can be. Intellectual property, unlike other forms of property, is not described geographically. Even in the beginning, the skills of a craftsman moved with him and those he taught, wherever their inclinations took them. Movement was slow, however, dependent as it was on human footpower. Now, intellectual property moves instantaneously and globally. We could send these very words almost anywhere in the world with a few

1. Denis Waitley, *Empires of the Mind—Lessons to Lead and Succeed in a Knowledge-Based World* (New York: William Morrow and Company, Inc., 1995), p. 8.

mouse clicks. Once done, that action would remove this document from our control, save for the intellectual property legal structure that is in place to enable us to retain rights to this creation and exploit it ourselves or to transfer some or all of those rights to another.

This explosion of intellectual property has led to conflict. One of the buzzwords in the technocratic world is *convergence*. As an example, the difference between a telephone instrument and a computer was once very clear. Now a cell phone can function as a minicomputer (and a digital camera as well!), and we can use our personal computers to communicate. Once, all of the intellectual property connected with telephony: patented and unpatented technology, copyrights and trademarks, was separated by commerce and fields of use from all of the intellectual property connected with computers. That is no longer the case, and these bodies of intellectual property, and the companies that own them, more frequently collide as they protect their rights. To add another dimension, we can understand that a body of technology or a trademark developed and residing in China could have, for many years, peacefully coexisted with confusingly similar intellectual property in Germany. No longer. There has been geographical convergence as well.

1.2 LEGISLATION CREATED INTELLECTUAL PROPERTY

On September 5, 1787, the Committee on Detail reported to the Constitutional Convention that Congress should have the power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

That recommendation was unanimously adopted without recorded debate, and the provision was incorporated into the final draft of the Constitution. Such a constitutional clause is highly unusual in that it instructs Congress how to promote the progress of the useful arts—namely by securing to inventors the exclusive rights to their discoveries. It is even more unusual in that nowhere else in the Constitution is there any provision for an exclusive right to be granted to any individual or group of individuals; only authors and inventors are so blessed.

America was not the first nation to recognize special rights for inventors.

> The patent institution was established by the medieval Venetian state, which articulated the basic feature of the law today: spur innovation through the incentive of limited-time exclusivity by demanding the demonstration to the public of a working model and promising to seize and destroy counterfeit product. Patent rights arise because inventing is an expensive process and costs must be recouped to provide incentives to invest. If others can cheaply appropriate an inventor's innovation, calling it their own without having invested time and energy in it, investments in innovation will not be made.
>
> …Venice institutionalized the right of patent in 1474 in a statute that contained all the main features of contemporary patent law, including requirements that the device be novel, be actually constructed (reduce to practice in modern jargon), and be made public. It also required that it be examined (although the examination was rather informal), that there be term limits to exclusive rights, and that there be remedies for infringement. Finally, the Venetian statute declared that the inventor must teach others how the invention worked and be granted exclusivity in return.
>
> …France, the eighteenth-century textile manufacturing center, also relied on the patent to promote manufacturing innovation and the state itself. The first design patent statute, established by the silk manufacturing guild to encourage creativity within its ranks, was enacted in 1711.…British settlers in the New World brought the English patent practice with them, writing laws in Massachusetts (1641), Connecticut (1672), and South Carolina (1691). As the new nation established itself Thomas Jefferson "set the course for the US patent institution when he authored the 1793 Patent Act."[2]

2. Michael P. Ryna, *Knowledge Diplomacy, Global Competition and the Politics of Intellectual Property* (Washington, DC: The Brookings Institute, 1998), pp. 21, 24, 25.

Many important inventions were first discovered and developed by small companies and inventors who sought personal success: for some as wealth, for others as fame. Without the patent system, likely we would not have the economic power that we enjoy nor the quality of life we cherish. The Continental Congress had in mind the creation of a country and system of self-government like none ever tried before—a system that protected the rights of individuals above all else, a system where the governing body had only the powers granted to it by its citizens. The protection of the fruits of inventive energies seems a natural extension of the Miracle at Philadelphia. Economic prosperity and military strength were imperative for the new experiment to work. By stimulating and encouraging innovation, the United States has achieved economic prosperity that all other systems of government can only envy. Probably the first international recognition of the eminence of American invention came at the Crystal Palace Exhibition in London in 1851. The London *Times* said, "It is beyond all denial that every practical success of the season belongs to the Americans."[3]

And about the turn of the twentieth century, a Japanese official, Korekiyo Takahashi, was sent to the United States; he subsequently reported, "We have looked about to see what nations are the greatest, so that we can be like them. We asked ourselves, 'What is it that makes the United States such a great nation?' and we investigated and found that it was patents, and we will have patents."[4]

Despite the Japanese appreciation of the U.S. patent system, attitudes have not always been favorable toward patents. Patents grant exclusivity, and antitrust laws work to eliminate monopolies. For quite a while, these two were seen to be in conflict. Licensing limitations by patent owners and the acquisition of similar patents by a single company were seen as restrictive to a competitive economic environment. Liberal attitudes about infringement diminished. Patent rights and the U.S. Treasury Department blocked acquisitions involving keystone patents and trademarks.

New thinking sees U.S. intellectual property laws as a complement to the encouragement of a competitive environment. The Justice Department is more likely than ever to see intellectual property rights as enhancements of competition. First, patent laws create an incentive for companies to research, develop, and commercialize new products and services that can be delivered in a more efficient manner. In addition, the laws encourage the disclosure of information that otherwise would be jealously guarded. Through licensing, this information can be shared and exploited in the most efficient manner. Patent values are again enhanced by this thinking because licensing decisions and limitations are not automatically seen as restrictive and conflicting with antitrust laws. Royalties go hand in hand with value.

Strengthening legal protection around the world for all other intellectual properties, such as trademarks and copyrights, provides similar benefits to these assets and supports high values.

1.3 NEED FOR INTELLECTUAL PROPERTY VALUATIONS

Intellectual property has become part of every aspect of life. As a result the reasons for valuing it encompass all aspects of our society. We have been called on to value intellectual property for some of the following purposes:

- *Transaction Support*. Intellectual property is being exchanged more often as an independent asset. Individuals sell inventions to corporations. Universities sell inventions to corporations. Corporations sell trademarks and patents to each

3. Ibid.
4. Ibid.

other. In all of these cases, the price must be determined and valuation opinions must be developed. Often the values involved are enormous. In such cases corporate managers are required to get outside opinions of value that show that the price of the transaction is fair.

- *Bankruptcy.* Intellectual property values play an important role in bankruptcies. Value opinions are needed for presentation in court as debtors scramble for assets that can satisfy their losses.
- *Licensing*. When the owner of intellectual property is considering licensing a property, the outright value is also a consideration. As an alternative to licensing, consideration is often given to selling the property. In such cases a value opinion is needed.
- *Strategic Alliances*. Often two independent entities come together to form a third entity for the purposes of exploiting new technology. Each party brings different contributions, which often include intellectual property. In order to determine the relative ownership of the new alliance, a value for the independent contributions is needed.
- *Estate and Gift Taxes.* As patents, trademarks, or copyrights are part of an estate, they must be valued. These properties are also becoming the subject of gifts. Patents are given to children. The recipient of the gift enjoys future royalties when the gifted patents are licensed. Value exists in these gifts, and valuation opinions are needed for income tax purposes.
- *Marital Dissolution*. In one case, the value of patents owned by the husband had to be determined as part of the marital assets. As intellectual property is owned by more individuals, its value will play an important part in divorce proceedings.
- *Infringement Damages*. A growing trend in litigation involves patent and trademark infringement. The damages analysis is directed at determining the damages caused by the infringer. The conclusion is not necessarily a fee-simple amount but still involves much of the same type of analysis discussed throughout this book.
- *Intercompany Transactions.* The transfer of intellectual property between related parties comes under the scrutiny of various taxation authorities. As a result, we have valued patents and trademarks that were the subject of domestic and international transfers.
- *Collateral-Based Financing*. As intellectual property becomes the dominant asset of companies, it also becomes the primary collateral on which banks are willing to make loans. Banks are asking for valuation opinions for patents, trademarks, and copyrights as security for their loans.
- *Attorney Malpractice*. Sometimes a patent attorney inadvertently fails to obtain patent rights that should have been obtained. In such instances an opinion of the value that was lost is required for presentation in court.
- *Accounting Requirements*. Acquisitions require that buyers properly state the value of purchased assets on their balance sheets. Since acquisitions are driven by intellectual property and since these assets dominate acquired companies, valuations for accounting statements are becoming common reasons for valuing intellectual property.
- *Regulatory Requirements*. Initial public offering (IPO) documents are more often referring to the importance of the intellectual property of the company that is

being taken public. Since intellectual property often dominates these companies, a valuation opinion is sometimes presented within the IPO document.

- *Ad Valorem Taxes*. Property taxing authorities traditionally have been limited to taxing the value of fixed assets. Some of the valuation techniques they use capture value that is intangible in nature. In some instances the value of intellectual property and intangible assets must be valued so that appropriate property tax bases can be determined.

1.4 INTELLECTUAL PROPERTY EXPLOITATION

One of the main sections of this book concerns the economic principles relating to the exploitation of intellectual property, with a primary focus on licensing.

Intellectual properties are now at the very core of corporate success. Properties such as patented technology and world-class trademarks are the basis for capturing huge market share, commanding premium prices, and maintaining customer loyalty. They are also in scarce supply. This combination of power and scarcity makes such assets very valuable. Companies that possess such assets will grow and prosper. Those without access to intellectual property will stagnate for a while in low-profit commodity businesses and eventually fade out of existence. Future success therefore requires that companies somehow gain access to intellectual properties. They must create them, buy them, or arrange to borrow them. As a result, licensing and strategic alliances will play a dominant role in future corporate deal making. At the core of these strategies will be intellectual property—especially technology and trademarks.

Companies are seeking to expand product lines, increase market share, minimize new product development costs, expand market opportunities internationally, and reduce business risks. Companies are also seeking to create corporate value for investors. All of this can be accomplished by exploiting patents, trademarks, and copyrights. It is important also to consider the consequences of not having access to intellectual property. Without intellectual property, profits are low, growth is lacking, and corporate value is lost. Corporate managers realize more than ever that access to intellectual property is key to their ability to create corporate value and, more important, key to continued corporate survival. The forces driving the licensing and joint venturing of intellectual property include time savings, cost controls, and risk reduction.

(a) TOO EXPENSIVE ON YOUR OWN. Even the largest companies cannot fund all the intellectual property programs that they may desire. Research programs can run into hundreds of millions of dollars annually, and trademark costs can reach billions of dollars. A major force behind the desire to form strategic alliances is the high level of investment needed to create new intellectual properties.

One of the first major joint ventures of the 1990s was the combination of pharmaceutical product lines from DuPont with the distribution network of Merck & Co. The new joint venture company was equally owned by the two companies. Its name was DuPont-Merck. DuPont had a product line of drugs but needed help with international distribution. The time and cost needed to create its own network of sales staff were formidable obstacles to fast growth and return on the research effort that DuPont had in the new drug line. Part of DuPont's worries included the remaining patent life associated with some of its drug products. By the time a self-created distribution network was established, some of the valuable products would be off patent. Full exploitation of patents required that sales be maximized during the premium price years that would exist before generic products hit the market. DuPont needed a way to tap its full market potential fast.

Merck had annual sales that ran above $6.5 billion. It also has one of the largest research and development budgets in the world. Even so, Merck has limitations as to the number of new drugs that it can discover, investigate, develop, and commercialize. Access to a new line of already commercialized products was a great attraction to Merck.

The DuPont-Merck joint venture saved DuPont both time and money. It gave DuPont immediate access to an international distribution network. Merck gained immediate access to a whole new product line that would have cost enormous amounts of time and money to develop.

This joint venture is a classic case of how the factors of time and cost drive strategic alliances that are founded on access to intellectual property. It also illustrates how strategic combinations of key intellectual property can reduce the investment risk associated with new strategies. If DuPont had attempted to build its own international distribution network, the cost would have been high and the time needed long, and there was no assurance that it would successfully construct a network that could move the goods. Merck enjoyed a reduction in investment risk by gaining access to the profits associated with the DuPont product line. If Merck had embarked on its own plan to duplicate the DuPont product line, there was no assurance that it would have been completely successful. Furthermore, there existed the risk that the Merck product line could have ultimately infringed on the DuPont product line. The two companies saved research funds, gained immediate access to commercialized intellectual property, and reduced business risk. Judy Lewent, chief financial officer at Merck & Co., told the *Wall Street Journal* that the DuPont-Merck deal "added about a third to our research capacity."[5]

The cost to establish and maintain world-class trademarks is no different. Huge sums of money are required and customer recognition takes time. One of the first mega-launches of a new product in the cosmetics industry was Yves Saint Laurent's 1978 Opium party to introduce his new fragrance. In attendance were Cher, Truman Capote, BBC correspondents, the crew of *60 Minutes*, and leaders of the fashion industry. The party cost $250,000, which in 1978 was a staggering amount for a single party to launch a new product. The total launch budget was $500,000. It turns out that those were inexpensive times. Similar launch budgets now run between $20 and $25 million. Joseph Spellman, executive vice president at Elizabeth Arden, said, "Today everything is global.… The competitive level is way up. The packaging, concept, advertising, staging—all of it has to be fabulous. The attention is always on big productions, so launches have escalated to mega proportions." The reason for the high costs to launch new product names was simply and accurately described by Edith Weiner, president of Weiner, Edrich, Brown, Inc., trend trackers and marketing strategists, when she told *Mirabella* magazine, "There's a product glut.… It's getting harder and harder to get people's attention." And this is exactly why an established trademark that already has an attentive audience is valuable.

(b) IMPOSSIBILITY OF MASTERING ALL THE NECESSARY TOOLS. Beyond time and cost factors are capability limitations. Products have become more complex. Mastering all of the divergent technologies that go into a single product is not always realistic. Consider the new battery technology that stores electricity mechanically instead of chemically. Such technology may be the breakthrough needed to make electric-powered automobiles a reality. The new technology may possibly power a car for 600 miles on a single charge. Conventional chemical-based batteries have a range potential of 100 miles at most. The new battery technology is the product of American Flywheel Systems, a company comprised

5. "Financial Prescriptions for Mighty Merck," *Wall Street Journal*, June 30, 1992, p. A17.

of former scientists from the Environmental Protection Agency and military aerospace researchers. The new battery is referred to as a flywheel electromechanical battery that stores energy kinetically. It operates on the same principle that drives the ancient potter's wheel. A heavy mass rotates at a very high speed inside a vacuum enclosure suspended by magnetic bearings and controlled by sophisticated electronics. The first electric car was created 100 years ago, but chemical batteries required frequent recharging. The old batteries also involved toxic waste, subjected other car components to corrosives, and introduced an explosion potential. Flywheel batteries were studied in the 1970s but could not be perfected until recently. Advanced technological development in three separate fields of science were required before the flywheel battery could become viable. Advances in composite materials, computers, and electromagnetics were all required to make the flywheel battery a reality.

A confluence of three critical technologies in materials, magnetics, and computing speed were needed to make the flywheel battery a viable technology. Lightweight but strong materials, such as graphite, have come into being recently. In 1990, the army tested a flywheel battery that used graphite components having a tensile strength of 52,000 pounds per square inch. Graphite now has a tensile strength of 1 million pounds per square inch. The second critical breakthrough occurred in computer power. Faster computers allow the performance of millions of calculations and the simulation of thousands of prototypes. This breakthrough allows scientists to turn ideas into working machines more quickly. The third direct scientific advance involved the development of magnetic bearings. These electromagnetic fields allow objects to spin in vacuums without friction. All of these technologies are needed for just one product idea, illustrating the problem currently challenging most companies. Technology is becoming more complex. Investigating any one of these critical technology areas requires a multidiscipline understanding of a wide variety of sciences such as physics, chemistry, and electronics. Advanced knowledge in each discipline is required, not just one specialty and a superficial understanding of the others. Corporations are a lot like people. A professional architect with expertise in marina design cannot cope with the complexities of modern life without outside assistance. Tax-preparation services, medical treatment, lawn services, and many other areas of individual expertise must be acquired from others in order for the architect to survive. Corporations, too, have their specialized areas of expertise, but to deliver the products of tomorrow, these specialized corporations will need to incorporate into their products advanced aspects of different technologies. This will require specialized knowledge that they do not possess and will require them to participate in corporate transactions that are centered on sharing access to technology.

Speaking to the *Wall Street Journal* about pocket-sized cellular telephones, where wireless telecommunications technology must be integrated with portable computing, information services, and satellite technological know-how, John Sculley, former chief executive officer of Apple Computer, Inc., said, "No one can go it alone anymore."[6]

1.5 LEGAL ATTITUDES ENHANCE VALUE

When intellectual property laws were administered inconsistently, owners of trademarks and especially technology were lucky to get requests for license deals. Infringement did not carry the same potential for financial ruin as it does today. When a potential licensing

6. "Getting Help: High-Tech Firms Find It's Good to Line Up Outside Contractors," *Wall Street Journal*, July 29, 1992, p. A1.

partner approached a technology owner, the leverage needed to demand high royalty rates was not very strong. Enhanced legal protection around the world has made patented technology and trademarks more valuable than ever before. Given this, royalty rates for licenses and joint venture equity splits are moving to higher levels, and intellectual property owners are less interested in outright sales of their valuable properties. In the United States, the patent system was dramatically strengthened with the creation of the Court of Appeals of the Federal Circuit (CAFC). It is the only court in the nation that handles patent and trademark case appeals. The continuity of the court's thinking and decisions has strengthened the rights of patent and trademark owners. It has made willful infringement a very risky proposition. Damage awards by courts are higher than ever before. Several decisions have upheld damage awards that have bankrupted the infringer. Patent rights have been reinforced to such an extent that the value of patents has risen to new heights. The exploitation opportunities of licensing are greatly enhanced and royalty income has risen as a result. The enhanced protection has trebled the avenues by which intellectual property can be exploited safely. Instead of only deriving profits from internal use, the licensing option is now well protected and joint venture projects are becoming common. Instead of deriving only one stream of income from intellectual property, we are more likely to see three: internal use, licensing, and joint ventures. Each of these represents another source of earnings growth that adds to the value of companies.

Legal protection of intellectual property is not limited to the United States. Germany, Great Britain, Japan, and France are all providing strong legal protection for intellectual property. Even the Third World recognizes the importance of protecting these vital assets. IBM was successful in stopping five companies within the People's Republic of China from assembling knockoffs of the IBM PC. Trademark infringement cases are now common in China's provinces. Legal protection around the world is advancing in recognition that intellectual property is the most important asset and must be protected. Much of the GATT treaty negotiations focuses on the proper means for protecting internationally exploited intellectual property. The value of patents and trademarks as a result is enhanced along with the opportunities to expand economic exploitation.

1.6 WHEN INTELLECTUAL PROPERTIES COLLIDE

The third major section of this book concerns the quantification of damages in the setting of infringement litigation. Such litigation is becoming more frequent as business managers are becoming much more sensitive to the role of their intellectual properties in support of earnings and as geographic and technical convergence continues.

The strength and value of patents allow owners to negotiate higher royalties. The new and favorable attitude toward patents originated in the Carter administration and came to fruition in 1981. The patent system was fundamentally strengthened with the creation of the Court of Appeals of the Federal Circuit (CAFC). It is the only court that handles intellectual property–based appeals in the nation. Its decisions have clarified and made uniform U.S. Law. Under 35 U.S.C. 283 (1952) courts may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.

Prior to 1981, when infringement cases were initiated, preliminary injunctions were granted only when there was a reasonable likelihood that the infringed patent could be proven both valid and infringed. While preliminary injunctions typically were granted in trademark and copyright cases, they were seldom granted for patents. The owner of the infringed patent was required to prove the validity of the patent in order to be granted a

preliminary injunction. Such proof was possible only in those cases in which prior court decisions had found the patent valid. Therefore, injunctions were rarely granted for patent cases. Infringing on an existing patent was not risky because an infringer could continue to exploit an infringing product or service while a court case dragged on. In cases where infringement was decided, damage awards typically were expressed as royalties in amounts that represented what would have been negotiated had the infringer taken a license before beginning the infringing activity. Prior to the creation of the CAFC, infringement was almost a risk-free strategy. The worst consequence an infringer faced was payment of the low royalty that should have been negotiated initially.

Currently, the Federal Circuit standard has placed the burden of proving a patent invalid upon the infringer. This standard supports the patent owner. Infringers must provide clear and substantial proof of invalidity. Otherwise, the patent owner is considered to have a valid patent. This standard of presumed validity is very powerful and renders infringement both costly and risky. Entire manufacturing plants may be shut down and entire workforces indefinitely suspended. As substantial investments by infringers can be rendered worthless, infringement is more costly than ever. This new attitude strengthens the U.S. patent system, making patents even more valuable. Another shift in the legal system that enhances patent values is the willingness of juries to grant huge awards. In addition, where willful infringement is proven, the damage award can be increased to three times the actual amount of damages. The effect can be substantial. In the case of *Procter & Gamble v. Paragon Trade Brands*, the damage award to P&G forced Paragon into bankruptcy.

CHAPTER 2

DEFINING INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

A dictionary might define intangible assets as those assets that have no physical substance or that are undetectable to the senses. Accounting theory defines intangibles as *assets that do not have physical substance*, that *grant rights and privileges to a business owner*, and that *are inseparable from the enterprise*. Accounting theory also defines them as assets for which the determination and timing of future benefits is very difficult.

2.1 INTANGIBLE ASSETS

This text defines intangible assets as *all the elements of a business enterprise that exist separately from monetary and tangible assets*. They are the elements, separate from working capital and fixed assets, that give the enterprise its character and often are the primary contributors to the earning power of the enterprise. Their value is dependent on the presence, or expectation, of enterprise earnings. They typically appear last in the development of a business and often disappear first in its demise. Intangible assets can be categorized as follows:

- Rights
- Relationships
- Undefined intangibles
- Intellectual property

(a) RIGHTS. Every business enterprise acquires rights through establishing contractual agreements with other businesses, individuals, or governmental bodies. At the minimum, a business establishes its right to carry on operations by obtaining a license or by registration at the local government level. A large enterprise may have contractual rights comprising thousands of elements.

These rights exist according to the terms of a written contract that defines the parties to the agreement; the nature of the rights, goods, or services transferred; the transfer consideration; and the duration of the agreement. A contract may have little value unless its provisions result in an exchange that is of economic benefit to the business.

(i) Contracts to Receive Goods or Services. Some contracts have value because they enable an enterprise to obtain goods or services at an advantageous price. One method to help identify favorable contracts is to compare them to recently negotiated contracts of a similar nature, focusing on the existing terms vis-à-vis those that would be negotiated today. An example is a contract between the business and an accounting firm to receive

auditing services. If the audit fees are comparable to those of other accounting firms at the time, and if there are other firms capable of providing the service, then this contract would not be of material value to the enterprise. Value arises from a contract that enables the business to receive goods or services at better than market rates or that ensures the receipt of goods or services in short supply. Value can be quantified in terms of price advantage or specific favorable terms. Contracts also must be evaluated to determine whether they ensure the continuation of rights, goods, or services that are in limited supply. Any contract can have value, but the most common include:

- Leases of premises at rates or terms better than those available in the current market. This is the most commonly valued contract. Such an advantageous lease is called a leasehold interest. It is so called because the lessee, in effect, obtains an interest in the property during the lease period because the property owner has relinquished more than the right of occupancy to the lessee by leasing it at a bargain rate. The economic result of dividing the owner's bundle of rights by contract with another is key to the valuation of this type of intangible property. This concept will be reviewed in later discussions of the valuation and exploitation of intangible assets and intellectual property.
- Advantageous distribution agreements for the sale, warehousing, and movement of products.
- Employment contracts that act to retain key personnel.
- Financing arrangements that result in capital being available at more favorable terms or at lower rates than otherwise available.
- Insurance coverage at better than market rates.
- Contracts for the supply of raw materials or purchased products at advantageous terms.
- Favorable contracts for services, such as equipment maintenance, data processing, or utility services.
- Licenses or governmental certifications that are in short supply or are costly to obtain.
- Rights to receive goods or services in limited supply, such as radio or television network affiliations, landing slots and gate positions at an airport, or film distribution rights.
- Covenants by a former owner or employee not to compete.
- Contractual rights of a franchisee to an exclusive territory or product line.
- License contract for the use of intellectual property that provides an economic benefit to the licensee greater than the economic cost of the license.

(ii) Contracts to Provide Goods or Services. Some contractual rights have value because they afford the business the opportunity to provide goods or services to others at a profit. These contracts represent "presold" business. They have the capability of providing a positive earnings stream that exceeds what is required to provide a return on the other assets employed. This type of contract can include:

- Mortgage servicing rights to collect, process, and manage escrow and insurance matters on a portfolio of mortgages for a fee.
- Loan agreements purchased as part of a business enterprise on which there will be a future return of principal and interest.

- Agreements to provide food service, healthcare, data processing, advertising, or consulting services.
- Agreements to provide goods under contract for future delivery.
- Student enrollments or subscriptions that are prepaid.
- Licenses granted to another for the use of intellectual property in return for royalties.
- Franchises that protect a territory or product line and produce fee income.

(iii) Franchises. There are particularly challenging issues connected with valuing the intangible asset rights of a franchisee and franchiser. A franchise relationship is created when the owner of intangible assets contracts with another entity to distribute products or services supported by those assets, provides marketing assistance to that entity, and exerts some controls over that entity's operations. The franchisee typically pays an amount in excess of an arm's length price for the specific products or services, and that excess is a payment for the use of the intangible assets and/or intellectual property owned by the franchiser and licensed to the franchisee.

Most often, a prominent asset in a franchising transaction is a trademark that was originated by the franchiser, developed by the franchiser, and which is "rented" by the franchisee. As in a license, the rights in intangible assets have been divided among franchiser and franchisee(s) according to the terms of their contractual agreement. We must therefore be careful to consider this apportionment properly when valuing the rights of either party or the collective value of the intangible assets or intellectual property involved. Perhaps because of the strong identification of goodwill with trademarks, the conventional wisdom leads us to conclude that the business of the franchisee, viewed alone, has little or no intangible assets. This is, however, not necessarily true, depending on the specific characteristics of the franchise.

In what we might call "strong" franchises, every element of the business enterprise is specified and controlled. An example might be a fast food operation, in which the building design, interior furnishings, signage, methods of food preparation, menu, ingredients, employee uniforms, and other procedures are rigidly specified and controlled by the franchiser. If the business is operated according to specifications, then whatever good or bad happens is largely due to the employment of the franchiser's assets. In this case, there are probably few valuable intangible assets in the franchisee's enterprise, although there may be some. A skillful and energetic franchisee, even under these strictly controlled conditions, ought to enjoy superior earnings and create some amount of "goodwill."

By contrast, in "weak" franchises the franchiser provides only an umbrella business concept and trademark. We use the terms "weak" and "strong" not in a pejorative sense but to depict the degree of control exerted by the franchiser. An example of a weak franchise might be one that provides a territory in which a franchisee sells a line of cosmetics or household goods. Even though the franchiser might provide training, accounting systems, and national advertising in support of a trademark, the success of the territory will be much more dependent on the skills, personality, and ingenuity of the franchisee. This situation permits the franchisee much more latitude to employ personal marketing or selling skills. The franchisee in this situation might even be able to switch to a competing line of products without a hitch in the earnings of his or her business, demonstrating the existence of the body of intangible assets that he or she has created as part of the enterprise.

Each franchise situation must, therefore, be examined on its own merits without undue dependence on the "conventional wisdom."

(b) RELATIONSHIPS. Every business establishes relationships internally and externally with outside agencies, other companies, and other individuals. These are not contractual and can, at the same time, be both ephemeral and extremely important to the enterprise.

(i) Internal Relationships.

ASSEMBLED WORKFORCE

One of the most obvious relationships of an enterprise is that with its employees. It can be very costly to locate, hire, and train a workforce, as evidenced by the expenditures made to retain employees and reduce turnover. The more specialized the workforce, the greater the cost of its assemblage and the larger its potential value to the enterprise.

(ii) External Relationships.

CUSTOMER RELATIONSHIPS

Every business has customers, but not every business has customer relationships. For example, a newsstand in a large city probably has a number of customers who habitually purchase a daily newspaper. Perhaps the walk from the bus stop to their place of work takes them past this particular stand. There are probably other convenient locations to make the purchase, but whatever the reason, they use this one. The newsstand proprietor does not know the identity of customers or where they work, maintains no customer account records, and could not contact them to research their interest in additional publications or services. If the proprietor moved the newsstand to another location, these customers would probably not seek him or her out but rather would patronize another stand better located to their route. This is not a customer relationship in the sense that we are using the term.

Two aspects of a business's relationship with its customers are primary value drivers. One is the amount of *inertia* in the relationship, and the other is the amount of *information available* about the customer.

The newsstand example is representative of a low-inertia customer relationship. We use this term to describe the situation in which there is little to hold the customer to the relationship. It is relatively easy for a customer to migrate to another source of the goods and/or services. Six characteristics of such a situation are:

1. Products and services that are of a commodity nature, not exclusive, and easily obtained elsewhere
2. A special location that drives the success of the business
3. The attraction of important brand names that are not the property of the business
4. Critical skills or personality of owner/operator/employees that are essential to the success of the business
5. Business activity that may be seasonal
6. The necessity of constant advertising to maintain sales

Examples of businesses of this type are retail establishments such as barbershops or beauty salons, trendy cocktail lounges, video rental stores, delis, bakeries, gas stations, convenience stores, and the newsstand previously described. One would expect sales to be volatile and the possibility of business failure to be relatively high. It is reasonable to expect that the value of customer relationships in such a low-inertia situation would be minimal.

At the high end of the inertia scale are businesses that are able to lock in their clientele to some degree. Typically, these businesses:

- Have exclusive products or services, or ones that are sharply differentiated from those of their competition
- Do not depend on brands for customer attraction
- Have less need for advertising or promotional activities
- Do not occupy a critical location
- Do not depend on special owner/operator/employee skills
- May require customer prepayments or work with a long order lead time, resulting in an order backlog
- Experience significant selling costs associated with obtaining or replacing a customer
- May sell goods or services in which there is significant cost associated with substitution (such as when equipment is placed on customer premises or when replacing computer software results in a hardware change-out)

These businesses have formed strong customer relationships that would persist through a change in ownership, changes in personnel, or even a relocation. The value of customer relationships in such a situation would be very high. The buyer of such a business would recognize the likelihood of earnings stability brought about by the solid clientele and would therefore pay more for such a business than for one with low-inertia customer relationships.

At the highest point of the inertia scale, we would find a true monopoly business. The best example of this might be a water utility. Such a business has a territorial monopoly, provides a service (water delivery) essential to life, and owns a distribution system unfeasible for a competitor to duplicate. Especially in urbanized areas, there is no reasonable alternative to being a customer of one's local water utility. Sales and earnings of such an enterprise would be steady, and the prospect of business failure would be remote. Perhaps curiously, the value of customer relationships in this scenario is *low*. A true monopoly obtains its customers by virtue of its franchise, not by building relationships.

We must be discerning when judging a business's proper position on the inertia scale, however. A franchise can be, at least to some degree, a monopoly, but does that mean that customer relationships always have low value in a franchised business? Definitely not. Few franchises grant the market power of a water utility. Most franchises only grant a relief from competition (within a territory) from purveyors of the same brand of goods or services. A franchisee may be in an extremely competitive business due to others offering similar goods and services in the franchised territory. A franchised seller of cosmetics, maintenance services, fast food products, or cable television signals may face considerable competition for customers, and the relationships that give stability to those revenues can be very valuable.

We are not suggesting that the value of the entire business necessarily declines as its characteristics move it toward the monopoly description. The relative value of its underlying assets will change, with the value of customer relationships declining and the value of other assets increasing.

In order for there to be a customer relationship as we define it, there must be some customer identifying records and/or some obligation or advantage on the part of either

the business or customer to continue the relationship. This *information* might include the following:

- Customer records that would be useful in selling efforts
- Records that contain history or other useful information about the customer-business association, credit information, previous purchases or services, preferences

The more information available, the more valuable is the customer relationship, all else being equal. Most businesses that possess extensive customer information treat it as valuable, proprietary property.

We have graphically illustrated the interaction of the inertia and information value drivers in Exhibit 2.1. The lowest value would be expected in the left foreground, where low inertia and scant information reside. Highest value lies toward the right background. At the extreme right background is the area in which value drops off as monopoly characteristics begin to prevail. This is not an abrupt, well-defined shift. Many enterprises appear in this band, and each case must be examined carefully to place it correctly within this spectrum.

Business in which one would expect to find significant customer relationships would include:

- A professional practice, such as medical, dental, legal, accounting, financial planning, consulting, or counseling
- A pharmacy (prescription records and doctor referral sources)
- A publisher of periodicals (subscriber or advertiser relationships)
- A provider of food service or department management on customer premises

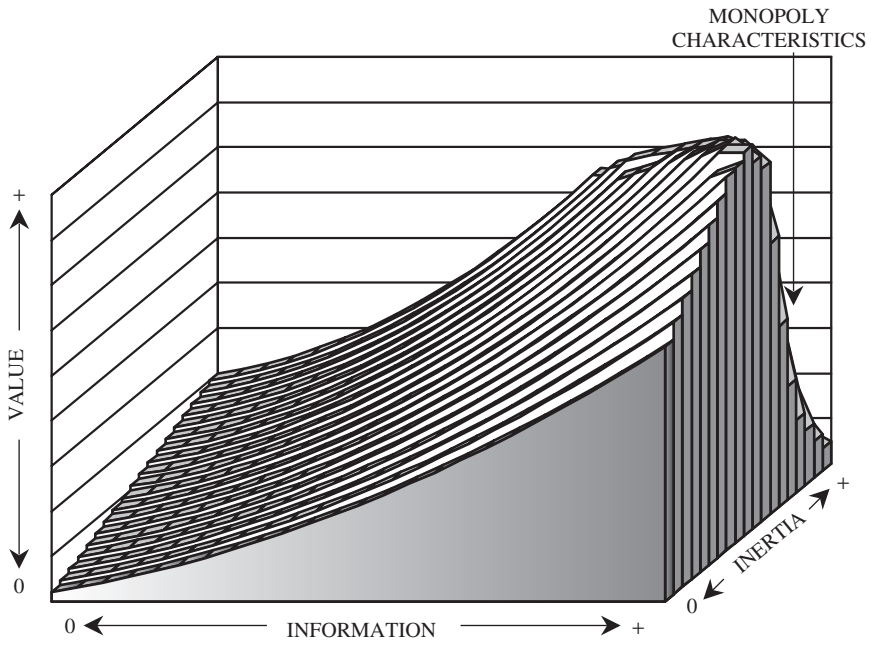

EXHIBIT 2.1 RELATIVE VALUE OF VARIOUS TYPES OF CUSTOMER RELATIONSHIPS

- Home healthcare providers (patient records and doctor/nurse referral sources)
- Laboratories
- An advertising or public relations agency
- Personnel placement/search firms
- A real estate or insurance agency
- An original equipment manufacturer for parts after market in which a "parts annuity" exists for the installed base of machines
- A radio or television station or newspaper (advertiser base)
- A bank (core depositors)
- A stock brokerage

Distributor Relationships

A business that depends on others to distribute and/or sell its products may have established relationships of considerable value. There are companies whose representatives sell cosmetics, cookware, and cleaning products in the residential market. These companies have no retail stores, and the relationship with their representatives is extremely important.

Other businesses may sell complex products in a highly technical market through manufacturers' representatives. While there may be a contract between the company and its representatives, it usually can be terminated on short notice, and therefore does not ensure a continuation of the relationship. Locating, hiring, training, and maintaining such representation can be a very costly process, and, once accomplished, the relationship is an asset of value to the enterprise.

It is important to note that, in this situation, the relationship between distributor and customer may be stronger than the relationship between company and customer. Therefore, the company-distributor relationship may be very crucial to the welfare of the business.

(c) UNDEFINED INTANGIBLES. In spite of the fact that appraisers have, in recent years, analyzed, identified, and valued many distinct intangible assets, a comparison of business enterprise value with the aggregated values of the identified underlying assets often reveals a residual or excess of business enterprise value. That residual is commonly referred to as "goodwill" and/or "going concern value." While some people combine these two assets, we believe it is useful to consider them separately.

We are able to identify, with some accuracy, the total amount of this residual value but may be unable to define specifically the individual elements that comprise it. This inability need not detract from the quality of opinions as to the value of this residual or the values of the other assets that make up the business enterprise. This is not an uncommon situation in business or even the physical sciences. As an example, experienced fundraisers know, for a given size and type of campaign, the amount of money that is likely to be collected. They do not know, although this might be estimated after an inordinate amount of investigation, *who* will make these contributions or what their individual motives might be. This lack of knowledge does not, however, detract from the validity of the estimate of the total results of the campaign. Agricultural economists can estimate the crop yield for a large farming operation. They do not know, nor do they need to know, the yield of each individual acre in order to make a valid estimate of the total.

(i) Going Concern Value. Going concern value has been defined as "the additional element of value which attaches to property by reason of its existence as part of a going

concern" [VGS Corp., 68 TC 563,569 (1977)]. This is a term that has troubled us because it implies that there is some asset called a going concern. There is such a thing as a going concern, to be sure, as distinguished from a defunct or insolvent one. One can describe a moving automobile to distinguish it from one at rest. But if one really wants to explain the difference between the two automobile states, one must describe the conditions giving rise to the movement. These include the consumption of fuel, combustion, pistons flying, gears turning, and the like. The same is true if we want to define precisely the difference between a "going" concern and one that is not "going." We believe that definition is aided by focusing on the elements of a going concern.

Perhaps a somewhat extreme example would serve to better describe going concern value. Suppose that one were to assemble in a giant factory building all the tangible and intangible assets for a business that was not yet in operation. These would include the following:

- Employees (first day on the job, wandering aimlessly)
- Machinery (in crates)
- Furniture and office machines (on the loading dock)
- Computer and peripherals (boxed)
- Cash (in bags)
- Computer software (on disks and tape)
- Office supplies (scattered about)
- Vendors (waiting to be seen)
- Customers (waiting in the lobby)
- Advertisements and radio/television commercials (ready to be placed)

Much must be done before this aggregation of assets is an organized business ready to sell its product.

Across the street is an identical business that has legalized itself; established relationships with financial, banking, legal, and accounting firms; contracted with suppliers; designed a product; obtained an inventory; developed a business plan; readied its advertising program; written operating procedures; and is poised and ready to go. However, it has yet to make a sale, so there can be no goodwill.

The difference between the value of these two enterprises is that one has the *elements of a going concern* in place. These elements are not so mysterious that they cannot be identified and quantified. An appropriate measure of their value is the cost incurred to do all the acquiring and organizing plus the profits lost during the process.

(ii) Goodwill. Businesspeople, attorneys, accountants, and judges have all had a try at defining this most intangible of intangibles. This is also discussed in Chapter 5.

Patronage

Many equate goodwill with patronage, or the proclivity of customers to return to a business and recommend it to others. This results from superior service, personal relationships, advertising programs, and business policies that meet with favor in the marketplace.

Excess Earnings

Another common aspect of a goodwill definition is the presence of "excess earnings." That is, a business that possesses significant goodwill is likely to have earnings that are greater

than those required to provide a fair rate of return on the other assets of the business. Such earnings are not "excess" in the sense of exorbitant or usurious profits, but indicate the presence of earning assets in addition to monetary, tangible and identifiable intangibles.

Residual

Goodwill can be represented by the residual between the value of the enterprise as a whole and the value of the other identifiable assets. This is really a permutation of the excess earnings concept because the value of the enterprise will exceed the value of the identifiable assets (and create room for the residual) only if there are excess earnings.

This residual is prominent in mergers and acquisitions of public companies. One well-used strategy is for the acquiring company to offer to the shareholders of the target a price in excess of that at which target's stock is trading on an exchange. Acquiring companies may do this for a number of reasons.[1] These may include the need to motivate all (or at least a majority) of shareholders to sell their holdings, to obtain control of target's assets, to exploit potential synergies, or to thwart competition for the transaction. The end result may be a value indication for the acquired company that exceeds that formerly in evidence in the marketplace. This increased business enterprise value may be ascribable to specific underlying assets or may be an increase in the value of goodwill represented by a residual.

It is incorrect to depend entirely on one definition to the exclusion of the others. Can there be goodwill in a business that is losing money? Of course. A temporary escalation of expenses, a casualty loss, the opening of a new plant, or the development of a new product line can temporarily eliminate earnings, but goodwill can remain. Even over a longer period, persistent mismanagement can result in losses, but the earning *capability* can be present, as can goodwill.

Can there be excess earnings and no goodwill? Certainly. Suppose that a business has a single customer who is locked in for several years under a lucrative contract. There might well be excess earnings, but they are attributable to the contract, not goodwill. As another example, the local franchisee of a well-known company may have a very successful business with earnings in excess of those required to provide a fair return on other assets. It is entirely possible, however, that those excess earnings are attributable (exercising the caveats noted previously) to the franchise and that the goodwill may really be trademark value or an advantageous interest in the trademark. Goodwill is an elusive concept, but a value can be determined once the other assets are identified and segregated.

If valuation practitioners were skilled enough in the identification and quantification of the intangible assets in the enterprise portfolio, they would not need to resort to the catch-all term "goodwill." There is, at times, no economic justification for the analysis necessary to do this, and in those cases, the term is useful, as long as valuation practitioners recognize that it represents an aggregation of intangible assets.

2.2 INTELLECTUAL PROPERTY

The term "intellectual property" refers to *patents*, *trademarks*, *copyrights*, and *trade secrets* or *know-how*. This is a special classification of intangible property and is unique because the owner of intellectual property is protected by law from unauthorized exploitation of it

1. For further discussion of this subject, see Gordon V. Smith and Russell L. Parr, *Intellectual Property: Licensing and Joint Venture Profit Strategies* (Hoboken, NJ: John Wiley & Sons, 1998, Supp. 1999) Chapter 2A.

by others. We include computer software in the following discussion because it can be subject to patent, trade secret, or copyright protection.

A business enterprise that owns intellectual property can either internally utilize its benefits or transfer interests in the property to others who will exploit it. Later chapters examine in detail how intellectual property is exploited and valued. As with other types of intangible property, not all intellectual property has value. Its value is usually determined by the marketplace, either directly or indirectly.

(a) PROPRIETARY TECHNOLOGY. The term "proprietary technology" here refers to trade secrets and know-how. Our discussion of intellectual property begins with this classification because, in essence, much of intellectual property is a "trade secret" at the time of its creation. Those responsible for the creation can either maintain secrecy or elect to obtain other forms of statutory protection in return for divulging its content.

Proprietary technology is very often more valuable to an enterprise than its patents. Karl F. Jorda describes this: "Patents are but the tips of icebergs in a sea of trade secrets. Over 90% of all new technology is covered by trade secrets and over 80% of all license and technology transfer agreements cover proprietary know-how, i.e., trade secrets, or constitute hybrid agreements relating to patents and trade secrets." Jorda also opines that the decision as to which type of protection to seek is not simply a "patent or padlock" question, but one in which the inventor must decide "what to patent and what to keep a trade secret and whether it is best to patent as well as padlock, i.e., integrate patents and trade secrets for optimal protection of innovation."[2]

(i) Trade Secrets. These have been defined in several ways:

> Information, including a formula, pattern, compilation, program, device, method, technique or process that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy. [Section 1(4) of the Uniform Trade Secrets Act (1990)]
>
> Any formula, pattern, patentable device or compilation of information which is used in one's business and which gives an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers . . . or it may . . . relate to the sale of goods or to other operations in the business such as a code for determining discounts, rebates or other concessions in a price list or catalog, of bookkeeping or other office management. [Restatement of Torts, (1939)]
>
> Any information that can be used in the operation of a business or other enterprise and that is sufficiently valuable and secret to afford an actual or potential economic advantage over others. [Restatement (Third) of Unfair Competition, Sec. 39 (1995)]

With the passing of the Uniform Trade Secrets Act, there is federal law prohibiting the misappropriation of trade secrets. Most states have modified their laws to conform with the provisions of this act and most litigation of this issue takes place in state venues.

Some trade secrets are patentable inventions that have not been patented in order to avoid making them public and limiting their rights to the statutory life of a patent. By not seeking a patent, the owner of proprietary technology also is relieved of the necessity of administering registrations (perhaps internationally) and the cost of legal and filing fees. A trade secret does not have to be reduced to some tangible form in order to be protected. In fact, some trade secrets are such that they cannot be so captured. An increasingly common

2. David Rines, Professor Intellectual Property Law and Industrial Innovation, *Germeshausen Center Newsletter* (Spring 1999).

reason not to patent is that the subject technology or information may be changing so rapidly that obsolescence may occur before a patent is granted. There are also situations in which a company does not wish to reveal even the direction of its research program. All of this is, however, counterbalanced by the risk of having valuable information subject to being inadvertently divulged, independently developed, or "reverse engineered" by another.

Proprietary technology as defined here is intended to denote a wide spectrum of the results of creative thought and practice. It is present in every business enterprise. Here's an example. In that most entrepreneurial of small enterprises, a newspaper delivery route, the boy or girl quickly learns the most efficient path in the neighborhood, which homes have dogs (and which dogs bite!), the best way to fold a paper, the homeowner's preference for placement, the best time to collect, and so on. Successfully learned, this proprietary technology makes the enterprise more profitable. (More papers can be delivered each day, bad debts are less, and the tips are better.)

At the other end of the spectrum, one could find the highly guarded formula for a popular cola drink or an extremely technical secret process for casting exotic alloys. Proprietary technology such as this may be embodied in extensive procedure manuals, computer software, or machine design and be essential to the economic welfare of a giant enterprise. Between these extremes, proprietary technology can take many forms.

Whatever its character, in order for a company's proprietary technology to receive trade secret protection under the law it should:

- Not be extensively known outside of the company
- Be known only by a relatively few employees
- Be subject to stringent procedures to protect its secrecy
- Be of significant economic value to the enterprise
- Have been the result of development expenditures by the company
- Not be information that could be easily obtained by others

Notwithstanding the preceding, the source of the proprietary technology is not necessarily a "bright-line" criterion. It does not have to have been developed by a purposeful expenditure of its owner. It may have been created by a fortuitous coincidence, by a combination of skills, by accident, or by trial and error.

Therefore, information is not classified as a trade secret simply because it is not generally known outside of a business organization. It must be used in the business, provide its owner with some competitive advantage, and be treated as secret. It is therefore necessary that there be procedures in place intended to protect its security. That is, documents should be safeguarded, access restricted, and confidentiality agreements be in place with employees who must have this knowledge for their work. In searching for proprietary technology within an enterprise, one should be attentive to the signs of its existence, including:

Restrictive covenants with employees

Control on a need-to-know basis

Segmentation of knowledge

Control of speeches, technical articles

Physical plant security

Handling of trash

Employee access

Whiteboards (erased at the end of the day)

Personal computer file security

Secured files and work areas

Secure handling of visitors, vendors, suppliers

File and document controls

Careful control when all or portions of knowledge must be divulged to vendors or customers

Fax, copier, and computer server controls

Impediments to reverse engineering

Use of trade secret legends on documents

Security "culture" in which employees are aware of the need to protect intellectual property

(ii) Essential Characteristics. Whatever it is or however it came to be, the most valuable proprietary technology has one or more of several common characteristics.

PROPRIETARY TECHNOLOGY PRODUCES AN ECONOMIC ADVANTAGE

This can take the form of lower manufacturing or operating costs such as these:

- Reduction in the cost of materials
- Reduction in the amount of material used
- Reduction in the amount of labor used to manufacture, inspect, package, or account for a product
- Reduction in shipping costs by creating a product that is lighter, smaller, or specially shaped
- Increase in manufacturing speeds
- Reduction of waste or rejects
- Reduction in fuel or electric power requirements
- Elimination or reduction of environmental hazards or improvement of safety conditions
- Reduction of costs by providing economies of scale
- Creation of a buying advantage

The economic advantage also can manifest itself in a premium price. Proprietary technology can enable a business to increase profits by charging a higher price for its goods or services than would otherwise be the case. A baseball pitcher with the ability to throw a fast and accurate curve ball certainly doesn't hide that fact at the bargaining table! A very popular food product might well command a price above its competitors', and the popularity (and price) may be the result of a proprietary recipe.

Collections of data are one form of trade secret. In order to be of material value, compilations of data should be organized, accessible, and (with the exception of historically significant information) pertain to, or be useful in, current and future operations. Some examples of proprietary technology include the following:

- Management or technical experience and judgment that is embedded in the decision logic of computer software
- Technical trial-and-error experience that is captured in drawings, operations manuals, tooling, fixtures, machine settings, or process designs

- Formulas, recipes, specifications for ingredients, methods of combination, mixing times, temperatures
- Accounting procedures, personnel practices, marketing strategies, and sales techniques
- Formations and plays of a sports team, or its training regimen
- Knowledge of materials or processes that don't work (negative knowledge can be valuable)
- Artistic techniques for mixing or applying pigment, or preparing a musical instrument, or exposing and processing film
- Research and development information, such as laboratory logs, experiment designs, and results
- Results of product or material tests
- Results of market surveys or consumer testing
- Job files such as for consulting engagements or construction projects
- Business knowledge—supplier lead times, names, alternate suppliers, cost and pricing data
- Customer lists, service routes, demography

Proprietary Technology Raises Some Barriers to Competition

The value of proprietary technology may not be wholly dependent on obvious economic benefits. It may still erect economic barriers, even though the technology is something that could be developed by a competitor. Time may be a barrier. Cost may be a barrier. Having the proper skills may be a barrier. Whatever the reason, proprietary technology has enhanced value when it represents a barrier to competition.

We once valued the proprietary technology of a client who manufactures and sells, in competition with several others, a product of low unit cost that is used in large quantities in electrical and electronic applications. Our client had developed technology to manufacture the product at a higher speed and with features that make it more desirable in the marketplace. The patent on this unique manufacturing technique had expired. Even though it is quite obvious, from inspecting the device, what these features are, competitors have not been able to duplicate the product's manufacture at the necessary speeds, quantity and quality, even though its essential features are known from the patent and from inspection of the product. The product is highly profitable, due to both lower manufacturing cost and a premium price. Intangible asset value still exists and is significant, but is no longer the result of patent protection.

The barrier to competitive entry is the proprietary manufacturing know-how that was developed during the period of patent protection. This combination of patent and proprietary technology is very common.

Proprietary Technology Protects or Creates a Strong Market Position

The devotees of PEPSI-COLA, COCA-COLA, SEVEN-UP, and DR. PEPPER beverages, or of one of the many brands of beer, follow their preferences when they purchase beverages. The market position of these products is, at least in part, created and/or protected by their individual taste or formula. The soft drink companies' concern over the market effects of changing sweeteners is testimony to their perception of the importance of these formulas.

(iii) Evolution versus Revolution. In a company in which technological advances evolve in small increments of product improvement, the proprietary technology is likely to be diffused throughout the organization. Proprietary technology will be found in drawings, operating manuals, computer software, test logs, and, possibly, patents. These patents are likely to apply to fragments of one or several product lines, are untested by competition, and are unlikely to be keystone patents. There might be a string of patents that covers a series of incremental improvements in a single product or process. These patents refer to each other and form a trail of progress.

When product development is evolutionary, it may be difficult to identify the proprietary technology because it is present in small pieces and is therefore less visible. Proprietary technology may be embedded in some other asset of the business, such as drawings, computer software, machine designs, or tooling. Customers are probably unable to identify the features of the product or service that causes them to buy it.

One question in this analysis is, "What would prevent me from going into this business and becoming a successful competitor?" Or, asked another way, "What would I have to create and how long would it take for me to follow in the evolutionary steps of my competition?" The answer to these questions may highlight the essential proprietary technology that may otherwise be hidden.

Such an enterprise can still be an industry leader with a commanding market position and high profits, because its incremental development has enabled it to stay ahead of competitors. Success does not require the startling invention of the transistor, instant film, or xerography. Christopher Hill and James Utterback describe this situation in some detail:

> A line of business . . . starts through the origination of one or more product innovations. These are usually stimulated through user's needs. . . . Exploration of the product's potentials . . . follows. Rising production volume may lead to innovation in the production process. Demands for greater sophistication, uniformity, and lower cost in the product create an ongoing demand for development and improvement of both product and process. This means that product design and process design become more closely interdependent as a line of business develops. A shift from radical to evolutionary product innovation will usually occur as a result of this interdependence.[3]
>
> Incremental innovations are extensions of existing technology that improve product performance, cost, or quality step by step. . . . They may derive largely from the experience of people within the firm and may be pursued informally—rather than being defined or recognized as formal projects, formal allocations of resources, or formal research and engineering efforts. . . . [They] do not tend to be published, patented, sold separately, or even formally identified within the innovating firm. . . .
>
> The sum of performance gains or cost reductions from such innovations usually turn out to be greater than the initial gains made through more radical innovation.[4]

When product or process development does come in breakthrough form, or is more *revolutionary*, then proprietary technology is more visible and concentrated. Anyone in the organization, whether in management, research and development, production, sales, or marketing, can identify it as a driving force in the business. Keystone patents are individually strong, tested by competition, and form effective barriers to market entry. Customers of the product are able to clearly identify the features that cause them to buy. Such proprietary technology is likely to be patented or otherwise carefully protected. Often such proprietary technology results from long and expensive research and development (such as a successful drug patent).

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3. Christopher T. Hill and James M. Utterback (Eds.), *Technological Innovation for a Dynamic Economy* (New York: Pergamon Press, 1979), p. 42.
4. Ibid., p. 54.

(iv) Patent or Padlock or Neither. There are a number of reasons why the developer of proprietary technology may wish to obtain specific protection by obtaining a patent. The most compelling reasons include: considerable monies spent on research and development, a strong market for the technology, and competitors pursuing similar research. These conditions are typical in the pharmaceutical industry.

In other cases an inventor may wish to ensure protection of an invention by maintaining a trade secret. This might depend on whether the innovation is quite protectible as a practical matter, or because (as in the semiconductor industry) the technology is advancing so rapidly that the innovation is expected to have a short economic life.

There may be other reasons as well. In his book *Patent and Trademark Tactics and Practice*, David A. Burge cites the case of Sir Alexander Fleming, who discovered penicillin in 1929:

> "He decided against pursuing patent protection so that his discovery could be commercialized without hindrance, and be put into worldwide use as quickly as possible. The result of this fatal folly was that, without the shield of patent protection, no commercial manufacturers could be found who would make the investment needed to find a way to purify the drug and develop techniques needed for manufacture."[5]

It was not until 14 years later, during World War II, that penicillin was available in commercial quantities.

These options illustrate, however, the importance of the "patent or padlock" decision noted by Mr. Jorda and quoted at the beginning of this section.

(v) Licensing. From the preceding discussion, the reader can easily observe the potential danger spots in the licensing of trade secrets, either as stand-alone property or as part of an intellectual property package. No matter what the contractual safeguards, the larger the number of people who have access to the trade secret and the farther they are from the owner, the more exposed they are. The owner of proprietary technology that is expected to be exploited externally might well elect to patent.

(b) PATENTS. This discussion is intended to provide an overview of patents and to highlight those aspects that have meaning in their valuation. The standards by which patent applications are judged, and by which patent validity may later be judged, are complex. Attorneys and other professionals specialize in this field, and their opinions should be sought when addressing the value of what may appear to be a keystone patent.

(i) Definition. A patent is the legal process whereby technology or proprietary methods may be turned into property with defined rights associated with its ownership. In the United States, a patent is the grant of a property right by the U.S. government to the inventor (or his or her heirs and assigns), by action of the Patent and Trademark Office. This structure is pretty universal worldwide, though the governments and agencies differ. The right conferred by the patent grant is the right to exclude others from making, using, or selling the invention. Burge describes a patent as a "negative right." He explains as follows: "While the right of ownership in most personal property is a positive right, the right of ownership in a patent is a negative right. It is the negative right to exclude others from making, using or selling the patented invention. . . . Indeed, in making, using or selling his own invention, the inventor may find that he infringes the patent rights of others."[6]

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5. David A. Burge, *Patent and Trademark Tactics and Practice* (John Wiley & Sons, 1984), p. 27.
6. Ibid.

(ii) Patent and Trademark Office. Title 35 of the United States Code establishes the Patent and Trademark Office (PTO) within the Department of Commerce as a continuing office which:

> -shall be responsible for the granting and issuing of patents and the registration of trademarks; and
>
> -shall be responsible for disseminating to the public information with respect to patents and trademarks.[7]

(iii) Utility Patent. Section 101 of the United States Code states, "Whoever invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore. . . ." The word "process" typically refers to industrial or technical processes and describe a methodology for treating materials to manufacture a product. The "machine" element would describe a device that provides an innovative performance of some operation. The "composition of matter" element relates to innovative mixtures of ingredients or to new chemical compositions. The "manufacture" element is somewhat of a catch-all to accommodate patentable innovations that do not fall into the process, machine, or composition of matter categories.

The United States Supreme Court, in a 1980 decision, found that living matter that owes its unique existence to human intervention is patentable subject matter. [*Diamond v. Chakrabarty,* 447 U.S. 303, 206 USPQ 195] This decision gave guidance to the Patent and Trademark Office Board of Patent Appeals in Ex parte Allen, 2 U.S. PQ2d 1425 in a similar finding. These decisions raised considerable controversy, as did the 1988 granting to Harvard University of a patent for a genetically engineered mouse ("onco-mouse") for cancer research. In recent years, hundreds of patents have been granted in the United States in the fields of plant and animal biotechnology.

Internationally, the degree to which these technologies are patentable varies considerably from country to country.

There has been, recently, considerable attention in the business press to so-called "business method" patents, though these are not really a totally new field. In the 1800s a number of patents were granted for financially related procedures and Herman Hollerith's patents of 1989 signaled the dawn of the data processing era and were the keystone of his Tabulating Machine Company (later IBM).

As business methods became increasingly embedded in computer software, the PTO became reluctant to grant patents for calculations contained therein. This approach came under pressure, however, and the door was opened somewhat by the U.S. Supreme Court in a decision to overrule the PTO and grant a patent for an invention that combined a process innovation for curing rubber and a computer and software to control it.[8] There followed a period of uncertainty and controversy. There were those who advocated the patent protection of "pure" software innovations and others who opposed it as representing an insurmountable barrier to further innovation.

It seems clear now, however, that a software algorithm is patentable if it is "useful" in its application. The 1998 *State Street* decision[9] has perhaps laid the central issue to rest, as the Court decided, on appeal, that the patent claims encompassing a computerized system for administrating and accounting for mutual fund pools were statutory subject

7. 35 U.S.C. Sect. 2 (a) 1 and 2.
8. *Diamond v. Diehr*, 450 U.S. 175 (1981).
9. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.,* 149 F 3d 1368, [Fed Cir.1998].

matter. Since then, the PTO has continued to strengthen its examiners and procedures for handling patent applications in Class 705—Data Processing: Financial, Business Practice, Management, or Cost/Price Determination.

A utility patent originally had a term of 17 years from its date of issue.[10] Under the General Agreement on Tariffs and Trade (GATT), the United States changed the statutory patent term for applications filed on or after June 8, 1995 to 20 years from the date of filing the application. A patent resulting from an application filed before June 8, 1995, is granted with a term of 17 years from issuance or 20 years from application filing, whichever is longer.

The Waxman-Hatch Act (see 35 U.S.C. Sect. 156) provided for extensions of patent rights for certain human and animal drug patents for up to five years. This extension reflected the sometimes significant time period consumed by the federal Food and Drug Administration approval process. There are some complexities to the application of this law and also to its interaction with the GATT extension.

(iv) Plant Patent. Patents also are issued for plants. "Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefore . . ."[11] Plant patents also have a term of protection of 20 years from the application filing date.

(v) Design Patent. Design patents are issued for a term of 14 years and are described as follows: "Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefore . . . "[12] Design patents protect only the appearance of an object, not its structure or utilitarian features.

(vi) Patent Process. The process of obtaining a patent can be very complex and time-consuming. It involves attorneys and other specialists. (This discussion is intended to describe the process in summary form. For more detailed information, the reader is directed to the many government and privately published references.) Obtaining a patent involves the following seven general activities:

1. An application, including a description of the patent and the claims sought, a drawing (when appropriate), a declaration that the applicant is the original inventor, and a filing fee, is made to the Commissioner of Patents and Trademarks.[13]
2. When the application is accepted as being complete, it is assigned to an examiner who is knowledgeable about the specific technology. Applications are normally processed in turn.

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10. We wondered about the origin of the traditional 17 year term of patent and learned that it was related to the historic apprenticeship enlistment of seven years. It was customary that if the apprentice learned something unique from the master, he would not practice it until two terms (14 years) had passed after his apprenticeship. It was assumed that if the apprentice learned such a unique "invention" on average about halfway through his term (3½ years) that the master's sole rights to the invention would be 17½ years. This was rounded, in practice, to 17 years. GATT harmonized our 17-year term with the world's term of 20.
11. 35 U.S.C. Sect. 161.
12. 35 U.S.C. Sect. 171.
13. Since June 8, 1995, inventors have been able to file a *provisional* application under 35 U.S.C. Sect. 111(b). Such an application does not need to include a formal patent claim or prior art statement. It has a pendency of 12 months, after which it is cancelled unless a nonprovisional application has been filed.

3. The examiner analyzes the application for compliance with legal requirements and makes a search through prior U.S. and foreign patents on file, as well as through technical literature, to see if the invention is both novel and nonobvious. The examiner reaches a decision as to the patentability of the claimed invention.
4. The applicant is notified in writing of this decision in an Office Action. It is not uncommon for some or all of the claims to be initially rejected.
5. The applicant must request a reconsideration in writing, and clearly and completely explain the basis for his or her belief that the examiner has erred in the examination.
6. The application is then reconsidered and a second Office Action is issued.
7. If the patent is not granted, the process may go through a third round, after which the action usually is considered final.

The applicant may appeal an examiner's final rejection to the PTO Board of Patent Appeals and Interferences and, following that, to the U.S. Court of Appeals for the Federal Circuit. A civil action against the commissioner also may be filed.

If the patent application is allowed, the applicant receives a Notice of Allowance. The patent is issued and printed after the payment of an issue fee. Maintenance fees must be paid periodically during the life of the patent, to retain its effectiveness.

The application process can be very lengthy and involve a long series of written negotiations with the examiner, modifying, adding, or omitting claims. The inventor, faced with continued rejection, can file a new continuation application in order to obtain a longer period in which to modify the original. If a patent is granted under such a continuation, the original filing date is still valid.

A patent is personal property and may be sold, mortgaged, licensed, or bequeathed in a will. Since patents must be applied for by individuals, many are assigned, after granting, to a business enterprise. Such an assignment is recorded in the Patent and Trademark Office. Most corporations whose employees are involved in research that might lead to patentable inventions require that those employees sign an agreement to assign such inventions to the corporation as a condition of employment.

(vii) Pending Patents. When a patent application has been received by the Patent and Trademark Office, the applicant may identify products containing the invention with the words "Patent Pending" or "Patent Applied For." This action does not provide any protection against infringement—either intentional or unintentional—because until the patent issues, its validity is not known. It may, however, discourage copying because, if and when a patent is issued, protection will ensue *from the date of issuance* and the copying may change from an annoyance to prosecutable infringement.

(viii) Foreign Patents. Non-U.S. patent protection is obtained by filing in each country desired. This process can be aided by the rules of the Paris Convention,[14] the Patent Cooperation Treaty (PCT), and the European Patent Convention (EPC). Filing in a Paris Convention country allows the inventor to claim priority based on the patent's original U.S. application filing date, as long as the non-U.S. filing date is within one year of the U.S. date.

Non-U.S. patent rights sought under the PCT allow the inventor to reduce the paperwork and costs that would result from individual nation filings. The application goes through two examination procedures and is not available for design patents. If patent

14. Paris Convention for the Protection of Industrial Property currently is in force in over 130 countries.

protection is sought in Europe, filing can be made under the EPC, which essentially reduces the process to a single examination that combines the major European countries.

The laws under which a patent may be granted differ considerably, as might be expected. Maintenance fees may be required, licensing may be compulsory to anyone who applies, and a patent may become void if manufacturing in the country does not occur.

(ix) Patent Notation. When a patent has been issued, most inventors mark products embodying the patent with the word "patent" or "pat.," together with the patent number and date of issue. This provides notice to any potential infringer. If infringement occurs and these markings are not present, the patent owner must prove that the alleged infringer was notified in order to collect damages in a successful litigation.

(x) Foreign Patentees. U.S. patent laws make no discrimination relative to the nationality of the inventor or applicant, so a foreign inventor can obtain patent protection for an invention by the same procedures as described previously.

(c) COPYRIGHTS. A copyright protects the expression of an idea, not the idea itself, just as a patent does not protect an idea but rather its embodiment in a product or process. Copyright protection commences from the time when that expression is fixed in some tangible form, even prior to its publication, not the time at which some application is accepted by the federal government. In fact, full copyright protection is present whether the work is registered with the Copyright Office of the Library of Congress or not. A copyright owner may reprint, sell, or otherwise distribute the copyrighted work, prepare works that are derived from it, and assign, sell, or license it.

An increasingly important issue concerns the ownership of copyrightable works when they are created by someone for use by another. As an example, many businesses rely on computer software, written materials, or photographs that are created by independent contractors or consultants. It is important to establish the ownership of such works, and this issue has been the subject of litigation in recent years. Unless there are specific arrangements between the parties, the copyright is the property of the creator. Because the creator was paid for the work does not automatically vest ownership with the buyer.

The Supreme Court has ruled that the commissioning party can own the copyright (1) when the work was created by an employee within the scope of his or her employment, and (2) when the work is of a specific type[15] and if the parties agree in writing that the work will be considered a "work made for hire." This situation is made more complex by the murkiness that sometimes surrounds the definition of employee versus independent contractor.

For works created after January 1, 1978, copyrights are protected for a period of the life of the author plus 70 years. The terms of copyright protection was extended in a new law passed in October 1998, the Sonny Bono Copyright Term Extension Act, bringing U.S. law into conformity with European standards. Copyright protection on works for hire extends for 95 years from date of publication, or 120 years from the date of creation, which ever expires first.

Two other changes were made in U.S. copyright law in 1998. The Digital Millennium Copyright Act strengthens copyright protection in cyberspace commerce, allows the United States to join treaties of the World Intellectual Property Organization directed at international copyright protection, and limits the liabilities of Internet service providers.

15. The types are: a contribution to a collective work, a part of a motion picture or other audiovisual work, a translation, a supplementary work, a compilation, an instructional text, a test, answer material for a test, or an atlas.

The Fairness in Music Licensing Act exempts small retailers and restaurants from paying royalties for music played over radios or television sets.

Section 102 of Title 17 of the U.S. Code defines a copyright as follows:

> Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device. [Included are:]
>
> **1.** Literary works;
> **2.** musical works, including any accompanying words;
> **3.** dramatic works, including any accompanying music;
> **4.** pantomimes and choreographic works;
> **5.** pictorial, graphic, and sculptural works;
> **6.** motion pictures and other audiovisual works;
> **7.** sound recordings.
>
> An unpublished work may be registered by:
>
> **1.** Reducing the work to tangible form
> **2.** Transmitting an application form to the Copyright Office
> **3.** Transmitting a copy of the work and the registration fee to the Copyright Office
>
> A work to be published is protected by:
>
> **1.** Publishing with the appropriate identifying marks
> **2.** Following steps 2 and 3 above, but furnishing two copies to the Copyright Office

A copyrighted work should carry the appropriate identification comprising the symbol © or the word "Copyright" or "Copr.," together with the date (year) of first publication and the name of the copyright owner.

In December 1990 the Copyright Act was amended to include protection for "architectural works": "the design of a building as embodied in any tangible medium of expression, including a building, architectural plans, or drawings. The work includes the overall form as well as the arrangement and composition of spaces in the design, but does not include individual standard features."[16]

In October 1992 the Copyright Office published final regulations for the registration of architectural works, which included some definitions and registration instructions. As with other registrable works, the issue of ownership can be very important because the design and ownership of a building are most often separated.

Because many copyrighted works, such as films and recorded music, are intended for wide distribution that is not easily controlled, the Copyright Royalty Tribunal was established to "make determinations as to reasonable terms and rates of royalty payments" [17 U.S.C. Sect. 801] for the use of such copyrighted works. The Register of Copyrights acts to distribute the royalties to the copyright owners of nondramatic musical works. These fees are collected from those, such as record companies, who distribute the works under license.

(d) COMPUTER SOFTWARE. Computer software is included in this discussion of intellectual property because it is subject to patent, copyright or trade secret protection. Trademark protection is also becoming very important in the computer software industry. Revenue Procedure 69-21 (1969-2 CB 303) defines computer software to include:

> all programs or routines used to cause a computer to perform a desired task or set of tasks, and the documentation required to describe and maintain those programs. Computer programs of all

16. 17 U.S.C. Sect. 102(a)(8).

> classes, for example, operating systems, executive systems, monitors, compilers and translators, assembly routines, and utility programs as well as application programs are included. Computer software does not include procedures which are external to the computer operations, such as instructions to transcription operators and external control procedures.

The Copyright Act (17 U.S.C. Sect. 101) defines a computer program as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

Computer software here includes the project description and research, source code, object code, program documentation, user instructions, and operating manuals. This form of intellectual property can be extremely important to a business enterprise, and we categorize it as being either *product* or *operational* software.

(i) Product Software. This category of software is developed for resale as a product. Product software ranges from individual, stand-alone programs to more complex modular systems that interface with one another, such as a general ledger system. The software may be sold with or without consultant support and related services.

(ii) Operational Software. This is software that is used by a company in its own internal operations. It may have been purchased, be used under license, have been developed by an outside firm under contract, or have been developed internally. Operational software may be required to operate the computer system itself or may be related to a specific task, or application.

System Software

Sometimes called "the operating system," this software is required for computer hardware to operate. Usually obtained from the hardware vendor as part of the computer system, it is rarely developed, although it may be modified, by the user.

Applications Software

This software is used for the specific functions of the business. This might include:

- Basic accounting functions such as general ledger, payroll, accounts payable and receivable, material and supplies and inventory control, and fixed asset accounting. These systems often are purchased and may be modified extensively.
- Company-specific accounting systems such as those for sales and commissions, product costing, purchasing, and customer billing. These are usually developed in-house.
- Management systems such as those for personnel functions or property taxes, database systems for management information, property lease systems, word processing systems, or financial models.
- Production systems such as those for manufacturing scheduling, CAD-CAM (computer-aided design–computer-aided manufacturing), design models, engineering calculations, numerically controlled machines, and robotic operations.

Recalling the previous discussion of proprietary technology, we note that when computer software is designed in-house, and when it becomes more company-specific in its design and function, it is likely to embody more proprietary features. That is, it is likely that more time was spent by "users" in the development, to design the system and to test the results. When the users of the system are heavily involved in the design, then more of their knowledge is embodied in the system.

Software is intellectual property that is always in some physical form, such as a paper listing, magnetic tape, a CD, or a disk. Because of this "tangible/intangible" manifestation, software has been the focus of much controversy relative to taxation as property by local and state governments.

Computer programs can be patented if they embody computations that are carried out as part of a process claim or if they do more than just make mathematical calculations, and if they meet the other requirements of patentable material. Recent court decisions suggest that software patentability may have broadened to include mathematical calculations that yield "useful, concrete, and tangible result."

Copyright protection is much more easily obtained. Remembering that a copyright protects the *manner* of expression of an idea, however, it is very possible that a program can be developed to accomplish the same task as the protected one and, as long as the structure and sequence of the coding is not copied, not infringe.

While this has not always been so, it is now clear that computer programs are copyrightable. This is true whether the program is in the form of source code and intelligible to humans, or in object code understandable only by a computer. Copyright is available for operating system or applications programs, and extends to a program's structure and organization as well as its coding.

Computer databases are considered "literary work," just as are dictionaries and catalogs. Further defined as a "compilation," computer databases are protected primarily to the extent of what the author of the work created or contributed to the finished product. This may only be in the arrangement or order of presentation of data, but some degree of creativity must be evident.

There has been a considerable amount of litigation over the degree of protectibility that the Copyright Act provides to computer screen images. The images are, of course, the result of software coding, and the problem has been made more difficult by the fact that the screen that appears the same could be the result of different coding within a program. The question has been which element of the process is copyrightable, or are both? This seems to have been resolved in the courts, and screen images are protected as "audiovisual works."

The question of copyright ownership can be quite complex, especially in the case of computer software, which often is created by teams of programmers who may be entrepreneurs creating a marketable product, subcontractors, or full-time employees. In today's complex workplace, it is not always clear who is an employee and who is not. It is not always clear who directed or controlled the creative aspects of a development project. While there is a growing body of judicial precedent helping to clarify these questions, many questions still remain.

(e) MASK WORKS. Standing somewhat in between computer hardware and software are semiconductor chip products that embody circuitry and logic. The essence of a chip is the *mask work*, defined by 17 U.S.C. Section 901 as:

> a series of related images, however fixed or encoded—
>
> (A) having or representing the predetermined, three dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product; and
>
> (B) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

Mask works are eligible for protection under the Semiconductor Chip Protection Act of 1984, whose provisions appear as chapter 9 of the Copyright Act if certain conditions

are met. Generally, these conditions require that the owner be a U.S. citizen or domiciled here or in a country that also protects mask works or that the mask work is first commercially exploited in the United States. Protection lasts for 10 years from the date of registration or of first commercial exploitation, whichever date occurs first. Rights terminate if registration is not made within two years of exploitation. A copyrighted mask work is to be marked mask work, bearing the symbol M or M along with the name of the owner.

(f) RIGHT OF PUBLICITY. The right of publicity emerged from the long-existing protection granted, primarily by state statutory or common law concerning the right of privacy. It addresses the right of a person to control and benefit from commercial exploitation of his or her identity. We live in an age of celebrities, and the commercial exploitation of that celebrity can be an extremely valuable right. In general, the right of publicity extends to a person's name and likeness as well as to voice or even identifiable robots. The right can even extend to those to whom a name or likeness has been licensed.

Many states have adopted right-of-publicity laws. These and federal trademark statutes have afforded celebrities new means to protect their images and their market.

(g) INTELLECTUAL CAPITAL. A new term, "intellectual capital," has entered the business lexicon. It has been an outgrowth of the attention that has been given to intangible assets and intellectual property as managers of businesses seek to maximize their creation and contributions to the enterprise. Intellectual capital has been variously defined as "what walks out the door at the end of the business day" and "knowledge that can be converted to value."[17] We believe that intellectual capital is not a new category of business assets but rather a different way of classifying assets in order to focus on their management. Intellectual capital is said to be a combination of human capital, intellectual assets, and intellectual property.[18] An examination of the elements of these categories reveals that they comprise the intangible assets and intellectual property we have discussed, with perhaps additional, more detailed breakdown of human capital (what we term the assembled workforce).

We encourage the reader to become familiar with the current writings and thinking about intellectual capital. They add a new dimension to the understanding of the business assets that are the focus of this book.

(h) COMMENT. Intangible assets and, to a larger extent, intellectual properties are constantly changing. When the first edition of this book was written, the Internet was a little-known province of academics. Now it is a worldwide force in marketing, distribution, commerce, and information resources. As a result, there are brand-new issues relative to the protection of both old and new forms of intellectual property rights, and these issues can be addressed only on an international basis because the Internet recognizes no national borders. A whole new family of intangible assets will need to be valued.

17. Russell L. Parr and Patrick H. Sullivan, *Technology Licensing—Corporate Strategies for Maximizing Value* (Hoboken, NJ: John Wiley & Sons, 1996), Chap. 14.
18. Ibid., p. 255.

CHAPTER 3

DEFINING INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY—TRADEMARKS

Trademarks can be extremely valuable business assets. Large amounts of money are spent to create and nurture them, and when they are threatened, large amounts of money are spent to defend and protect them. Trademarks are both long-lived and ephemeral, powerful and delicate. Even those that have been with us seemingly forever have undergone change, sometimes dramatic, sometimes subtle.

3.1 TRADEMARKS

Even those formerly most prosaic of enterprises, electric and gas utilities, are spending large amounts to rename themselves and to educate the public about their new identities.

In the old days, most utilities' names began geographically (Detroit, Pacific, Middle South) and ended with, if not always Power & Light, something close to it: Light & Power, say, or Gas & Electric. . . . ["Now] in this era of deregulation . . . the aim . . . is to differentiate from the utility next door and project a bright new face to customers with a bright new name."[1]

Middle South Utilities has become Entergy, the combined Wisconsin Energy Corp. and Northern States Power Co. have become Primergy Corp., and Detroit Edison has become DTE Energy Corp.

Trademarks can also cause difficulties for their owners. The first choice of gas pipeline company HNG/Internorth for a new name was Enteron, a word quickly discovered to mean "alimentary canal." A rapid change to Enron ensued. This unhappy trademark saga continues today as Enron emerges from insolvency and scandal, in the renaming of the two emerging entities Prisma Energy International LLC and CrossCountry Energy. Bankruptcy and scandal forced WorldCom, telecommunications giant, to rename itself MCI as it emerged from its troubles. MCI was itself a well-known company when WorldCom acquired it, and this greatly eased the transition, though the change is said to have cost the better part of $100 million.

A more recent subject of trademark controversy involves the use of words or symbols now judged to be disparaging. A petition of cancellation was filed in 1992, relative to the seven trademarks of the Washington Redskins professional football team. In April 1999 the Trademark Trial and Appeal Board ruled that these trademarks should lose their federal registration and the rights that accompany it. This decision was appealed,

1. Benjamin A. Holden, "Utilities Pick New, Nonutilitarian Names," *Wall Street Journal*, April 7, 1997, p. B1.

and in September 2003 the U.S. District Court for the District of Columbia ruled that there was insufficient evidence to support the contention that this use was disparaging to a substantial portion of Native Americans. This case reflects the changing mores of society and their impact not only on new trademark registrations but also on existing, well-established marks.

On Tuesday, April 23, 1985, the management of the Coca-Cola Company announced the introduction of NEW COKE. As Allen describes it "a shudder of betrayal . . . began stirring deep in the hearts of a large segment of the American populace . . . Long before they had ever tasted a sip of it, millions of Americans decided they *hated* New Coke . . . Hundreds and then thousands of angry callers began inundating the company's 800 number in Atlanta."[2]

There is no doubt that trademarks are images with many levels of meaning. They can be nostalgic reminders of times and products past, examples of outstanding graphic design, or the symbols of powerful institutions that influence our lives. As pleasant as it might be to contemplate their nostalgic or artistic aspects, we will focus on the role of trademarks in commerce. Trademarks are business assets and must be viewed primarily in the context of a commercial enterprise. Their task is to contribute to the profitability of the parent enterprise. Commerce is driven by return on investment (ROI) principles, and trademarks are not exempted from that requirement. Even trademarks that are associated with nonprofit, governmental, or institutional organizations are used for a purpose and promoted with an objective in mind. They must be judged by how well they meet those objectives.

3.2 TRADEMARK DEFINED

A trademark is used to identify the source of a product or service and to distinguish that product or service from those coming from other sources. As defined in the Trademark Act of 1946 (the Lanham Act), a trademark is "any word, name, symbol or device or any combination thereof [used by someone to] identify and distinguish his goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods..." A trademark also serves as an assurance of quality—the consumer comes to associate a level of quality with the goods or services bearing a given trademark. Trademarks have been described as the embodiment of goodwill. The courts have addressed these aspects of trademarks in various ways:

> Trademarks help consumers to select goods. By identifying the source of the goods, they convey valuable information to consumers at lower costs. Easily identified trademarks reduce the costs consumers incur in searching for what they desire, and the lower costs of search the more competitive the market.[3]
>
> A trademark also may induce the supplier of goods to make higher quality products and to adhere to a consistent level of quality. The trademark is a valuable asset, part of the "goodwill" of the business. If the seller provides an inconsistent level of quality, or reduces quality below what consumers expect from earlier experience, that reduces the value of the trademark. The value of a trademark is in a sense a "hostage" of consumers; if the seller disappoints the consumers, they respond by devaluing the trademark.[4]

2. Frederick Allen, *Secret Formula*, (New York: HarperCollins Publishers, Inc., 1994) p. 413.
3. *Scandia Down Corp. v. Euroquilt, Inc.*, 772 F2d 1423,1429 (7th Cir., 1985), *cert. denied*, 475 U.S. 1147 (1986).
4. Ibid.

> The protection of trademarks is the law's recognition of the psychological function of symbols. If it is true that we live by symbols, it is no less true that we purchase goods by them. A trademark is a merchandising short-cut which induces a purchaser to select what he wants, or what he has been led to believe he wants. The owner of a mark exploits this human propensity by making every effort to impregnate the atmosphere of the market with the drawing power of a congenial symbol . . . to convey, through the mark, in the minds of potential customers, the desirability of the commodity upon which it appears. Once this is attained, the trademark owner has something of value.[5]

(a) TRADEMARK TYPES. Not every word or symbol is acceptable as a trademark. Geographic names or surnames generally cannot be registered, and the same is true of commonly used words for an object or good, such as "knife," "cotton," or "cup." Marks that would be misleading (vis-à-vis the intended goods or services), or those in poor taste are not registrable. Trademarks are categorized as follows:

Fanciful or Coined Marks. These are words that are made up and have no built-in meaning, such as KODAK, EXXON, LEXUS and CHEERIOS.

Arbitrary Marks. These are existing words with no relation to the goods or services with which they are associated, such as APPLE (computers), SHELL (petroleum products), or WINDOWS (software).

Suggestive Marks. These are words that suggest some attribute of or benefit from the goods or services, but do not describe the goods themselves, such as COPPERTONE (tanning lotion), CATERPILLAR (tractors), or WHIRLPOOL (washers).

Descriptive Marks. These describe the goods or services or a characteristic of them. They cannot be protected until they have achieved distinctiveness through use and advertising, which is called acquiring "secondary meaning." Examples are CAR-FRESHENER for an auto deodorizer, RICH 'N CHIPS for chocolate chip cookies, or the descriptor GOLD MEDAL for flour or BLUE RIBBON for beer.[6]

(b) TRADEMARKS. Trademarks are used to identify goods. Many common trademarks are some form of the owning company's name, usually in a distinctive type style, or a logo. Examples are IBM, PEPSI-COLA, GE, GOODYEAR, and AT&T. The most familiar trademarks are those associated with a particular brand of product, such as MARLBORO cigarettes, L'EGGS hosiery, BIRDSEYE frozen foods, TIDE detergent (now celebrating its 50th anniversary), and FRISKIES pet food.

While they may or may not be protected as trademarks, some "spokespersons" or "spokescharacters" can take on a form of secondary meaning with respect to a product or service. It is difficult to think of the late John Cameron Swayze without making a mental association with his long series of TIMEX watch advertisements on television. Even the cartoon character Snoopy, who has a strong identity of his own, has become associated with Metropolitan Life financial services. The thundering herd of bulls used in Merrill Lynch advertisements, Kemper Insurance Company's cavalry, Sprint's dropping pin, and Verizon's "Can you hear me now?—Good!" service mark are images that are taking on secondary meaning.

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5. *Mishawaka Mfg. Co. v. Kresge Co.*, 316 U.S. 203, 205(1942).
6. *Trademark Basics: A Guide for Business*, International Trademark Association, 1995.

(c) TRADE NAMES. A trade name is a name used to identify a business, association, or other organization. It may or may not be the same as the trademark used to identify the company's products. It cannot be registered at the federal level unless it is also a trademark. Ownership would be governed by common or state law. A trade name is typically not an asset of material value, unless it is also a trademark, since the buying public recognizes goods and services by their trademarks and, in many cases, is unaware of the actual name of the producing companies. Many are unaware that such famous brand names as FOLGERS coffee, CREST toothpaste, and PRINGLES potato chips are all products of Procter & Gamble. DANNON yogurt, EVIAN mineral water, and LEA & PERRINS WORCESTERSHIRE sauce are the brands of a French parent company, Danone Group. The term "trade name" is often incorrectly used to identify a trademark.

(d) SERVICE MARKS. For all practical purposes, service marks are the same as trademarks, except that they are used to identify services rather than products. Examples would be METLIFE and AMERICAN EXPRESS financial services and UNITED airlines.

(e) CERTIFICATION MARKS. Certification marks identify products that have specific characteristics, such as those marked with the COTTON mark of the National Cotton Council, or the WOOLMARK registered by The Wool Bureau. Some certification marks signify goods or services that comply with certain known standards, such as the GOOD HOUSEKEEPING SEAL OF APPROVAL or the Underwriters Laboratories' UL stamp. Standard & Poor's Corporation has registered some of its ratings used to denote the quality of certain types of securities, and the Motion Picture Association of America has registered the phrase RESTRICTED UNDER 17 REQUIRES ACCOMPANYING PARENT OR GUARDIAN.

Certification marks are used on goods or services that are not provided by the owner of the mark. Presumably, however, the owner of the mark is exerting some control over the use of the mark so that the public is not deceived by its presence.

(f) COLLECTIVE MARKS. Collective or group marks denote that the product or service bearing the designation was manufactured or is being provided by someone who is a member of a specific group. Collective mark registrations we have observed range from the Lightning Class Association (sailboats) to the National Court of the Royal Order of Jesters to The Supreme Chapter of the P.E.O. Sisterhood.

More commonly recognized uses of a collective mark relate to those of professional organizations that permit their members to use the mark of the group. Examples are those of the American Society of Appraisers (ASA), the Appraisal Institute (Member, Appraisal Institute [MAI]), and the Financial Analysts Society (Certified Financial Analyst [CFA]). Again, the presumption is that the group supervises the use of its mark to prevent unqualified or nonmember individuals from using it.

(g) TRADE DRESS. The trade dress of a product describes its total image and includes its size, shape, color, or texture. Trade dress has been defined as "the total image of a product and may include features such as size, shape, color or color combinations, texture . . . or graphics. . . ."[7]

7. *John H. Harland Co. v. Clarke Checks, Inc.*, 711 F.2d 966, 980 (11th Cir. 1983).

W. Mack Webner describes trade dress as:

> what catches the consumer's eye, and he or she may come to identify a 'product' with the focal point of its "package" . . . The elements of a consumer product package: the trademark, the color scheme, the use of opaque or clear containers, geometric design features, the arrangement of the elements—and, in retail establishments, the arrangement of service areas and other public spaces—can all come together to provide a distinctive image, the trade dress, that the public recognizes. [8]

Trade dress can be protected if it has come to be associated with a particular manufacturer (source of goods or services) *and* if it is nonfunctional. The shape of the Coca-Cola bottle and the pink color of Owens-Corning fiberglass insulation have become distinctively associated with their products and specific sources. They have achieved secondary meaning. To pass the trade dress protectability test, however, such features must also be nonfunctional. If, as an example, the Coca-Cola bottle shape facilitated a less expensive manufacturing process, or served some primarily utilitarian purpose, its shape would not be protectable because of its functionality. The molded-in handle of a plastic gallon milk container is clearly functional, and not protectable as trade dress. A chrysanthemum molded into the side of such a container would be nonfunctional trade dress, which, if it achieved secondary meaning, would constitute protectable trade dress.

The concept of functionality has been interpreted differently by various courts, as has the requirement that trade dress must achieve secondary meaning. Among the most particularly troublesome elements has been the functionality of colors and of product configurations. The Supreme Court (in *Qualitex v. Jacobson Products Co., Inc.*) ruled in favor of trademark registration of a color. In its decision, the court noted that shapes, sounds, and a scent had been registered by the U.S. Patent and Trademark Office, and Justice Breyer wrote that "Over time, customers may come to treat a particular color on a product or its packaging as signifying a brand. And if so, that color would have come to identify and distinguish the goods. . . ." A color still must be nonfunctional, however. A green sprinkler head, so colored as to make it unnoticeable in the grass, probably would not qualify. Webner[9] notes that the primary colors (red, yellow, blue) are not protectible, neither are basic shapes, such as a cube, pyramid, or sphere.

The protectability of trade dress has been a troublesome area for the courts, which are attempting to maintain order on the playing field, and for trademark owners, who are understandably interested in obtaining the maximum protection for design concepts in which they have invested considerable resources. The battles are most likely not over yet. Our purpose is not to attempt to interpret the courts' interpretations, but simply to point out that what we might otherwise call "packaging" or a "design" may be protectable under the trademark laws and may, if strong enough, constitute an asset of considerable value.

(h) BRANDS. Many think of a brand as being synonymous with a trademark. From the literature, it seems to us that a brand is more of a marketing concept, or a way that marketing professionals have developed to describe an asset that differs from the strictly legal concept of a trademark. Martin[10] describes brands by contrasting them with "commodities"—soap versus IVORY, pianos versus STEINWAY, and breakfast food

8. W. Mack Webner, "Protecting Trade Dress or, Not All Packaging Is Political," Remarks: *Trademark News Business*, International Trademark Association, Vol. 5, No. 3.
9. Ibid.
10. David N. Martin, *Romancing the Brand: The Power of Advertising and How to Use It*, (New York: American Management Association, 1989).

versus KELLOGG'S Cornflakes. We think that a useful way to conceptualize a brand is as an aggregation of assets that *includes, but is not limited to*, a trademark. A brand also comprises a particular product, or more than one product, perhaps a formula and/or a recipe, trade dress, marketing strategy, advertising program, and promotional activities.

One way we have conceptualized a brand is by considering the existence of products or services aimed at market segments. One manufacturer often creates similar, but different, products for different market segments. Thus Proctor & Gamble sells more than one soap and toothpaste brand. Each is aimed at fulfilling different customer needs, while the overall purpose (cleaning clothes or teeth) is the same. McCarthy and Perreault[11] discuss a schema of these needs:

- *Physiological*. "It really quenches your thirst." (GATORADE)
- *Safety*. "You're in good hands with Allstate." (ALLSTATE Insurance)
- *Social*. "Reach out and touch someone." (AT&T)
- *Personal*. "We're looking for a few good men." (U.S. Marine Corps.)

A brand, then, is a product or service "package" intended to meet a particular set of buyer needs. It could very well be that several brands could be offered under a family trademark.

Paramore[12] cites a number of elements that influence how we understand brands and their performance:

- The product itself
- The manufacturer
- The name
- The pack
- The advertising/promotion/publicity history
- The price
- The distribution/displays
- Competitors' histories
- Product users and the context of use
- Consumer motives, wants, needs, and lifestyles

Other writers on the subject have differentiated the brand from product by noting that a product is what is manufactured for sale, while a brand is what the customer buys. Kapferer presents the brand as follows:

> For the potential customer, a brand is a landmark. Like money, it facilitates trade . . . One word, one symbol summarizes an idea, a sentence, and a long list of attributes, values, and principles infused into the product or service. A brand encapsulates identity, origin, specificity, and difference. It evokes this information-concentrate in a word or a sign.
>
> Like money once again, brands facilitate international trade. Brands are the only true international language—a business Esperanto.[13]

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11. E. Jerome McCarthy and William D. Perreault, *Basic Marketing*, (Homewood, IL: Richard D. Irwin, Inc., 1987).
12. Jack Paramore, "Developing a Marketing and Advertising Campaign to Build Loyalty," as quoted in Peter Nagy, "The Mutual Interpendence Among Marketing, Advertising and Trademarks," *Remarks*, INTA, Vol.8, No.1.
13. Jean-Noel Kapferer, *Strategic Brand Management*, (London: Kogan Page Limited 1992), p. 10.

In his discussion of the role of brands, Aaker relates:

> A brand is a distinguishing name and/or symbol (such as a logo, trademark, or package design) intended to identify the goods or services of either one seller or a group of sellers, and to differentiate those goods or services from those of competitors. A brand thus signals to the customer the source of the product, and protects both the customer and the producer from competitors who would attempt to provide products that appear to be identical.[14]

Both of these descriptions of a brand sound to us like the definition of a trademark, especially that of Mr. Aaker. One can imagine a situation, however, wherein the trademark associated with a well-known product was judged to have become generic. All of the elements of a brand would still be in place, but the legal trademark rights would be missing. One can also envision the situation in which trademark rights have been obtained relative to a fledgling product. In this situation, the brand is hardly more than the trademark rights. Brand and trademark are therefore not synonymous.

In our discussions of trademark valuation, we will assume that a trademark carries with it the other elements ascribed to a brand—that the trademark carries with it a "full complement" of all the ingredients necessary to also be recognized as a brand. The reader must be aware, however, that this is not always the case, and that, as in any valuation, a trademark appraisal begins with a careful definition of the property rights to be valued.

The distinction between a brand and a trademark is especially important when one considers the economic life of each. Economic life will be discussed in detail in Chapter 11, but the reader can visualize how the economic life of a brand (composed as it is of many elements) could be quite different from that of a trademark. Within the brand, there may be a constant turnover of its constituent parts, as advertising programs and marketing strategies come and go in order to respond to the *sturm und drang* of business and competition, like an actor who may appear on the stage now as a cowboy, then as a butler. The economic life of a trademark can even be independent of a particular product if it is sufficiently strong and versatile, and if the transition is carefully managed.

(i) TRADEMARKS AND GOODWILL. A trademark or brand name identifies a product or service as coming from a particular source (usually a commercial enterprise). Siegrun Kane describes trademarks as "symbols of goodwill. The value of this goodwill increases with length of use, advertising, and sales. Trademarks used for a long time on successful, highly advertised products have developed tremendous goodwill."[15]

In a 1942 decision, the Supreme Court described this trademark/goodwill relationship as follows:

> The protection of trademarks is the law's recognition of the psychological function of symbols. If it is true that we live by symbols, it is no less true that we purchase goods by them. A trademark is a merchandising shortcut which induces a purchaser to select what he wants, or what he has been led to believe he wants. The owner of a mark exploits this human propensity by making every effort to impregnate the atmosphere of the market with the drawing power of a congenial symbol. Whatever the means employed, the aim is the same—to convey through the mark, in the minds of potential customers, the desirability of the commodity upon which it appears. Once this is attained, the trademark owner has something of value. If another poaches upon the commercial magnetism of the symbol he has created, the owner can obtain legal redress.[16]

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14. David A. Aaker, *Managing Brand Equity: Capitalizing on the Value of a Brand Name*, (New York: The Free Press, div, Macmillan, Inc., 1991), p. 7.
15. Siegrun D. Kane, *Trademark Law: A Practioner's Guide*, second edition., (New York: Practising Law Institute, 1991), p. 10.
16. Op Cit., Mishawaka Mfg. Co.

This linkage of a trademark and goodwill is both understandable and the source of confusion. At one time, a business enterprise was thought to consist of tangible assets and goodwill. We still hear references to the value of a retail business as equal to the fixtures and inventory plus "blue sky." As our valuation expertise has developed, however, we have been able to whittle away at that goodwill catch-all and identify and analyze its components. We now find it easy to understand the difference between computer software, an assembled workforce, and a favorable contract. It is much less clear that there is a difference between goodwill and a trademark, especially when goodwill is described as patronage, or the proclivity of customers to return to a business and recommend it to others, or—as previously described—"commercial magnetism."

The courts have addressed this linkage in considering the assignment (transfer of ownership) of trademarks. Kane[17] explains that, "A trademark does not exist in a vacuum. A trademark is attached to a business—it symbolizes the goodwill of the business."[18] When the trademark is assigned without the goodwill of the business, the assignment is invalid. Some courts characterize the effect of such an invalid assignment (also known as a "naked" assignment or assignment in gross) as abandonment. It is not precisely clear exactly *what* must be transferred along with a trademark assignment, to avoid this potentially disastrous result. In some cases, it has been judged sufficient that tangible assets necessary to carry on the assignor's business were transferred along with the trademark. The overriding principle seems to be that enough other assets are transferred so that the assignee is able to produce the product or service at a level of quality indistinguishable from that of the assignor, so that the public is not deceived by the presence of the trademark on the goods or services of the new trademark owner.

We are not going to struggle with this concept or attempt to draw a bright line between goodwill and trademarks. We do not need to clarify the issue, if in fact there is one, because we are not going to use the goodwill term in our subsequent discussions. We have often expressed the opinion that, if we are skillful enough in identifying all the elements of a business enterprise, we do not need to resort to the term "goodwill" at all. We will have accounted for its existence by naming all of the constituent intangible assets.

3.3 TRADEMARKS—THE LEGAL UNDERPINNINGS

A trademark is property in the sense that we have previously defined it. It achieves this stature from common law, under which protection is obtained by use. Federal and state laws enhance these rights.

The Lanham Act, as amended by the Trademark Revision Act of 1988, and the Trademark Dilution Act are the primary federal laws governing trademark rights. In October of 1994, the United States signed the Trademark Law Treaty, whose purpose it is to harmonize with trademark practices elsewhere in the world. It necessitated some procedural changes, but nothing dramatic.

States also have trademark statutes, including registration, which a trademark owner may use to establish trademark rights. If a trademark is only to be used on goods or services within a state, registration at that level may be sufficient. If it is to be used in interstate or international commerce, trademark registration at the federal level has distinct

17. Op. cit., Kane, p.174.
18. *Kidd v. Johnson*, 100 U.S. 617 (1879)

advantages, including the presumption of primacy of ownership throughout the United States the right to seek redress in the federal courts, and the right to bar importation (by enlisting the aid of Customs) of goods bearing infringing trademarks.

(a) TRADEMARK APPLICATION. An application for federal trademark registration in the United States is made to the Patent and Trademark Office (PTO) and can be made on the basis of (1) intent to use, or (2) actual use of the mark for goods and services. A trademark application is preceded by a careful search for potentially conflicting marks. The steps in the registration procedure vary somewhat for these two conditions, but generally involve:

- Filing a trademark application (or declaration of intent to use)
- Examination for registerability by the Patent and Trademark Office
- Publication, to provide an opportunity for opposition
- Issuance of registration (or notice of allowance for "intent to use") applications
- Information contained on the application comprises:
  - Identification of applicant
  - Description of goods or services
  - Designation of trademark class, or classes under the International
  - Classification System
  - Date(s) of first use and a statement that the mark is "now in use"
  - Specimens consisting of samples of materials (packaging and/or promotional materials) bearing the mark
  - Drawing of the trademark[19]
  - Affidavit or declaration by the trademark owner that the information given is true

There are procedures in place that enable a registrant to respond to rejections by PTO examiners and attempt to work out a solution to the condition that gave rise to the rejection. Failing this, an applicant can appeal to the Trademark Trial and Appeal Board (TTAB) or the Commissioner of Patents and Trademarks.

Exclusive rights to trademarks are obtained by use. Evidence of that use must be filed with the PTO during the fifth year after registration, and at renewal of the registration every ten years. After the registration has passed its fifth year, an additional filing can be made, attesting that the mark has been in use for five consecutive years (a "Section 15" affidavit of incontestability). This gives the mark conclusive evidence of the owner's exclusive right to its use and makes it immune to claims of prior use and descriptiveness. None of the rights obtained by following this registration procedure will, however, remain if the mark was obtained by fraud, or has been abandoned, or becomes generic.

Federal registration on the principle register offers advantages that are important in the valuation process. In a publication of the USPTO,[20] these advantages are noted:

- The filing date of the application is a constructive date of first use of the mark in commerce (this gives registrant nationwide priority as of that date, except as to certain prior users or prior applicants)

19. It is of interest that the "dropping pin" application by Sprint, noted previously, was accompanied by a drawing and a description of the image. The PTO may require some other visual evidence, such as a videotape, if, as in this case, an essential part of the image is its movement.

20. *Benefits of Registration*, obtainable from the U.S. Patent and Trademark Office, Washington, DC.

- The right to sue in Federal court for trademark infringement
- Recovery of profits, damages and costs in a Federal Court infringement action and the possibility of treble damages and attorney's fees
- Constructive notice of a claim of ownership that eliminates a good faith defense for a party adopting the trademark subsequent to the registrant's date of registration
- The right to deposit the registration with Customs in order to stop the importation of goods bearing an infringing mark
- Prima facie evidence of the validity of the registration, registrant's ownership of the mark and of registrant's exclusive right to use the mark in commerce in connection with the goods or services specified in the certificate
- The possibility of incontestability, in which case the registration constitutes conclusive evidence of the registrant's exclusive right, with certain limited exceptions, to use the registered mark in commerce
- Limited grounds for attacking a registration once it is five years old
- Availability of criminal penalties and treble damages in an action for counterfeiting a registered trademark
- A basis for filing trademark applications in foreign countries

(b) GENERICNESS. If a trademark ceases to identify goods or services as coming from a single source and simply becomes a word in common usage in the language, it can be adopted by others, and the original owner may not be able to prevail in its exclusive use. Many trademarks have followed this unhappy (for their owners) path, such as "escalator," "nylon," "linoleum," and "aspirin." The cause is repeated improper use of trademarks in speech and writing, such as:

- Use of the trademark as a noun ("hand me my NIKON")
- Use of the trademark as a verb ("please XEROX that letter")
- Use of the trademark without its descriptor ("this recipe calls for TABASCO")
- Pluralizing a trademark ("move all the BUICKS to the showroom")
- Using the trademark as a noun-descriptor ("it's the ROLLS-ROYCE of electric drills")
- Using a trademark in the possessive ("the IBM's tape drive is turned off")
- Failing to capitalize, put in quotation marks, or otherwise set apart a trademark in writing

Improper usage will, in time, lead to an inevitable slide toward genericness (or "genericity" or "genericide"). Owners of trademarks are aware of this and police the usage of their marks and conduct campaigns to promote proper use. Xerox Corporation, which has a particularly difficult battle, has placed very imaginative advertising campaigns in the media, encouraging proper use of their marks: "XEROX has two R's" (one in the word, and one in a circle denoting registration). They remind us that a trademark is an adjective and never a verb or a noun. Trademark owners continually monitor the media and remind transgressors of their misuse. This is an exceedingly difficult task, because, on the one hand, trademark owners *want* their marks to be on everyone's lips, yet on the other, they need to encourage proper usage.

3.4 TRADEMARK CREATION

Merely following the legal steps to a successful registration will not create an asset of value. Every business enterprise needs, and needs to obtain, a trademark. If we start up a wine business, we cannot call ourselves "The Little Winery South of Town on the Left Side of Route 43." Though this might be an interesting change of pace in company names, it is unlikely. A more memorable trademark would likely be chosen. As a practical matter, we must have a "shorthand" way of referring to this new business, especially if its products or services are out in the general marketplace.

A few years ago in China we visited the "Beijing Boiler Plant Number 2." No doubt this naming convention stemmed from a political motivation, to avoid the creation of "capitalist trappings" (for what is more capitalistic than a trademark?), but the fact is that, if the Factory No. 2 performed in exemplary fashion, and if its products became known for their quality or efficiency in the marketplace, a trademark would have been created in spite of the system. There is just no escaping it.

To be of value, however, a trademark must attain a degree of positive perception in the minds of a number of people—it needs to be nurtured—sometimes at considerable cost. As someone said, "A boat is a hole in the water into which one pours money." Trademarks are like that, but the end result can be well worth the effort.

(a) TRADEMARKS AND VALUE. There is a system of international classes of goods and services that is used to describe the type of product or service with which a trademark will be associated. Such a system enables the use of two marks that otherwise might be confusingly similar, by segregating them to specific products or services.

These categories do not, however, provide much help in the valuation process. For that we need to think of trademarks using a different structure that will help us differentiate marks by using some of the criteria that affect potential value. To be useful, our valuation methodologies must apply all along the trademark spectrum. For most of us, the word "trademark" equates to the identity of some good or service that we use in everyday life. There are, however, millions of trademarks used by those who provide intermediate goods and services (those used in the manufacturing process or in business-to-business transactions), or by governments, organizations, and institutions. Intermediate buyers are motivated differently than consumers, and their needs are more specific and better defined. The trademarks they use must be included in such a classification scheme, and we suggest the following as a structure:

GOVERNMENTAL/INSTITUTIONAL

- Federal government
- State governments
- City government
- Governmental agencies
- Armed forces
- Post office
- Internal Revenue Service
- Transportation
- Hospitals
- Universities

- Trade organizations
- Charitable organizations
- Fraternal organizations
- Professional organizations

Extractive/Commodity

- Oil and gas
- Coal
- Metals
- Electric, gas, and water utilities
- Lumber
- Grain
- Cotton
- Chemicals

Semicommodity

- Industrial/commercial/residential construction
- Paper
- Fruits/nuts
- Meats/poultry
- Dairy products
- Plywood/dimension lumber
- Specialty chemicals
- Transportation/freight

Intermediate Goods/Services

- Services for industry
- Design/engineering/construction to industry
- Parts/component manufacturers
- Machine tools
- Textiles
- Leather
- Plumbing/heating/AC/electrical/masonry contractors
- Wholesalers/distributors

Finished Goods

- Automobiles
- Appliances
- Computer software (business to business)
- Electrical/electronic goods
- Apparel

RETAILERS

- Mass marketers
- Malls
- Department/specialty stores/supermarkets
- Small/intermediate retail stores
- Dealers
- Franchisees

INDUSTRIAL/COMMERCIAL SERVICES

- Construction
- Advertising
- Market research
- Management consulting
- Accounting
- Legal
- Financial (e.g., investment banking, commercial credit)

CONSUMER SERVICES

- Banks/financial
- Telecommunications
- Cable television
- Insurance
- Hotels
- Publishers
- Newspapers
- Transportation
- Restaurants/fast food

CONSUMER PRODUCTS

- Soap
- Personal care products
- Apparel
- Computer software (shrink-wrap)
- Food products
- Beverage products

ENTERTAINMENT

- Motion pictures
- Television
- Stage
- Characters/personalities/sports figures
- Sports teams
- Toys/games

There is a pattern to the list of classifications above. Generally speaking, as we read down the list, it can be observed that there is *value being added* along the way. Another observation is that the classes move from industrial to consumer goods. Intuitively, we might feel that the importance (and relative value) of trademarks associated with these categories of business activity might also increase from the beginning to the end of the series. This pattern might appear as in Exhibit 3.1.

We can test our intuition by examining the categories further. Obviously some trademarks could be placed in more than one classification or it might be somewhat unclear which classification might best describe a given mark. Anything as ubiquitous in our lives as trademarks will resist strict compartmentalization. But our purpose is to superimpose a rationalization that can assist in our specific analysis.

(i) Governmental/Institutional. We tend to dismiss the trademarks associated with organizations in this category, perhaps because we feel that they do not *need* trademarks and just have them because they have to identify themselves in some way or other. To some extent this is true, but we find that trademarks provide these organizations with some of the same benefits that they provide to others. They can be emblematic, identifying a vast organization by means of a symbol. The Great Seal of the United States on an aircraft in the farthest reaches of the world carries an unmistakable message. The symbols of the Red Cross, Salvation Army, and United Nations are instantly recognized everywhere.

These trademarks can be guideposts. Anyone who has visited London has come to appreciate the symbols of the Underground and British Rail because they provide guidance through an effective, but potentially confusing public transport system. The symbols of the "T" in Boston, the METRO in Washington, and BART in San Francisco accomplish the same purpose. All that is needed on a sign is a symbol and an arrow, and we are on our way.

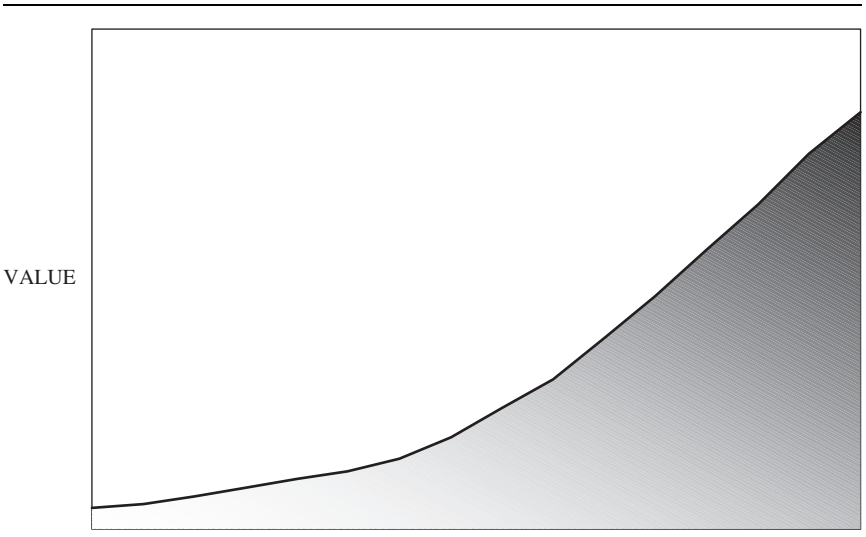

EXHIBIT 3.1 RELATIONSHIPS OF RELATIVE VALUE AND TRADEMARK CLASSIFICATION

(ii) Extractive/Commodity. Extractive industries, such as oil, natural gas, coal, and mining, do not depend on their trademarks in the way that consumer products companies do. They and commodity producers sell to other industries, for the most part, and these are knowledge- or technology-based buying decisions. Even commodity products such as plywood, lumber, coal, and fuel oil, which find their way to a consumer market, are more likely to be identified, in the mind of the consumer, with the retailer than with their original provider. The retailer's trademark is then more important than that of the cutter of trees or the miner of coal. There are exceptions to this, however, and these serve to illustrate our classification system. Sodium chloride, as an example, is mined or obtained by evaporation. It is a commodity chemical. Some is bound for chemical processes (e.g., as a feedstock for chlorine) or for our roads in wintertime, and some is destined for our tables.

The former is "unbranded," though chemical specifications, price, and location are very important. The latter is granulated, processed and packaged, wholesaled, distributed, house branded or company branded, and sold to us from the shelves of our food market. A trademark has little importance at the beginning of the process, but can be very important at the end.

Crude oil is also a commodity. It is not described by the name of the party who drilled for it, but by its characteristics (e.g., "light sweet crude," or "Texas intermediate"). By the time it is refined into motor oil or gasoline, however, its identity is very important, and refiners spend considerable amounts of money to make sure that we as consumers are aware of the unique properties of their product and of their trademark.

(iii) Semicommodity. As we have noted, there can be "crossovers" along our spectrum, as specific products move along the manufacturing continuum. Trademarks may be present all along, but their relative importance changes. A container of polyethylene granules coming from Dow Chemical Co. is so marked and is clearly identifiable to the buyer. To what extent, however, did the Dow trademark influence the decision to buy this raw material? We suggest that the decision to buy was made on the basis of chemical specifications, price, delivery (time and quantity), and perhaps other contractual terms, and that the Dow name and reputation as embodied in the trademark made relatively little difference. There is no question that suppliers of commodities and/or intermediate goods or services or components work hard to build strong reputations and are justifiably proud of what their trademarks stand for in the business world. We submit, however, that those reputations provide less "inertia" (in terms of retaining a customer) than those of consumer brands. These buying decisions are (should be) based on more rational thinking, and less emotion. One's reputation is only as good as the products or services delivered yesterday. Therefore, product performance, technology, service, support, innovation, and price loom much larger than they do in a consumer's decision to purchase a lawnmower, shaver, or CD player—a case in which a buyer does not have the skill or information to perform a technical evaluation of the product and tends to depend on the manufacturer's reputation as embodied in the trademark.

This is not to say that trademarks cannot become important quite early in the process. Trademarks can become important to the manufacturers buying a product, because a distinctive trademark can serve as a shorthand identifier of the product, enabling a buyer to quickly specify the needed material. The mark becomes a symbol for a whole package of specifications, quality characteristics, delivery capabilities, and price points. This early differentiation of a product from commodity into brand could affect our value pattern as shown in Exhibit 3.2.

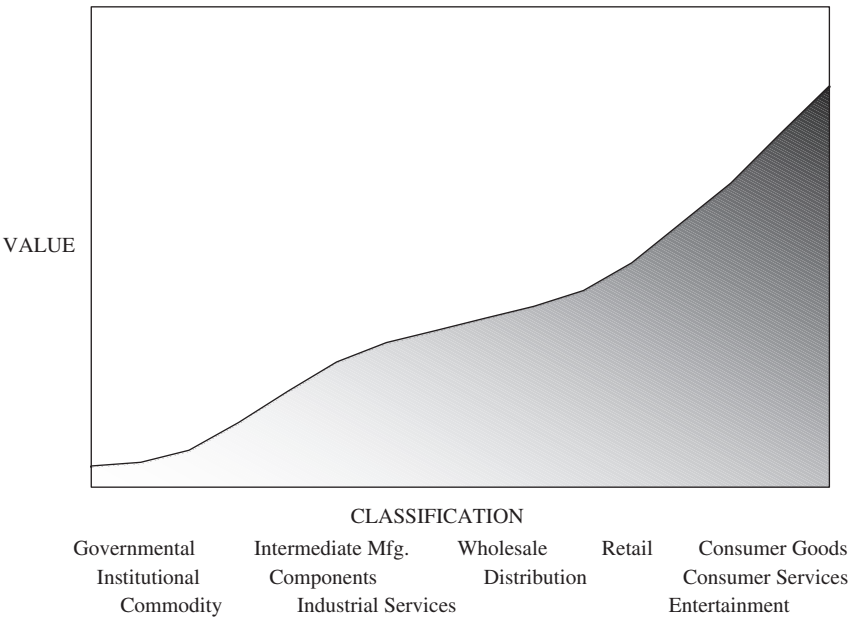

EXHIBIT 3.2 RELATIONSHIP OF RELATIVE VALUE AND TRADEMARK CLASSIFICATION (REVISED)

(iv) Intermediate Goods/Services.

FINISHED GOODS

Steel, metal castings, plastic, and paint are commodity components of subassemblies that eventually become finished products such as automobiles and appliances. The trademark known to consumers goes on when the finished product is assembled. Many trademarked products we buy move a long way through the manufacturing chain before the trademark that we recognize is applied.

There are, however, trademarks in use all along the chain. Some of these are associated with the materials used, with subassemblies, or with the manufacturing process itself. There is a myriad of trademarks associated with goods and services that are used to make the products we buy. There are those, however, to whom these names represent a product image that is important to them in their work. In the commercial or industrial sales cycle, a new vendor is thoroughly vetted and their goods or services are subjected to tests and/or trials. Once this is done, the successful candidates are put on an approved bidders list. Under the banner of a trademark, such an approved product or service greatly facilitates the approval process for new or related products or services. The trademark paves the way, and the selling effort can get right to the essentials, without the "who are we?", "how long have we been in business?", "whom else have we served?" preamble. This results in both a cost saving and a better opportunity for the trademark owner.

These marks have a role in their particular commerce, but are not as critical as other product elements that we have discussed. As proof, companies are acquired and it is not uncommon for the acquirer to begin to market the products of the former owner under its own brand "umbrella." This is done carefully, of course, but it is not uncommon. In the consumer marketplace it would be extremely expensive (and foolhardy) for the purchaser of a soap brand to rename or eliminate it.

Another way to view this is to imagine that a consumer brand in a competitive market lost its trademark for some reason. This could well mean the demise of the brand. If such an event befell an industrial or commercial brand, a severe result would be much less likely.

Trademarks such as CINCINNATI MILACRON machine tools and ROCKWELL factory automation systems are extremely well known to those involved in manufacturing. These are examples of mission-critical items of equipment on whose dependability entire plants or product lines depend. In this arena, a track record is a most important buying criterion. Again, however, these are products made by industry and sold to industry (sometimes to a relatively few, known customers) and the critical marketing elements are performance and price, and so a trademark, while an important identifier, is not one of the primary building blocks of brand equity. No automobile owner knows if his or her car has a Meritor sunroof or not. On the other hand, owners of heavy trucks are likely to know if they are equipped with a Cummins diesel engine and may even have specified this equipment when they ordered the truck or have purchased a particular truck brand because it was so equipped.

The best of all worlds for the manufacturer of industrial or commercial goods or services is to achieve a level of quality or uniqueness that results in being "specified." That is, when construction or design specifications are written, the description of a unit is stated as: "Electric motor, 20 h.p. . . . GE Model XXXXX or equivalent." This type of brand equity is built by performance and price, not massive advertising.

Trademarks in the industrial or business setting may be important because of their "implied guarantee" attribute. We are sure that there have been at least some lemons among the many models of copier sold by Xerox or Canon over the years, but overall they have established strong reputations and it would be an uphill battle for a newcomer to compete. A company purchaser would be hesitant to put his or her reputation on the line by recommending the purchase of a "just as good as" copier, no matter what the price or claims for quality. Everyone wants a trademark that can be inserted in the phrase, "no one ever was fired for buying____."

When the attributes of a trademarked intermediate product are important (or can be made important) to the end consumer, these trademarks can be made to carry through to the marketplace. There are many examples of this, such as ACRILAN, CAPROLAN, DACRON, and ORLON fibers, GORE-TEX membrane, INTEL computer chips, and the like. When this happens, we have "dual billing" in the marketplace, such as outerwear by L.L. BEAN, with GORE-TEX lining, or a TOSHIBA personal computer with INTEL INSIDE.

A commercial or industrial trademark can also be extremely useful as an umbrella, under which new products or services can be introduced. Brand extensions can be an important strategy outside of the consumer markets

(v) Retailers. Even after all the hands have carried and added value to a product to bring it to its final, finished state, we may see it and buy it in a retail establishment that has its own trademark. So yet another brand layer has been added. The retailer's value added is to provide us with a one-stop shop (ample selection), provide display and education, perhaps credit or payment facilities and delivery services, and to act as our ombudsman with the maker of the goods.

Retailers can themselves become customer magnets in the marketplace. Manufacturers of goods may vie for display or shelf space in the establishment of a successful retailer. We explain in a later chapter how this can lead to brand extension strategies for some retailers.

Trademarks can be very important in retailing, but there is usually a balancing of importance between the mark of the retailer and the marks of the goods being sold. Some retail locations, such as auto dealers, apparel stores, and service stations, use the trademark of the manufacturer or service provider. The actual identity of the location owner is immaterial to the consumer. Other retail locations, such as MACY'S, BLOOMINGDALE'S, ECKERD'S, or SMITH'S TOY SHOP, have an identity separate from that of the goods sold. That identity, by itself, may be very strong or relatively insignificant, but will always have some relationship to the goods sold or services provided. That is, a retailer's name will become associated with the type, quality, and price of the goods sold. The characteristics of the wares become part of the retailer's "persona."

(vi) Industrial/Commercial Services. This is a business classification in which one intuitively recognizes a wide range of importance for trademarks. Services are provided by people, and so there can be a variety of combinations of personal and trademark power to drive such a business. As a general rule, the character of smaller service firms is formed by their personnel, while that of large firms is more of a corporate character. Employees of small firms may take customers or clients with them if they move to another firm. This is much less likely to happen with larger service providers. There tends to be a much more personal relationship between the customers and employees of a small advertising, accounting, or legal practice than there is at larger firms.

The relative power of a trademark is quite evident in professional services. As an example, one could assume that an audit performed in accordance with Generally Accepted Accounting Principles by a certified public accountant would be essentially the same service, no matter which firm provided it. We have, however, observed a price difference in the audit services of small as opposed to large accounting firms. In addition, a small or middle-market company (which would have a free choice between a large or small auditing firm) will most often opt for the large firm if it is contemplating a public offering of stock or seeking other significant financing. The motivation in this is that investors, and perhaps regulators, take a higher degree of comfort in an audit by a larger, more well known accounting firm, and the process may be smoother as a result. For the same reason, a public company involved in a major transaction will seek the assistance of a major investment banker. It is a bit more difficult, in this case, to ascribe this entirely to the power of the trademark (because of the nature of the services required), but unquestionably the directors of such a company derive some comfort by this action, given the litigious nature of our financial society.

Obviously, a large professional firm, advertising agency, market research firm, consultant, designer, or constructor can offer "one-stop shopping" and an ability to handle large tasks. So the advantage is not only from its trademark. But a firm's trademark does become a symbol of its particular prowess and is an attraction in its own right. There are those that feel that a letter from a prestigious law firm will strike more fear and trepidation in the heart of an alleged transgressor than one from an attorney or firm less well known.

Hiring a world-renowned management consulting firm can provide an element of insurance against criticism that may not be available from a less well known firm, even though the advice received may be the same. This is the power of a trademark.

(vii) Consumer Services. We are becoming a service-driven economy, and so it is not surprising to observe the development of regional, national, and international trademarks for consumer services. This includes banking, insurance, credit card services, brokerage and investment services, and even legal and accounting services. There are also national brands of healthcare, tax-preparation, and funeral services.

(viii) Consumer Products. Even though this is one of the largest classifications, in terms of number and importance of trademarks, little needs to be said about this classification of trademarks, because these are what we think of when we use that term. This classification is populated by EVEREADY, BAND-AID, and BUDWEISER and a host of other consumer products. These are the trademarks that are written about, are sung about, and are part of our lives on a daily basis. Trademarks in this classification are very important building blocks in the brand equity structure. McCarthy and Perreault[21] provide an interesting analysis of differences within this category: *Staples* are products bought often and routinely, and branding is important to assist shoppers in saving time and locating products with which they were previously satisfied. *Impulse* products are purchased in an unplanned manner, and their display location becomes very important. *Shopping* products are defined as either homogeneous or heterogeneous. *Homogeneous* products are seen by the consumer as basically the same, and price becomes a dominant force in the purchase decision. *Heterogeneous* products are seen as different, and the buyer wants to inspect carefully for quality and performance. Branding may be less important here. *Specialty* products are those for which the consumer is willing to search. This may involve a specific insistence on a particular brand. Finally, there are *unsought* products that are either brand-new in the market or not regularly needed, such as a cemetery plot. It is in this world of consumer products that trademarks loom the largest, in terms of fiscal importance.

(ix) Entertainment. At the other end of the range from commodities are the products and services associated with entertainment, games, sports, and toys. This is where trademark is everything. Well, not everything, but certainly extremely important. The fact that licensing of marks and characters is a multibillion-dollar industry within this industry underlines the importance of the images that drive profits in this business.

As with all things financial (that are legal), investments with relatively low risk tend to have surer, but relatively low, rewards. People *need* automobile tires, so we at least have that need assisting us if we decide to invest money to build a tire brand. People do not need entertainment or toys or t-shirts with a cartoon character on them, so the sale is dependent on the persuasiveness of the image alone. The investment to build a "character" (living or not) is a large and risky one. But the rewards can be huge, if the effort is one of the few successful ones. The owner of such a character can rest assured that "the world will make a beaten path to his door."[22]

(b) INTERNET DOMAIN NAMES. This subject is introduced here because, while Internet domain names are not trademarks in the legal sense, they share important property characteristics with trademarks. This sharing has led to some very difficult international disputes and equally complex efforts to resolve them.

The Internet dates from the early 1970s, when a communications network was established by the U.S. Department of Defense to connect various military and research locations. As part of this project, technology was developed that permitted dissimilar computer systems to communicate with one another and enabled the use of location "addresses." The National Science Foundation (NSF), in the 1980s, began to expand its own network to enable colleges and universities to access and use its supercomputers.

21. OP. Cit., p. 224ff.
22. Ralph Waldo Emerson, from a lecture.

The concept of e-mail soon developed. This network was for the transmission of text only, and only a few commercial users were present.

During this rather long development period, the Internet was discovered by nonacademic and government users. After about 1992, it virtually exploded in use, size, and capability. This massive growth has been fueled by rapid technological developments in our communications network infrastructure and increasingly capable and inexpensive personal computers. The Internet is now global, connecting millions of users, and has become a huge distribution system for all forms of media.

As with the traditional telecommunications system, individuals and businesses have a numerical address that serves as their "location" on the Internet. A typical address is a series of digits, such as 209.68.1.151. To make things easier for humans, each such address has an alphanumeric equivalent called a domain name. A domain name is an alphanumeric address (26 characters maximum) of a computer at a specific location. Invoking a domain name on the Internet leads one to the Web site of an individual, corporation, organization, government or other institution. Web sites are "named" because the actual numerical addresses are too cumbersome to remember. There are several elements to a domain name, the most important of which are the so-called top-level domains (TLDs) and second-level domains (SLDs). TLDs are either country designators (us for the United States, uk for United Kingdom, as an example), or they are one of several generic designators originally intended to denote user segments (.com for commercial entities, .gov for government, .edu for educational institutions, and so forth). A domain name has meaning as the address of a particular entity and thus takes on some of the characteristics of a trademark. As an example, if one wished to connect to the Web site of IBM Corporation, it would be natural to key in ibm.com, rather than look up in a directory to discover that IBM's Web site had the address of ertlxt.com. By using meaningful names, the Internet avoids the "telephone book" task, and the communication process is greatly facilitated.

The potential problem, of course, is that the ibm in ibm.com is not technically a trademark and could have been registered as a Web site address by anyone, anywhere in the world. The content on that site could be anything that owner wished, including derogatory information about the "real" IBM. The early developers and users of the Internet felt very strongly that it is a medium of free speech. The potential conflicts of domain names and trademarks probably did not loom large in their thinking at that time.

We are trademark conditioned, however, and as the number of users burgeons, many people use the principal trademark of a company in an Internet search and expect to find the Web site of the sought-after entity. One expects to find the Web site of IBM Corporation when one connects to ibm.com. We are confused if that is not the case, or perhaps come away with a bad impression of IBM if the material we find is offensive. Fortunately (as in the actual case of ibm.com), this situation does not arise very often; a trademark-based search usually leads one to the expected, and correct, site. There has been considerable controversy over domain name/trademark issues, but these have gradually settled down.

(c) COMMERCIAL EXPLOITATION. The opportunities for commercial exploitation are varied and growing exponentially.

As we observe it today, commercial exploitation takes several forms:

Providing Information—Many Internet sites, such as those of corporations and service firms, have as their primary purpose the introduction of the organization to prospective customers, employees, or suppliers; providing information about products

and services; giving access to financial information, such as the current annual report, for investors or analysts; and generally serving as a vehicle for enhancing the public relations function.

Some sites, such as those of financial institutions, provide more detailed or proprietary information or some service for the viewer. These usually require the viewer to become a "customer" and pay some fee for the additional services. An example is the Web site maintained by Standard & Poor's Corporation. Anyone can view the site and receive general information about the financial markets and about the firm. As a fee-paying customer, however, the viewer can access proprietary information and investment recommendations and maintain a file of personal investments that is continually updated. Many news organizations offer the same sort of two-tiered services for casual browsers and for subscribers.

E-Commerce—These are Web sites such as amazon.com that are designed for the primary purpose of enabling the viewer to do business with the site owner or with the site owner as agent for others. Online catalogs are often a part of such a site, with search protocols that enable the viewer to quickly "turn to" a specific product or service. Very often these sites provide a secure system for ordering products or services using a credit card. This form of exploitation is very appropriate for a company with large or complex products, because of the search capability provided by online digital information. A site selling used books, as an example, can provide a keyword search capability that would be impossible in an actual store.

Site Exploitation—In this form of exploitation, the Web site itself is the focus and becomes similar to a newspaper, radio, or television station. That is, it provides some content that is attractive to Web users and then uses that "circulation," or "hit rate," to sell advertising. An unknown in this form of exploitation is the relative effectiveness of such advertising, which, of course, affects the rates that can be charged. Some studies indicate that Web banners get little attention and that "click-throughs" (clicking on an icon to move to another site to get more information about the advertised product or service) are few and produce little actual business.

There is potential, however, for Internet advertising to be very effective, if one could deliver Web viewers ("readership") with known demographics. Web viewers are essentially anonymous when they access a site, unless they choose to reveal information about themselves, which few are willing to do.

Meeting Sites—Other Web sites offer to bring viewers together so that they can do business. This would include sites that run auctions or broker the sale of goods and services for a fee.

In each of these forms of exploitation, the role of the domain name is different. As an example, in some cases it is very important that the domain name be an image of a trademark or be a strategic generic name (e.g., autoracing.com) in order to be an effective magnet and fulfill its role. In other cases (e.g, amazon.com), the Web site owner has created an awareness of a domain name that does not directly identify the owner or relate to the products or services being offered (this is analogous to a fanciful, or coined, trademark). In still other situations, the domain name is almost incidental to the process, because Web viewers reach the site through keyword searches of the site's content. They then "bookmark" the site in order to be able to return to it in the future.

(d) DOMAIN NAME CLASSIFICATIONS. The following classifications can serve as an aid to analyzing a domain name in preparation for valuation:

Trademark-Linked—The SLDs of these domain names are identical or very closely related to an existing trademark. As an address, they lead one to the Web site of the trademark owner. They take their identity from the trademark(s) of the owner, and their value is as a part of that trademark portfolio. Some of these may have existed as domain names before being trademarked, but the order of creation will likely not be a factor in valuation.

Generic or Intuitive—The SLDs of these domain names are typically one or two words denoting some subject, place, or activity, such as bassfishing.com, air-travel.com, or chicago.com. These are potentially the most valuable domain names because they appeal to a fairly large market of potential users and, at the same time, represent "addresses" that would be used intuitively by Web seekers. These names may have considerable income-producing potential. These names also can be shared by several users who have a common attribute and who are not competitive. In this case the "home page" contains links to the Web sites of those sharing the address.

Internet Business—These are the domain names of businesses doing business primarily on the Internet. They may not be linked to existing trademarks and are not intuitive addresses. They have built, or are building, their value as part of the portfolio of assets in an enterprise.

Individual or Fanciful—These are domain names that are not intuitive addresses or generic words. In some cases, they might reflect the whim of their owner, or they might represent some social, religious, or economic philosophy. More often, these addresses are the result of someone adapting to the limited availability of domain names. As an example, we would have preferred aus.com for the Web site of one of our companies, AUS Consultants. That domain was taken, and we chose not to try to acquire it. We selected ausinc.com instead, depending on other ways of alerting our clients and prospective clients to the site and the use of search engines to locate our subject matter.

Strategic—These are domain names that exist for a particular competitive reason. They may be an effort to widen the net and catch Web seekers who otherwise might not be brought to one's site. Headache.com (as well as a large number of other names of common ailments and remedies) leads one to the site of Procter & Gamble Corporation. One could also imagine registering a domain name that closely resembled that of a competitor, to bring in the Web seekers who narrowly missed their intended target or who were attempting a crude search. We include in this category domain names that are "defensive" in nature and that exist in case a Web seeker is likely to misspell or otherwise garble the intended domain name. Many trademark owners purchase a family of domain names that represent all the likely permutations of their name, so as to capture Web seekers who do not get it exactly right.

(e) DOMAIN NAME VALUATION. Conventional wisdom indicates that domain names have value. Opinions about domain name value have been a bit euphoric. We observed a tendency to link domain name value with the explosive market capitalizations of the "dot-com" enterprises and with the spectacular growth of Internet business. Broadcast television emerged about 1950 and enjoyed remarkable growth in the 1950s. It was a new communication medium, and opened up vast product and service distribution channels.

But was that growth driven by the trademarks of RCA, Dumont, or the call letters of the new television stations? We think not. Did trademark values increase as a result of the success of the new television-related businesses? Of course, but other important assets were the drivers of growth for the new television enterprises, such as broadcast technology, advertising and content relationships, government licenses, and the like. We need to be realistic about the role of domain names in the Internet world.

Certainly mcdonalds.com has value, but does that value exist only because of the immense value of the McDonald's family of trademarks? Are domain names that mirror existing, known trademarks merely secondary marks in the same family? We believe that this often is a correct supposition. In that case, a preferred approach may be to appraise the whole family of trademarks and logos, and allocate some of that value to the domain name. At the other end of the scale, many domain names identify the locations of the Web sites of individuals who are not in commerce.

A totally new asset classification is the domain names of new, Web-based businesses, such as eBay, Yahoo!, and the recently gone-public Google that are not related to preexisting trademarks (although they may also be registered as trademarks). These will obviously grow in value as do the businesses with which they are associated. There also are other domain names (at least the SLDs) that could not be trademarked at all, such as fishing.com, canada.com, or coffee.com. These are potentially the most valuable in the marketplace, since they are unique and would have considerable marketability due to their versatility and wide appeal.

At present, however, the .com TLD is the focus, according to Jeffrey Tinsley, chief executive officer of Great Domains (which reportedly recently sold the drugs.com domain name for $823,456): "Drugs.org or drugs.net are worth something to someone, but dot-com is the Internet's Rodeo Drive."[23] As noted previously, the development of a specialized search engine that would perform as a directory also could dilute the value of existing domain names.

All of these factors lead us to the conclusion that there is a wide range of value for domain names, depending on their individual characteristics and the changing state of the marketplace. We can, however, observe how our valuation methods can be applied to these varied situations.

(f) PREMISE OF VALUE. The unusual nature of the domain name market causes us to remind the reader to consult the definitions of value discussed in Chapter 7. Market value is defined as: "The amount at which the property would exchange between a willing buyer and willing seller, neither being under compulsion to complete the transaction, each having knowledge of relevant facts, and with equity to both." The important element of this definition is the lack of compulsion or unusual motivation on the part of buyer or seller. This element often is not present in current domain name transactions, as we discuss later.

These transactions, therefore, may not represent fair market values, a fact that must affect our interpretation of these data. Real estate valuation references refer to this as investment value: "the term investment value designates a value to a specific investor whose objectives or investment requirements may deviate from the typical. In such cases the investment value conclusion reflects these atypical requirements and does not necessarily coincide with market value."[24]

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23. As reported by John Cook, "Unreal Estate," *New York Times* Supplement, August 22, 1999, p.18.
24. "The Appraisal of Real Estate," American Institute of Real Estate Appraisers, 7th Edition, Chicago, IL, p. 321.

Others have defined this type of transaction as one representing acquisition value:

> Acquisition value: the price that a particular, specifically identified buyer would be expected to pay for an intangible asset with consideration given to any and all unique benefits of the intangible asset to the identified buyer. Acquisition value is typically estimated in terms of answering the question: What is the most that an identified buyer can afford to pay for the subject intangible asset, given that buyer's unique set of circumstances?[25]

We therefore need to be sensitive in our interpretation and application of market data.

(g) COST APPROACH. As we have noted, the cost approach typically is not appropriate for trademarks, or for trademarklike domain names. This is because the cost to replace such property is seldom reflective of its value, except at the inception of its life, when the momentum of the business has yet to be felt. For the domain names of individuals or those domains that are more likely to be found through a search engine seeking words or subjects, the cost approach may be appropriate. In these cases, the "hits" (times accessed by Web surfers or seekers) are not the result of the domain name but the result of the site's subject matter or keywords, or they occur because the seeker has found the site previously and wishes to return.

A cost approach in this case equates to the expenditures that would be borne in "brainstorming" a name, perhaps several iterations of clearing it (or alternatives), and the costs of registration. A cost approach for price setting might be useful to an owner of a domain name that is being sought by another. If a domain name has been in use for some time, the cost to change it could be significant, as would be the case with the change of a long-used main telephone number. That amount would be useful as the floor on which negotiations could begin.

(h) INCOME APPROACH. Some Web sites are themselves profit-making enterprises. Internet customers may pay to observe the site's content or access the site in order to gain access, for a fee, to information available in some other medium. Internet customers may seek out the site to purchase products or services available only by this means. Some Web sites may offer attractive content only to increase their hit rate or as a vehicle to other links and to make themselves attractive as an advertising site for others. The revenue stream is advertising fees, acting as a vehicle, through links, for access to other sites (click-throughs), or perhaps even a share of the business generated for the other site.

When Web site income can be delineated, an income approach is feasible and desirable. The methodology would proceed along the lines we have described elsewhere in this book and would comprise a capitalization of the earnings attributable to the domain name. The caution is that one should think through a "but-for" analysis to discern the extent to which the site earnings are attributable to the name or to other features of the presentation.

A Web site can provide an additional source of revenue to a company already conducting business through the normal channels. This would normally be an indication that there is specific income attributable to the Web site. One must be careful, however, that Internet sales are not being realized at the expense of sales through other distribution channels. Care must also be taken to ascertain the level of profitability of Internet sales. The Internet is a very efficient marketplace that makes shopping comparisons easy, and consumers have come to expect lower prices for Internet goods and services. Their common wisdom is that Internet trade costs the provider less, and therefore prices should be lower.

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25. Robert F. Reilly and Robert P. Schweihs, *Valuing Intangible Assets* (New York: McGraw-Hill, 1999), p. 60.

A company doing business over the Internet may in fact enjoy economies such as reduced costs of order entry, inventory, sales commissions, advertising, or customer communications. This reduced expense may represent income attributable to a Web site, but one must be confident that the seeming profit advantage is not absorbed by a lower price. Additionally, the amount of "Web site income" will likely not be synonymous with domain name income. Our discussions in Chapter 10 point out the need to allocate income to all of the assets that produce it. There could be substantial investment in designing and creating the software necessary to support Internet sales, and some of the resulting income must be allocated to providing a return of and return on that investment. A Web site is a storefront, and the sign on the door is but one of many assets that compose it.

Even income that seems to be directly attributable to a Web site may need to be allocated among the assets. Fees for sponsorship, advertising, linking, membership, or cobranding are Web site income and not necessarily domain name income.

(i) MARKET APPROACH. The market approach has great appeal because there would seem to be an active market in domain names. After the early spate of cybersquatting and name hoarding, a number of entrepreneurs invested in the registration of generic domain names and now offer them for sale. Some also operate auctions. Those who value intangible assets have relatively few opportunities to avail themselves of market data, and so the attraction to the domain name market may be strong, perhaps stronger than it ought to be. While sales of domain names have occurred, the elements necessary for the market approach may not always be present.[26] A valuer therefore must be guarded about using these transactions found in the "marketplace" relative to domain names. Many of these transactions reflect investment value rather than fair market value, and it is necessary to judge them as such.

This is the probable explanation for the very wide range of domain name transaction prices that can be observed. A nominal amount of Web surfing on our part turned up a considerable amount of information relative to domain names for sale or being auctioned, as well as reports of past transactions. Several sources have reported the sale of the altavista.com domain name for $3.35 million, which seems to be the high watermark in the marketplace to date.

(j) SUMMARY. We suggest that valuers (or those addressing licensing royalty rates for the use of domain names) perform a careful analysis of the role of the subject domain name and the particular characteristics and motivations of buyer and seller:

- What is the function of the domain name (i.e., what would happen to the current exploitation if the name were lost or changed)?
- What is the income stream attributable to the domain name?
  - What revenues are attributable?
  - What cost savings are attributable?
  - Analyze the profitability of Internet business.
  - Are there income streams directly attributable to the domain name?
  - What is the relationship of Web site income to domain name income?

26. As discussed in Chapter 9, these elements are: an active market, arm's-length transactions, full information about the transactions, and transactions that are contemporaneous with the analysis.

- What is its specific market (highest and best use)?
- What is the proper premise of value?
- If market data are used, are the transaction criteria comparable?
- What are the alternatives for a potential buyer?
  - Pay the price.
  - Obtain a less desirable variation.
  - Consider trademark/domain legal action.
  - Arrange a sharing of the site.
  - License a link to the site.

The valuation methods that we have presented are appropriate for domain names, but their use and application must be considered carefully because of the rapidly changing legal, technological, and economic aspects of this unique property.

3.5 NAMING RIGHTS

Most sports fans, and many others for that matter, would instantly recognize Lambeau Field as the home of the Green Bay Packers football team. Built in 1957, the stadium was renamed Lambeau Field in 1965, following the death of E. L. "Curly" Lambeau, the founder and first coach of the Packers. Lambeau Field underwent a major renovation and modernization. That sort of activity often triggers consideration of the "naming rights" issue. That is, should the stadium be renamed and bear the corporate logo of some enterprise that would, in exchange, be willing to pay for the privilege? In this particular case, that decision was up to the city fathers and citizens of Green Bay, Wisconsin, who own the team. Their decision was to retain the name of Lambeau Field.

Perhaps this all began, albeit somewhat indirectly, in 1926 when William Wrigley, Jr., the owner of the Chicago Cubs baseball team, renamed Cubs Park as Wrigley Field. This venerable ballpark remains Wrigley Field to this day. Inevitably, this name is associated in the public consciousness with the Wm. Wrigley, Jr. Company, and its famous chewing gum products. In naming the field, Mr. Wrigley may have just had in mind to signify his ownership of the field and the Cubs. But who knows, he may have recognized the commercial possibilities as well—that the Wrigley name would be heard by thousands over the airwaves and seen on countless newspaper sports pages nearly every day of every summer in the upper Midwest

Our research readily revealed over 100 naming rights transactions, with prices ranging from $250,000 to over $200 million. Facilities of all kinds were involved, ranging from major league sports facilities to local stadiums. The terms of agreement range from 5 years to 99 years, though the longest term in recent contracts is 30 years.

Shopping malls have been the subject of naming rights transactions, as have stations on urban mass transit lines. Naming transactions have also reached a very local level, such as in Jefferson County, Colorado, where the county stadium, used for high-school sports, will bear the name of the U.S. West Communications Group for 10 years. Naming rights transactions are being made outside of the U.S. as well. Estimates of the total market for naming rights deals worldwide range from $3.5 to $4 billion

We note that most naming rights transactions can include other benefits such as long-term leases for luxury boxes, suites for the naming corporation, and various concession rights. For this reason, the terms of the deal can cause the price to vary considerably.

(a) NAMING RIGHTS AS PROPERTY. It is perhaps somewhat of a misnomer to use the term "naming rights" as if it were some specific type of property heretofore unknown. In essence, so-called naming rights are really part of the underlying bundle of rights possessed by the owner of a special event facility, such as a sports stadium or arena, or a retail location such as a shopping mall, or a public facility such as a transit stop. One of the ways that the owner of such a facility can exploit that property is by permitting others to place advertising messages on it or in it.

Advertising messages placed in and around sports facilities go as far back as any of us can remember. Baseball fields, from the Little League to the Majors, are replete with adadorned fences. It is only recently, however, that a market has emerged for corporate identification of the whole facility and, together with that, the willingness of facility owners to give up the right to name the facility in return for a fee.

What we are calling naming rights, then, arises out of a contract between a property owner and a third-party entity, usually a corporation. The facility owner gives up a portion of the total rights of ownership—the right to name the facility. The corporation receives the right to display its name and have the facility identified with it for a period of time. While a corporation's trademark is involved, this is not a license of the trademark, since the facility owner gets no trademark rights from the transaction. It is more akin to a lease of real estate and represents a new form of exploitation of land and structure (somewhat analogous to a large billboard). Hence, many value elements of the transaction are similar to those found in other types of real estate deals—location, size of the market, tenant quality (in this case teams and events), attractiveness of the structure, and so forth. There are other considerations as well, making the naming rights lease somewhat unique. The publicity opportunities in the case of a stadium or convention center spread far beyond the visual impressions of passers-by. The advertising and media coverage of events held in the facility necessarily contains the location (name) of the venue, leveraging the advertising attractiveness.

As a result of a naming rights contract, the facility owner receives:

- Compensation for the naming rights in the form of an upfront payment and/or annual payments for some period of time
- A contractual income stream that may help finance renovation or new construction expenditures
- If the owner is a governmental entity, income to offset taxes or to effect a reduction in the amount of bonded debt

On the other side of the transaction, the corporate entity receives:

- The public relations benefit of being a good corporate citizen—perhaps acting to help retain the home team (especially in the case of a government-owned facility)
- The associated benefits of a prominent advertising program on-site, including signage, employee uniforms, programs, and product or service displays
- The benefits of an advertising program reaching beyond the site, through radio and television coverage of the events held there
- Luxury seating and parking for the entertainment of its clients and customers, as well as season tickets and the right to conduct tours
- A wide range of concession rights including pouring rights, operating or licensing food and/or beverage concessions, operation of restaurants or bars

- The right to exclusively provide services related to the company's business, such as automated teller machines, telecommunications services, or electronic products
- Advertising and marketing rights connected with the members and staff of the resident sports team(s)

As with any contract, we would expect to find economic benefits for both parties to the agreement. As in any valuation, the quantification of those economic benefits is the keystone.

(i) Valuation of Naming Rights. In any appraisal, it is critical to have a clear understanding of the specific rights being appraised. This is no less true with respect to the property that we are calling naming rights. We need to establish which side of the transaction is our focus. Are we estimating the market value of:

- A potential naming rights transaction? That is, are we estimating the probable price that a contemplated transaction will bring?
- A consummated naming rights contract from the standpoint of the corporate lessee?
- A consummated contract from the point of view of the facility owner/lessor?

When we are estimating the probable price of a transaction, we are weighing the economic benefits to both parties and estimating how they will be divided between them. In valuations such as this, we often go to the marketplace seeking benchmark information. It is analogous to a lease of office space, which is a common occurrence in the real estate marketplace. The lessor gives up the right of occupancy for some period of time in exchange for lease payments. The amount of those lease payments is, in general, dictated by the marketplace because there is usually competitive office space available in a given market, and lessees have the choice of alternative leases or the option of constructing a building themselves for their own occupancy.

With respect to naming rights, the marketplace is not nearly so informative. There are usually only one or two naming rights opportunities of equal stature in a given metropolitan area. Because of the extreme variety of the terms associated with a naming rights agreement, the value of a naming rights transaction in Dallas a year ago may not be very informative as to an appropriate market value for a naming rights agreement in New York currently.

For the facility owner, the income from the licensing of naming rights (and perhaps that from ancillary rights granted as part of the naming rights contract) represents the quantification of the economic benefit. The net present value of that economic benefit is the basis for quantifying value.

Estimating the value of a naming rights contract from the standpoint of a corporate lessee represents a much more complex situation. The value of naming rights is going to depend entirely upon the nature of the rights being transferred. The value of the naming rights contract will depend on the extent to which it is *favorable* to the corporate lessee.

(b) COST APPROACH. As we discuss in later chapters, the cost approach is rarely appropriate for intellectual property assets, and that also holds true in the case of a naming rights contract. The cost of putting together such a contract and the cost of the facility involved are both irrelevant to the value of the deal. We say this even though it is not unlikely that the cost of renovating or constructing the facility may well have entered into the naming rights negotiations. That is, the facility owner, especially if it was a government-owned property, may well have "backed into," the payments that would be

required to support an amount of debt that it was seeking for the renovation or construction cost. The amount of that annual payment, matched against the payment terms of the bonded debt, may well have heavily influenced the amount that the entity was seeking from the outside corporation for naming rights. This is coincidental to the question of value, however, and typically the value associated with a naming rights contract would have nothing to do with the cost of negotiating it or the cost of the facility or renovations that may have triggered the discussion.

It may be, however, that no corporation will come forward for such a transaction at the hoped-for expense. The owner must therefore scale back the expectations. There are, therefore, some limits on the amount that a corporate sponsor would be willing to pay, defined by the Principle of Substitution. That is, the corporation must weigh the cost of a naming rights contract against the cost of advertising and public relations benefits that could be obtained by other means. If the owner's construction costs were unusually low (or perhaps zero in the case of a preexisting but unnamed facility), the owner is certainly not going to set rents at below-market levels, even though they might be sufficient to provide a reasonable return on the investment.

(c) MARKET APPROACH. As we touched on previously, the marketplace transactions for naming rights have been very uneven, primarily because in the last few years there has been a rapidly surging interest in the leasing of naming rights by corporations and in the willingness of facility owners to lease naming rights. In addition, just as is the case with any intellectual property–licensing activity, there is an almost infinite variety of terms and conditions associated with a naming rights transaction. Because of that, it is very difficult to observe value benchmarks in the marketplace.

It is probable that there would be some relationship between team value and the price of a naming rights contract at the team's home facility. This would seem logical in that team value (if the data are available) would be related to the team success, the spectator size of its home field, and the size of the media market in which it performs at home. It seemed likely that these factors would also be elements of value for the naming rights in the facility. It would also seem reasonable that a two-team facility would yield more valuable naming rights, though these facilities are becoming more and more rare. Our analysis reveals that, not surprisingly, minor league facilities command lower naming rights contracts than major league ones.

We also observe that the range of deal values has widened over time. This would indicate that the contract terms vary considerably and that corporate lessees are looking carefully at the specifics of a naming rights contract and the potential economic benefits, rather than being driven by the market and seemingly escalating prices. We also wonder whether the prices of new deals are beginning to level off as the prices of naming rights deals approach the level of alternative advertising and public relations programs.

Whether or not we are correct, the message is clear that naming rights contracts must be valued based on their particular facts and circumstances. There are no overriding market data that can provide solid benchmarks.

(d) INCOME APPROACH. If our assignment is to value a naming rights contract from the standpoint of the facility owner (or other entity that has the right to collect all or a portion of the naming rights income stream), the task is fairly straightforward. There is a contractual agreement in place that calls for the payment of a certain amount of income annually from the appraisal date into the future. Some decisions must be made relative to the risk that the lessee of the naming rights will not be able to honor that contract. Some

judgment also must be made if there are options in the naming rights contract that permit the lessee to alter or cancel the contract based on certain events, such as the gain or loss or a major league team (or player) using the facility, physical damage to the facility, and so forth. This becomes a discounted cash flow exercise, which is described elsewhere in this book. The resulting value, of course, is the market value of the naming rights contract to the facility owner.

Much less straightforward is the valuation of a naming rights contract from the perspective of the corporate lessee. That is, the value will be measured by the extent to which the economic benefits (primarily of an enhanced advertising program) exceed their cost, as measured by the cost of equally effective advertising obtained in an alternative way. We believe that this is a controlling factor. A corporation "leases" naming rights primarily for the advertising benefit that they will provide. There is a myriad of alternative advertising and public relations opportunities available. While each naming rights opportunity is unique, the overall objective (i.e., delivering advertising messages) is available by other means. Therefore, it seems reasonable to assume that the economic benefit that the lessee of naming rights would be willing to hand over to a facilities owner is likely going to be something less than the cost of equivalent advertising and public relations activities. To be sure, while competition for the naming rights to a facility or even corporate culture or management egos may drive the price near to or equal to the cost of alternative advertising, business logic would certainly suggest that the price would not go beyond that.

There can be other benefits in addition to those associated with advertising, of course, but in general we are seeking the difference between obtaining those benefits as part of the naming rights contract and obtaining them in some other way.

In applying the income approach, it is obvious that a simple discounted cash flow calculation would, on the surface, yield a negative result. The corporate lessee would be expected to experience an outflow of cash equal to the anticipated payments to the facility's owner under the contract. The offset to that, of course, is the present value of the costs that would be borne by the corporate lessee to obtain similar economic benefit by other means. These would be expenditures for advertising, public relations programs, promotion expenses, client entertainment expenses (at "retail"), test marketing programs, and the like. Each element of benefit provided by the naming rights contract should be analyzed as to the price at which it would be obtainable elsewhere. The difference between these two present value calculations indicates the value, to the corporate lessee, of the naming rights contract.

(e) SUMMARY. Contracts for naming rights should be viewed in the context of "favorable contracts" as they are discussed elsewhere in this book. We must be careful to define the particular rights to be valued—be they those of the facility owner/lessor or the name owner/lessee. If we are attempting to predict the market value of a transaction, we have observed that there are few, if any, benchmarks from the marketplace. When this is the case, we must base the conclusion on our estimate of the economic benefits to be enjoyed by both parties, and how they would reasonably divide them.

CHAPTER 4

INTANGIBLE ASSETS AND THE BUSINESS ENTERPRISE

The valuation of intangible assets or intellectual property always must be guided by the consideration as to whether that property achieves its highest and best use in combination with an aggregation of other assets or as an individual unit. While the purpose of this book is to focus on the valuation of intangible assets and intellectual property, these assets can be fully understood only within the context of the business enterprise. This is so because it is typically within that context that they attain their highest and best use and therefore their highest value.

4.1 THE BUSINESS ENTERPRISE

Every business enterprise, from a pushcart vendor of hot dogs on the street to the largest multinational corporation, comprises three basic elements: monetary assets (net working capital), tangible assets, and intangible assets. These are the elements that constitute a business, and it also can be said that their aggregate value equals the value of the business enterprise. This is illustrated in Exhibit 4.1.

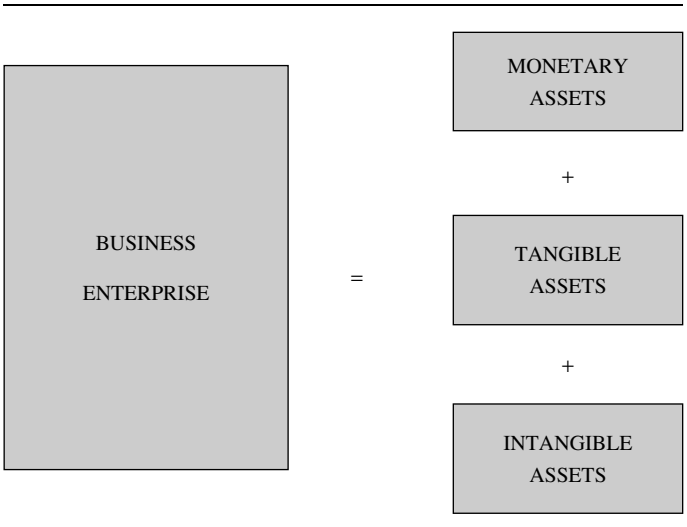

EXHIBIT 4.1 BUSINESS ENTERPRISE ASSETS

(a) MONETARY ASSETS. Monetary assets, also referred to as net working capital, are defined on a company's balance sheet as current assets less current liabilities. Current assets include:

- Cash
- Short-term investments, such as marketable securities
- Receivables from all sources, less reserves
- Inventories, including raw materials and work-in-process finished goods
- Prepayments

Current liabilities include:

- Accounts payable
- Current portions of long-term debt
- Income taxes and other accrued items

In most cases, there is an excess of current assets over current liabilities, and so net working capital is a positive amount. In the most simplistic scenario, this can be thought of as the "cash in the till, necessary for the workings of the business." Certain businesses, however, are able to operate quite satisfactorily with an excess of current liabilities, or negative net working capital. These are usually businesses in which the customers pay in cash (such as a restaurant) so there is no delay in collections, or in which customers pay in advance for services rendered.

The elements of monetary assets appear on the financial balance sheet of a business. If the financials are audited, these elements are subject to auditor scrutiny. Reserves may be created to reflect, as an example, accounts receivable for which collection is doubtful, or for inventories of materials that are unlikely to be used. These accounts, therefore, tend toward conservatism, and, in our experience, it is not unreasonable to accept balance sheet amounts as commensurate with market value. On occasion, however, it may be necessary to appraise some of these accounts independently, particularly if the entity's financial statements are not subject to audit.

(b) TANGIBLE ASSETS. Tangible assets are usually shown on the balance sheet as "Plant, Property, and Equipment." Typically included in this asset category are the following classifications:

Land

Land improvements

Paving, fencing, landscaping, yard lighting, sewerage, fire protection

Buildings

Building construction and services

Improvements to leased property

Structural improvements, building services, power wiring, piping

Machinery and equipment

Machinery, power wiring, plant piping, laboratory equipment, tools

Special tooling

Dies, jigs, fixtures, molds

Drawings

Office furniture and equipment

Licensed vehicles

Construction in progress

The valuation of tangible assets is not a subject of this book, nor does it lend itself to a brief explanation other than to note that the cost, market, and income approaches, as described herein, are applicable. Since tangible assets are an integral part of a business, an assignment to appraise certain intangibles must include some consideration of their value. In this book, when a tangible asset value is necessary in an explanation, we often use amounts from an accounting balance sheet with or without some adjustment. We do this as a reasonable substitute for a tangible asset appraisal, not in the belief that this technique is the equivalent of such an appraisal. The dollar amounts on a financial statement for tangible assets ("plant, property & equipment") represent the original *cost* of assets over, perhaps, many years past. Such amounts may or may not be commensurate with current *values*, even after reflection of accounting depreciation (capital recovery). In fact, when tangible assets are specialized in their use or otherwise unusual, the need for a specific appraisal is especially indicated.

(c) INTANGIBLE ASSETS. Intangible assets and intellectual property usually do not even appear on a company's balance sheet, but they are present in any case. This asset category might include an assembled workforce, trademarks, contracts, patents, designs, customer lists, accounting and operating systems and records, supplier/distributor relationships, and goodwill. Chapter 2 is devoted in its entirety to a description and classification of intangible assets and intellectual property.

We can add another element to the previously illustrated business equation by stating that the value of a business enterprise is also equal to the value of its invested capital, as shown in Exhibit 4.2.

This concept can be made intuitively comfortable if we imagine the start-up of a business enterprise. At the starting point, the value of the business is represented by the

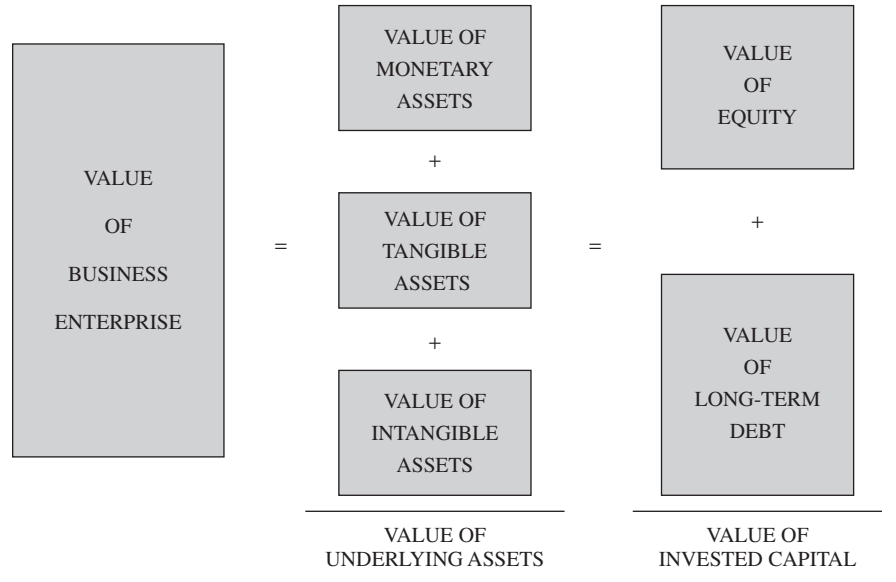

EXHIBIT 4.2 BUSINESS ENTERPRISE EQUATION

money that has been collected to purchase the business assets needed. Typically this money comes from investors who buy common stock (equity) and investors who make loans to the business (debt). Thus the total dollars of equity and debt constitute the totality of business assets.

After the start-up, the managers of the business convert the investors' dollars into other assets with the intent of creating a portfolio that will make a profit (providing investors with a return *on* their investment) and that will maintain (or increase) the value of the assets (providing investors with a return *of* their investment). This process is illustrated graphically in Exhibit 4.3.

The investors, in the meantime, have certain rights to the assets of the business, which are fluctuating in value according to the success of the enterprise. The rights of equity and debt investors are different. As long as the business is viable, the value of the debt investment is about equal to the unpaid balance (absent interest rate gyrations). The value of the equity investment floats up and down with the fortunes of the enterprise (or with the stock market's evaluation of those fortunes). So even after the start-up phase, the equation depicted in Exhibit 4.2 is applicable.

(d) ASSET PORTFOLIO. It is useful to think of a business enterprise as a portfolio of assets. In the investment world, the portfolio concept describes an aggregation of different types of investments put together for the purpose of reducing overall risk. As an example, let us consider a $50,000 investment consisting of the securities listed in Exhibit 4.4.

As shown, the overall rate of return of this portfolio of investments is 8.1%. Investment theory tells us that the risk of achieving that rate of return with this portfolio is less than that of achieving it with a single security yielding 8.1%.

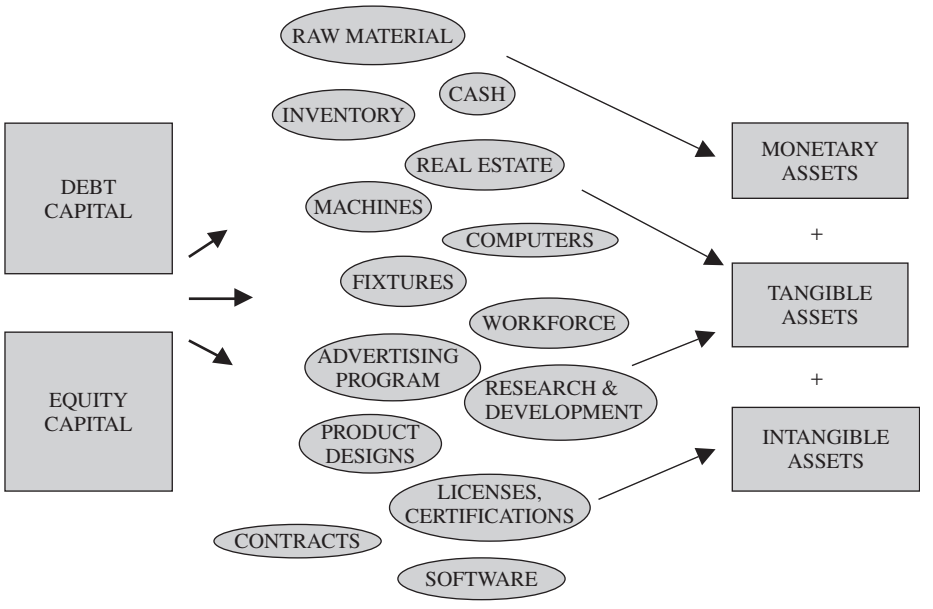

EXHIBIT 4.3 FLOW OF FUNDS IN A START-UP BUSINESS

Investment Type	Amount $	Return %	Return $
Certificate of Deposit	$ 5,000	2.5%	$ 125
Government Bond	6,000	5.0%	300
Corporate Bond	14,000	6.8%	952
High-Yield Bond	15,000	9.9%	1,485
Common Stock	10,000	12.1%	1,210
Portfolio	$ 50,000		$ 4,072

Portfolio Return Rate = $4,072/$50,000 = 8.1%

EXHIBIT 4.4 INVESTMENT PORTFOLIO

The assets of a business are not usually accumulated in order to reduce overall risk but rather because they are needed to accomplish a set of tasks. Once assembled, however, business assets have many of the same characteristics as an investment portfolio, and it is useful to think in these terms. Exhibit 4.5 illustrates this equation between investment and business asset portfolios.

Just as the elements of a financial portfolio have different risk and return characteristics, so do the assets within a business enterprise. This is illustrated in Exhibit 4.6.

Asset Type	Value $	Return %	Return $
Monetary Assets	$ 8,000	3.9%	$ 312
Tangible Assets	24,000	6.8%	1,632
Intangible Assets	18,000	11.8%	2,124
Business Enterprise	$ 50,000		$ 4,068

Business Enterprise Return Rate = $4,068/$50,000 = 8.1%

EXHIBIT 4.5 ALLOCATION OF BUSINESS ENTERPRISE RETURN

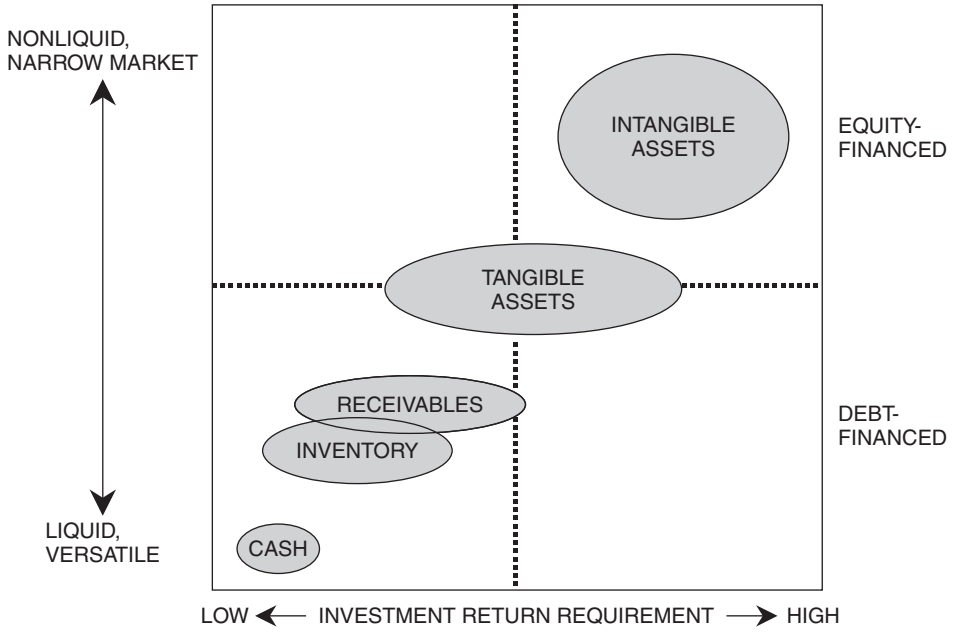

EXHIBIT 4.6 ASSET RISK AND RETURN CHARACTERISTICS

This graph illustrates the relationships among several types of assets and their financial characteristics. Along the abscissa the investors' required rate of return ranges from low (little risk) to high (significant risk). The right ordinate indicates the type of financing that typically would be available to create these assets, and the left ordinate indicates a range of asset characteristics. Into the matrix are placed several classifications of business assets, and we can observe how they differ with respect to their financial and investment characteristics.

With these concepts in mind, it can be shown that the profits of an enterprise can be allocated to the different asset categories that compose the enterprise (Exhibit 4.7). The amount of profits is directly related to the existence of the different asset categories. Companies lacking any one category of assets would have different profits.

The total earnings of a business are derived from exploiting its assets. The amount of assets in each category along with the nature of the assets, and their quality, determines the level of earnings that the business generates. Working capital, fixed assets, and intangible assets are generally commodity types of assets that all businesses can possess and exploit. A company that possesses only these limited assets will enjoy only limited amounts of earnings because of the competitive nature of commodity-dominated businesses. A company that generates superior earnings must have something special—intellectual property in the form of patented technology, trademarks, or copyrights. The distribution of the earnings among the assets is primarily driven by the value of the assets and the investment risk of the assets.

The total earnings of the company (T_e) are made up of earnings derived from use of monetary assets (M_e), earnings derived from use of tangible assets (TA_e), and earnings derived from use of intangible assets (I_e):

$$T_e = M_e + TA_e + I_e$$

These relationships are shown in Exhibit 4.7. We also show the fact that the total earnings also provide the return on the invested capital and on the whole portfolio of business enterprise assets.

The earnings associated with use of intangible assets and intellectual property are represented by I_e. This level of earnings can be subdivided further into earnings associated

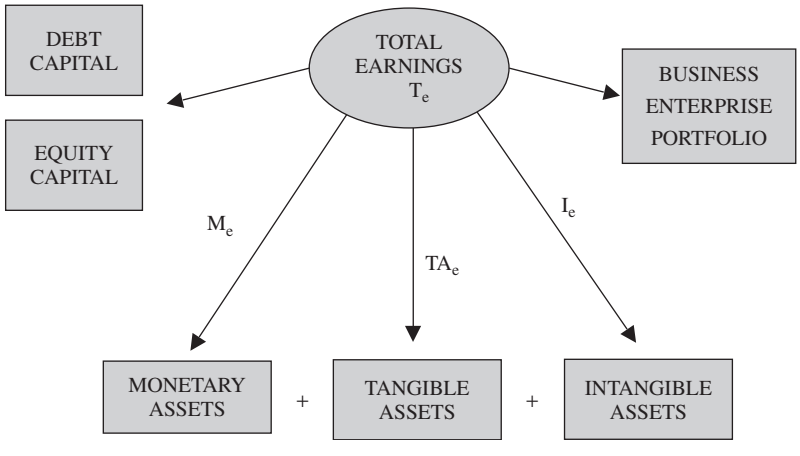

EXHIBIT 4.7 ALLOCATION OF ASSET EARNINGS

with the use of the intangible assets (IA_e) and earnings associated with the use of intellectual property (IP_e) as shown:

$$I_e = IA_e + IP_e$$

If we are interested in isolating the income associated with one element of intellectual property, for example, this can be accomplished in a subtractive process, as illustrated in Exhibit 4.8.

In addition to assisting in the valuation of intellectual property, this framework is useful in deriving royalty rates at which the subject intellectual property can be licensed. Specifically, a company lacking intangible assets and technology would be reduced to operating a commodity-oriented enterprise where competition and lack of product distinction would severely limit the potential for profits. Conversely, a company possessing proprietary assets can throw off the restrictions of commodity-oriented operations and earn superior profits. When a portion of the profit stream of a company is attributed to its proprietary assets, an indication of the profits contributed by the existence of the proprietary assets is provided, and a basis for a royalty is established when the attributed profits are expressed as a percentage of the corresponding revenues.

Earnings Attributed to Specific Technology/Revenues = Royalty Rate

(e) COST AND VALUE. We have made several references to the balance sheet of a business, and here again the balance sheet is a reference structure for describing valuation techniques. There is good reason for this relationship, in that the balance sheet represents the summation of all the historical transactions of the business. The balance sheet does

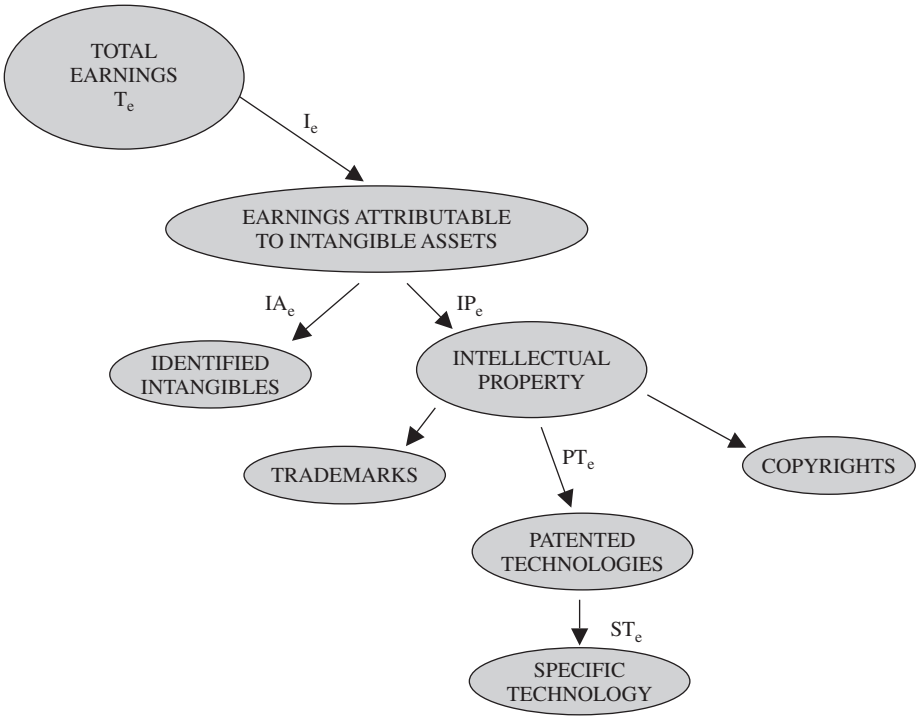

EXHIBIT 4.8 ALLOCATION OF EARNINGS AMONG INTANGIBLE ASSETS

not record value, however; it records cost. Therefore, what is recorded on the balance sheet or what is included in it or excluded from it is not determinative in a valuation. Exhibit 4.9 illustrates a balance sheet as it might appear to an investor. The items inside the solid lines are the historic costs recorded for accounting purposes.

We must remember that there is an implied marketplace for a company's equity. In the case of a public company, the shares of stock constituting equity are typically traded on an exchange, creating an actual market. In the case of a nonpublic company, the market is a private one. These markets are separate and distinct from the accounting balance sheet. If the company's assets have been invested and managed profitably, the market value of equity might well be higher than the amount recorded on the balance sheet. The reverse could be true, as well.

The dashed lines in Exhibit 4.9 illustrate how this would appear to an investor if we assume that the market value of equity is greater than its book amount. This representation shows the most common difference between a balance sheet of cost versus one of value—the increase in common equity value perceived in the marketplace is attributed to the value of intangible assets and intellectual property. This is a simplifying assumption, but a reasonable one in that it is unlikely that the value of monetary and tangible assets would appreciably increase over their book amounts, even in a highly successful enterprise. All the assets of a business can be valued, and those values can be either above or below their recorded cost, to be sure, but the most likely scenario is that enhanced earnings (which drive the enhanced market value of equity) are the result of profitable deployment of intangible assets and intellectual property.

(f) VALUING THE BUSINESS ENTERPRISE.

(i) Sum-of-Assets Technique. The valuation of a business enterprise can be a complex undertaking, especially if the common stock of the enterprise is not traded on an exchange. There is a large body of knowledge and many text resources available to assist the reader when a business valuation is necessary. In the following sections, we provide an overview of the appropriate valuation methodologies.

This balance sheet restatement approach is one of the ways that a business enterprise can be valued. An appraiser would most likely call this the sum-of-assets technique. The assumption is that when each of the elements of working capital and tangible and intangible

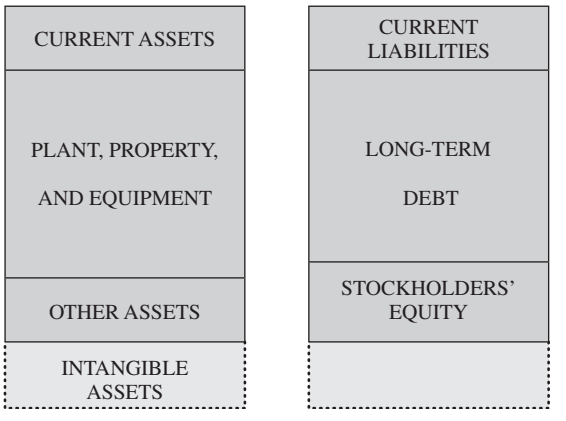

EXHIBIT 4.9 BALANCE SHEET AS IT APPEARS TO AN INVESTOR

assets is individually valued, their sum represents the value of the enterprise. Recalling the previous section, we can relate this to the cost approach as it might be applied to an entire business (what it could cost to replace all the assets of a going business).

This approach is also analogous to the five steps involved in the start-up of a business:

1. The start-up entrepreneur first accumulates cash, in the form of equity and/or debt.
2. The cash is then converted to property or property rights. Typically this is the process of renting a place of business and purchasing store fixtures, manufacturing machinery, vehicles, and so on. At this time, an inventory of raw materials or finished goods would be purchased.
3. Some of the cash then would be used to purchase services in the form of advertising and to hire employees. Other expenditures are made to establish business relationships—for example, with a bank, with accounting advisors to set up systems, and with an attorney to perform legal services to organize the business entity and to obtain the proper licenses, permits, and so on.
4. At this point, all of the elements of a going concern have been assembled, and sales to customers can begin.
5. When a satisfied customer returns for the second time, or when a new customer arrives on the recommendation of a previous one, then patronage is established and customer relationships or goodwill begins to exist.

An appraisal of this start-up business would present some unique challenges. One logical method would be to appraise the individual assets—probably by a cost approach, since the assets would have been so newly created. The indicated value would be comparable to the owner's investment if the purchases of goods and services were wisely made.

The sum-of-assets technique can be used for an established business as well. The appraiser might utilize the cost, market, or income approach,[1] as appropriate, for all of the individual assets that investigation shows are part of the business.

(ii) Testing the Result. The appraiser would then have to address the question of whether the result indicated by this technique is an appropriate indicator of value for the enterprise. The value of this business could be far greater than the sum of individual asset values if, for example, any of the following holds true:

- The owner has chosen a superior location.
- The competition turns out to be weak.
- A large share of the market is captured with a new, patent-protected product.
- Superior service is delivered, resulting in loyal patronage.
- Unique manufacturing techniques reduce costs and increase profits.

Obviously these are not the only attributes of a successful business, but note two common elements: the presence of these attributes results in (1) increasing value of intangible assets and (2) higher than normal profits.

The enterprise also could turn out to be of considerably less value than the sum of individual asset values if each of the previously noted attributes is reversed. Again, there would be a diminution of intangible asset value and reduction in profits, resulting in a lower business enterprise value. In a severe situation, that reduction could be to the level

1. These three valuation techniques are discussed in detail in Chapter 7.

of asset liquidation value. Imagine a start-up that never gets off the ground. The liquidation of the newly purchased assets rarely brings as much as their recent cost.

The sum-of-assets technique, no matter how carefully applied and no matter how accurate the individual asset values are, is never in itself a conclusive indicator of value for a business enterprise. The appraiser always must analyze whether the earning capability of the business is sufficient to support those values. This is a confirming step that must be taken. To paraphrase a well-known axiom: "The sum of the parts (assets) is not necessarily equal to the whole (business enterprise)."

You may well be asking why a discussion about the proper methodology for valuing a business enterprise and its assets begins with a technique that has so many shortcomings. This is so because, in our experience, this point is where most nonappraisers begin: with a so-called cookbook approach. Take one real estate appraisal, add to it an equipment valuation, fold in the inventory from the balance sheet, mix well with a pinch of customer list and a dash of goodwill, and presto—a business enterprise value. The variations are endless, but all proceed from the same, usually faulty, assumption that the sum of the parts, measured individually, is unfailingly equal to the whole.

(iii) Income Approach. The income approach, when applied to a business enterprise, begins with a projection of the income-producing capability of the business. It is based on the assumption that the value of the enterprise is dependent on the ability of all the assets to earn a reasonable return.

We cannot emphasize enough the importance of the relationship of value and earnings. The raison d'être of business assets is to provide a return on the investment required to obtain them. Exhibit 4.10 illustrates the interaction among the value of an enterprise, its earnings, and the value of its tangible and intangible assets.

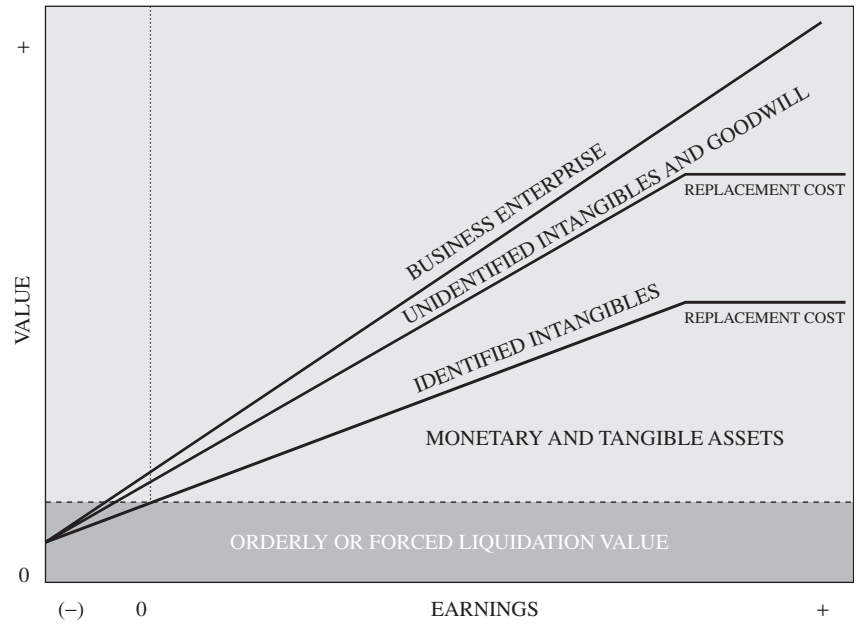

EXHIBIT 4.10 THE INTERACTION AMONG THE VALUE OF AN ENTERPRISE, ITS EARNINGS, AND THE VALUE OF ITS TANGIBLE AND INTANGIBLE ASSETS

At the left end of the line denoted "Business Enterprise," the business is losing money, and the assumption is that it will continue to do so. To avoid further loss, the owner would initiate the forced liquidation of assets. Stated another way, the assets should be converted into cash, which can be deployed elsewhere to maximize economic value.

When the line emerges from the liquidation value shading, the business is breaking even. That is, sales revenue is equal to operating expenses, but no return, or a substandard return on investment, is being earned. The owner therefore should liquidate, but has the time to dispose of fixed assets in an orderly fashion, and perhaps obtain a higher price.

At the line's center, the enterprise has adequate earnings, and one would therefore expect to find a full complement of tangible and intangible assets with no significant amount of economic obsolescence reflected in their value.

At its upper right, the line shows that the business is highly profitable, and tangible assets would reflect value in continued use to a maximum of their replacement cost, as would identifiable intangible assets. The enterprise has significant goodwill or other intangible value, supported by its superior earnings.

Each of these situations presumes that earnings will be stable at the level represented along the abscissa. The relationships are not precisely fixed when the earnings picture is expected to change. In the example of the start-up business described previously, one would not immediately assume that the business has no value because it has no earnings of the moment. That is why we stress that *earnings capability*, and not *actual earnings*, is the key.

Obviously, Exhibit 4.10 is a representative diagram and not intended as a visual valuation formula from which one can determine tangible and intangible asset values. In actual practice, the lines are not always straight, and the no-value point for all assets is not the same. One should not assume, for example, that intangible assets have no value in liquidation.

This is an area in which the appraiser can be more flexible than an accountant, who must reflect the enterprise on a balance sheet as a "snapshot" frozen at a moment in time. While the appraiser is free to develop projections of income, there must be a calculation methodology to quantify the result of those projections into an indication of value.

(iv) Capitalization of Income. The theory underlying the income approach is again based on a measurement of the present worth of the economic benefits of ownership. In the case of a business enterprise (with the seeming exception of a sports franchise or daily newspaper), the benefits of ownership are in the form of future profits. The present worth of those future profits is the value of the enterprise. An income stream and a capitalization or discount rate that recognizes the risk of achieving the income are required.

The following chapters contain a number of detailed examples of an income approach.

(v) Adjustments to the Income Stream. The first step in the income approach, when applied to a business enterprise, is to estimate the level of earnings that the enterprise is capable of producing in normal operations. This capability is not necessarily what the business is actually earning at the time of the appraisal. Adjustments may be made to a current income statement, as indicated in Exhibit 4.11.

In most cases, adjustments to revenues and expenses are minimal or, in the case of a publicly held corporation, may not be made at all. Adjustments of this kind very often are made when analyzing a closely held business. The owner of such an enterprise is often not at all concerned with showing a profit on the bottom line but desires instead to

Income/Expense Item	Adjustment
Revenue	Increases to reflect new products, acquisitions, or price increases
	Decreases as products decline or market share is lost
Cost of Goods	Adjustment for changes in inventory accounting method
	Reductions in manufacturing costs as product matures
	Changes due to supplier prices
	Increases due to new labor contract
Operating expenses	Adjustment for excessive owner compensation
	Adjust for unusual research or development expenses
	Adjust depreciation expense for new plant additions/retirements or new depreciation base of acquirer
	Increase selling expense for new product introduction
	Remove nonrecurring items such as strike losses, reorganizations, expansion costs, gain/loss on property sales, write-off, etc.
Other expenses	Adjust interest expense to reflect normal capital structure
	Remove income from nonoperating assets and make balance sheet adjustment
Taxes	Adjust to statutory rate when unusual and nonrecurring deductions are shown

EXHIBIT 4.11 INCOME/EXPENSE ADJUSTMENTS

minimize taxes. Owner's compensation often takes the form of a high salary rather than dividends, and there are often substantial perks in evidence. In another case, a business can be squeezed for every possible dollar of earnings in order to make it attractive for sale. Purchases of needed equipment or maintenance of existing machinery may have been deferred in order to enhance earnings.

All of these things would appear differently in a professionally managed, publicly held company. No value judgment is made on the relative skill or efficiencies of these two scenarios; only the objectives are different.

Whether or not the financial statements are audited has no bearing on the need for this analysis. It is not the auditor's responsibility to determine an appropriate salary for the owner, the extent to which an owner's salaried relatives really work in the business, whether three Mercedes-Benz automobiles and a Florida condominium should be on the books, or whether equipment maintenance is properly done. This is not to say that the auditor does not know or have an opinion about these things, but only that they are not normally enumerated as part of financial statements.

One needs to know, however, what the business is capable of earning on a sustainable basis. One cannot simply accept what the most current income statement shows. To many readers, this may seem presumptuous to the extreme. It is, however, no different from when the situation in which a real estate appraiser concludes the highest and best use of a property regardless of how the present owner is utilizing it. It is also not an entirely capricious undertaking; the ground is nowhere near as swampy as one might think.

(vi) Calculation of the Income Stream. For the valuation of a business enterprise as defined here, most analysts will use net cash flow as the relevant income stream. Net cash flow is defined as:

Earnings before interest and taxes

Less: income taxes at the statutory rate

Plus: depreciation and other noncash expenses

Less: capital expenditures

Less: cash required to increase net working capital

Plus: Cash that might be extracted from net working capital

The use of debt-free net cash flow eliminates the effect of the way the business is presently financed and taxed (by substituting statutory tax rates) and also recognizes the future cash outlays that may be necessary to achieve the forecasted earnings. Net cash flow is calculated for the period of the forecast. Obviously cash flow is not expected to cease at the end of the forecast period, and therefore the value of the ongoing business must be reflected. This is the reversion of the property and is analogous to a landlord regaining possession of a property at the end of a lease. When the reversion takes place, it is assumed that the net cash flow in the terminal year of the forecast will continue in perpetuity with depreciation equal to capital needs, so that further infusions of cash will not be necessary.

The underlying assumption at the reversion year is that product cycles or market shares have matured and that future cash flow growth is expected to be at a steady and sustainable rate.

Capital additions are estimated based on specific plans for new plants to add capacity or new products, on an analysis of present plant capacity, or on more general measures, such as the historic ratio of plant investment per dollar of sales in the subject company or in the industry. Additions to net working capital usually are based on working capital turnover ratio analysis.

(vii) Rate of Return Determination. The appropriate rate of return to utilize in the capitalization of net cash flow is a weighted average cost of capital comprising the after-tax cost of debt and equity. This is called by some the "band-of-investment" method. The components of this calculation are:

- An appropriate capital structure, that is, the relative proportions of debt and equity
- Cost of debt capital
- Cost of equity capital
- Income tax rate

The most difficult components are the capital structure and the cost of equity capital. Both of these elements typically are obtained from analyses of comparable companies in the same industry.

In Appendix A we present several methods of analysis that can assist in the determination of an appropriate cost of equity capital. They include:

- Dividend growth model
- Build-up method
- Capital asset pricing model
- Arbitrage pricing theory
- Venture capital approach

The cost of debt capital can be estimated more directly by seeking the market-derived cost of debt for similar-risk enterprises.

(viii) Market Approach. As noted above, the income and market approaches are not completely distinct from one another. The income approach uses data from the market to

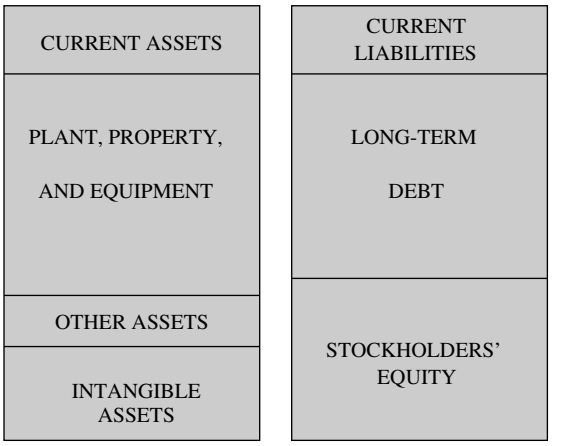

EXHIBIT 4.12 BALANCE SHEET AS IT APPEARS TO AN ANALYST

determine a rate of return and a capital structure, and the market approach is based on an analysis of investor decisions, which themselves most probably were founded on an income capitalization.

To utilize a market approach in the valuation of a business enterprise, an appraiser would investigate and analyze the reported sales of other business enterprises. If he or she were extremely fortunate, one or two might be found and be similar enough to the subject to be of use. To be useful in the appraisal process, sales data must provide a high degree of comparability. Otherwise the adjustment process becomes so extreme that it renders the exercise worthless.

Sometimes rules of thumb develop when there is an especially active market for a particular type of business. During recent years, there has been a relatively active market for cable television and cellular telephone systems. There was enough similarity in the tangible property and in the rates and operating expenses to make meaningful comparisons and to use these market data. The fair market value of a cable system often was expressed on a per-subscriber or homes-passed basis. This situation is, however, unusual, and seldom can this direct market approach be used to value a business enterprise.

Exhibit 4.12 shows a balance sheet as it might be viewed by an analyst. The sum-of-assets technique previously described addresses the value of the left side of that balance sheet. Since it is a balance sheet, the value of the enterprise also can be determined if one can value its right side. This is the "stock and bond" or "stock and debt" technique. One can therefore value the common equity of an enterprise together with the liabilities of the business and obtain an indication of business enterprise value. Usually the securities of a business are appraised individually for specific purposes, such as for a stockholder's estate, but the techniques are the same as would be used to value all of the securities of an enterprise and thereby the enterprise itself.

4.2 SUMMARY

This chapter has presented background relative to the valuation of a business enterprise and the relationship between that value and the values of underlying assets. This is important groundwork for later discussions, because intangible assets and intellectual

property find their highest value as a part of an aggregation of assets that compose such an organization. It is crucial to understand the relationship of the value of the assets and the value of the enterprise in which they reside. The sum of the parts cannot be greater than the whole unless there exists the relatively rare situation in which the enterprise is grossly mismanaged to the extent that individual assets could be more profitably exploited outside the business. If the sum of the parts is considerably less than the whole, then serious questions must be raised about the identification and the values of the parts or the value assigned to the whole.

Not everyone shares this view. Some feel that it is possible to value intangible assets and intellectual property directly, without any reference to the value of the business enterprise and the relative values of the other assets that compose it. We do not agree, and we hope that our reasons are convincing to the reader.

CHAPTER 5

ACCOUNTING ISSUES

Our consideration of intangible asset values begins with a discussion of accounting and tax matters as they relate to intangible assets and intellectual property. This might seem premature, but most of the valuation "technology" relating to valuing these assets came about as a result of taxpayers' desire to maximize their benefits under the U.S. tax code during the "merger mania" that preoccupied U.S. corporations in the 1960s. Even before that, early attempts to account for business transactions came face to face with the unique characteristics of intangible assets and their resistance to quantification. These issues resulted in some of the earliest writings on the subject, and it is useful to review these as background to our later discussions.

Another reason to begin with background in accounting principles is that many immediately turn to a company's financial statements as a source of asset value information. We must examine the assumptions underlying these statements in order to be able to understand to what extent they are useful in the valuation process.

Intangible assets and intellectual property are present in every business enterprise. Many of these assets, such as patents, trademarks, and copyrights, exist as a result of the operation of a complex body of law. There are many excellent references available to the reader who wants to understand the legal aspects of intangible assets and intellectual property. Our purpose is to focus on those characteristics that affect their valuation and management. Intangible assets and intellectual property have often been referred to in accounting terms as goodwill. This chapter goes beyond explaining goodwill and identifies the fundamental characteristics of intangible assets and intellectual property and their overall contributions to the business enterprise. A discussion on estimating their value follows in later chapters.

5.1 INTRODUCTION

Every business enterprise comprises a portfolio of assets that includes intangible assets and intellectual property. For many years, this bundle of assets was simply called *goodwill.* While there seemed to be little difficulty in naming this mysterious asset, there was much more in defining it. In 1936 Frank S. Moore wrote:

> What is commercial goodwill? "Lord Eldon, the great English judge, said that it meant nothing more than the probability that the old customers will return to the old place." (*Cruttwell v. Lye*, 17 Ves. Jr., 335, 346)
>
> [Quoting Justice Joseph Story]: Goodwill may be properly enough described to be the advantage or benefit which is acquired by an establishment beyond the mere value of the capital, stock, funds, or property (meaning physical property) employed therein, in consequence of the general public patronage and encouragement which it receives from constant or habitual customers on account of its local position, or common celebrity, or reputation for skill, or affluence, or punctuality, or from other accidental circumstances or necessities, or even from ancient partialities or prejudices. (*Faust v. Rohr*, 166 N.C. 187)

> Goodwill is of value in a business world in which competition exists or may exist. If there be monopoly, if there be a single source to which consumers must go to satisfy their wants, they must avail themselves of that source even though their minds be filled with hate. . . . There is no room in goodwill for compulsion. Natural human tendencies must have free play.[1]

The subject of goodwill was examined at length by the accounting profession in *Accounting Research Study No. 10*, published by the American Institute of Certified Public Accountants. Goodwill was discussed therein as follows:

> The idea of goodwill appears to have existed long before the advent of modern business concepts. P. D. Leake mentions some early references to goodwill, including one in the year 1571 in England, "I gyve to John Stephen . . . my whole interest and good will of my Quarrell [i.e., quarry]."
>
> In the simpler business organizations of [an] earlier period, goodwill was often of a rather personal nature, attaching in large measure to the particular personality, friendliness, and skill of the proprietor or partners of a business.... As the industrial system developed and business increased in complexity, the various advantages which a business possessed and which contributed to its profitability became less personal in nature. The individual advantages which a company enjoyed became more varied, were integrated with all facets and activities of a business, and thus became less distinguishable. Manufacturing processes, financial connections, and technological advantages all assumed increasing importance. Goodwill came to be regarded as everything that might contribute to the advantage which an established business possessed over a business to be started anew.[2]

Those who have addressed the question of how to deal with goodwill for accounting purposes agree that the value of goodwill is market determined and would be commensurate with historical expenditures only coincidentally:

- In general, the value of goodwill can be measured indirectly by determining (a) the overall value of a business enterprise and (b) the net values of the various separable resources and property rights. . . .
- Market price [of publicly traded stock] provides one basis to determine the total value of the business and, therefore, a basis for the valuation of goodwill, since the values of the separable resources and property rights may be determined directly. . . .
- Other means of measurement [of the value of a nonpublic company] are possible, many involving the use of discounting and other mathematical concepts.[3]

Accountants acknowledge the obvious existence of goodwill and its enhanced earning potential, while at the same time expressing the difficulty of quantifying it in an ongoing business:

- Should a company capitalize expenditures that result in goodwill value being ascribed to the business enterprise?
- Expenditures of money and effort necessary to bring together an effective working force, to provide desirable working conditions resulting in a creative and harmonious environment; and to create a favorable corporate image may contribute to the goodwill of an enterprise. In fact, many expenditures create future earnings benefits that may be reflected in increased goodwill value.
- An attempt to capitalize and amortize the expenditures that create goodwill value would be extremely difficult if not impossible. Which particular expenditure resulted in the creation of goodwill value? In what period are income benefits received?[4]

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1. Frank S. Moore, *Legal Protection of Goodwill* (New York: The Ronald Press Company, 1936), pp. 6–8.
2. *Accounting for Goodwill—Accounting Research Study No. 10* (Stamford, CT: American Institute of Certified Public Accountants, Inc., 1968), pp. 8, 10.
3. Ibid., p. 13.
4. Ibid., pp. 71–72.

This, then, is the essence of the accountants' dilemma, which has grown more important with the passing of time. Increasingly, business enterprises depend on intangible assets and intellectual property rather than on bricks and mortar for their earning power. As this trend continues, traditional accounting statements become less and less useful to investors, financial analysts, and lenders.

The increase in business complexity has created more intangible assets. Evidence of this is the ever-increasing amount of commerce in intellectual property across corporate and national borders. Fortunately, along with this increase in commerce have come the analytical tools that enable us to identify most of the elements of what used to be a catch-all termed goodwill. It is largely an aggregation of recognizable intangible assets and intellectual property. Michael Tearney,[5] even in the 1970s, found that "the term 'goodwill' is an old term that has outlived its usefulness" and that "valuation techniques have been developed to a point where goodwill no longer need appear on financial statements. . . . All assets . . . regardless of how intangible they may be . . . should be identified, valued and disclosed." Although more than 30 years have passed since that writing, we are still debating the issues concerning the accounting treatment of intangible assets.

5.2 ACCOUNTING PRINCIPLES RELATING TO VALUATION

Although accountants were perhaps the first to recognize the existence and unique characteristics of goodwill, they have not been able to reconcile them with the requirements of bookkeeping and financial reporting. Some recent rulemaking has reduced the issues, but there are still some discontinuities, which are highlighted in the following discussion.

(a) FINANCIAL STATEMENTS. The financial statements of a business "are prepared as a medium of communication between a business entity and interested parties,"[6] each of whom has a different viewpoint. To a customer a business is a source of products or services, while to an investor a business represents an opportunity to put capital to work, for a return. Suppliers, taxing authorities, and creditors each have their unique ways of evaluating a business.

The financial statements of a business enterprise are intended to provide both a snapshot of the assets and liabilities of the business at a specific point in time (balance sheet) and a summary of the transactions during a past period that resulted in that picture (income statement). These records represent to an accountant a definitive picture of the enterprise and a basis on which to discern its direction and financial health. The two primary elements of the balance sheet are assets and liabilities. The characteristics of these elements are described in *Statement of Financial Accounting Concepts No. 6*, published by the Financial Accounting Standards Board (FASB).

(i) Assets. Accounting elements that are included on the asset side of the balance sheet have been described as follows:

> Assets are probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events.
>
> An asset has three essential characteristics: (a) it embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly

5. Michael G. Tearney, "Accounting for Goodwill: A Realistic Approach," *Journal of Accountancy* (July 1973) p. 43.
6. Ibid., p. 31.

to future net cash in-flows, (b) a particular entity can obtain the benefit and control others' access to it, and (c) the transaction or other event giving rise to the entity's right to or control of the benefit has already occurred.

The common characteristic possessed by all assets (economic resources) is "service potential" or "future economic benefit," the scarce capacity to provide services or benefits to the entities that use them. In a business enterprise, that service potential or future economic benefit eventually results in net cash in-flows to the enterprise.

Assets of an entity are changed both by its transactions and activities and by events that happen to it. [It obtains them by exchanges of cash or other assets.] It adds value to noncash assets through operations by using, combining, and transforming goods and services to make other desired goods and services. An entity's assets or their value [may be] increased or decreased by other events that may be beyond the control of the entity for example, price changes, interest rate changes, technological changes taxes and regulations [etc.].

Once acquired, an asset continues as an asset of the entity until the entity collects it, transfers it to another entity, or uses it up, or some other event or circumstance destroys the future benefit or removes the entity's ability to obtain it.[7]

These statements defining business assets are quite in line with valuation principles and apply equally to tangible and intangible assets. Accounting practice, however, seems to shrink from extending recognition to intangibles.

(ii) Liabilities. The accounting elements described as liabilities of the business have been addressed in accounting literature as:

Liabilities are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.

A liability has three essential characteristics: (a) it embodies a present duty or responsibility to one or more other entities that entails settlement at a specified or determinable date, on occurrence of a specified event, or on demand, (b) the duty or responsibility obligates [the] entity, leaving it little or no discretion to avoid the future sacrifice, and (c) the transaction obligating the entity has already happened.

Once incurred, a liability continues as a liability of the entity until the entity settles it, or another event or circumstance discharges it or removes the entity's responsibility to settle it.[8]

(b) EQUITY. Accounting principles require that the assets and liabilities of a business must be equal, so the balancing amount is the equity, or net assets, of the business. This is defined as follows:

Equity or net assets is the residual interest in the assets of an entity that remains after deducting its liabilities.

or

The equity or net assets of . . . a business enterprise . . . is the difference between the entity's assets and its liabilities. It is a residual, affected by all events that increase or decrease total assets by different amounts than they increase or decrease total liabilities. . . .

In a business enterprise, the equity is the ownership interest.[9]

The failure of accounting practices to adequately reflect intangible assets and intellectual property in financial statements nearly always understates the amount of investor equity, and in some cases, dramatically. Alfred Rappaport, an accounting professor at Northwestern University is quoted: "As we become a more information-intensive

7. *Statement of Financial Accounting Concepts No. 6* (Norwalk, CT: Financial Accounting Standards Board, 1985), pp. 10, 11, 12.

8. Ibid., pp. 13, 15.

9. Ibid., pp. 17, 20.

society, shareholder's equity is getting further away from the way the market will value a company."[10]

The accounting definitions quoted above relative to equity tend to describe balance sheet equity as some sort of *value*. It is critical to remember, however, that common equity *value* is determined in the marketplace, not in the accounting process. The marketplace for common stock is completely isolated from the accounting process once the stock is sold to investors for the first time. This difference between equity as recorded on the balance sheet and its market value is critical to the understanding of intangible asset valuation.

It is generally recognized that intangible assets and intellectual property are becoming increasingly significant to the business world and to investors worldwide. It also becomes increasingly obvious that there is a divergence between what we can observe in the financial statements of a business organization and the assets that really drive the organization's earnings.

Stock market studies have shown an increasing divergence between the market values of companies and the recorded book values of their tangible net assets. For some companies, particularly those in new markets or in the service sector, where processes tend to be labor intensive rather than capital intensive, the book values of their tangible net worth are often a small fraction of their market value.[11]

Why is there a tension between the accounting profession and others who may either oversee or use the financial statements of businesses? Wallman has addressed this question by commenting:

> Accountants are the gatekeepers of our financial markets. Without accountants to insure the quality and integrity of financial information, the markets for capital would be far less efficient, the cost of capital would be far higher, and our standard of living would be lower. The accounting profession has undertaken a function that promises society a number of benefits, including investment risk and better resource allocation. In turn, accountants have been granted a legally enforceable franchise—no company can come to the public markets without an accountant's attestation.
>
> Accounting statements must not only accurately report financial events, but must also be "useful" to their users.[12]

This, then, defines the issue. There are those who feel strongly that current financial statements are much less useful than they could be, because information about "soft" assets, such as intangibles and intellectual property, either is not contained therein or is inconsistently presented. On the other side of the question, the gatekeepers express concern about including this type of information in financial statements because:

- Financially describing intangible assets or intellectual property invariably requires forecasts.
- Definitions of intangibles are unclear.
- Methods for valuing intangibles are thought to be imprecise.
- The economic useful life of intangible assets can be unclear.

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10. Richard Greene, "Inequitable Equity," *Forbes* (July 11, 1988), p. 83.
11. Michael A. Diamond and Donald T. Nicholaisen, "Intangibles," in Frederick D. S. Choi, *International Accounting and Finance Handbook*, second edition. (John Wiley & Sons, 1997), Chapter 14.
12. Steven M. H. Wallman, Commissioner, U.S. Securities and Exchange Commission, in an address at the AICPA Annual Conference on Current SEC Developments, January 1995. According to the Financial Accounting Standards Board, *Statement of Financial Accounting Concepts, No. 1*, "Financial reporting should provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions."

These concerns have formed a fairly impenetrable wall for quite some time, especially in the United States. Cracks seem to be appearing, however, and the gatekeepers' resolve to keep self-developed intangible assets and intellectual property values off financial statements appears to be waning a bit. The Financial Accounting Standards Board (FASB) issued a proposed statement relative to using cash flow information as an accounting measure:

> Most accounting measurements use an observable marketplace-determined amount, like cash received or paid, current cost, or current market value. However, accountants often must use estimated future cash flows as a basis for measuring an asset or a liability. This Statement provides a framework for using future cash flows as the basis for an accounting measurement. . . . The objective of using present value in an accounting measurement is to capture, to the extent possible, the economic difference between sets of estimated future cash flows. Without present value, a $1,000 cash flow due tomorrow and a $1,000 cash flow due in 10 years appear the same. Because present value distinguishes between cash flows that might otherwise appear similar, a measurement based on the present value of estimated future cash flows provides more relevant information than a measurement based on the undiscounted sum of those cash flows. . . . To provide relevant information in financial reporting, present value must represent some observable measurement attribute of assets or liabilities. In future standard-setting deliberations, the Board expects to adopt fair value as the measurement attribute when applying present value techniques in the initial and fresh-start measurement of assets and liabilities.[13]

While the FASB limited this statement to issues concerning the measurement and use of cash flow information, and did not address how these measurements might be used or to what assets they might apply, we view this statement as a step in the right direction toward increasing the usefulness of financial information. Certainly the reader will recognize in it the underlying concepts of the income approach for the valuation of intangible assets and intellectual property, described in later chapters of this book.

This is perhaps the most important failing of the accounting principles that guide the preparation of financial statements. There can be, and often is, a vital ingredient—intangible assets—missing from such statements.

(c) SUBJECTIVE ELEMENTS. The accounting profession recognizes that there is subjectivity involved in the decision as to whether a transaction has resulted in the creation of an asset or liability:

> Uncertainty about economic and business activities and results is pervasive, and it often clouds whether a particular item qualifies as an asset or a liability of a particular entity at the time the definitions are applied. The presence or absence of future economic benefit . . . can often be discerned reliably only with hindsight.[14]

(d) BALANCE SHEET. Graphically, the balance sheet displays assets and liabilities as shown in Exhibit 5.1.

(i) Tangible Assets. These are shown on the balance sheet and typically described as "Plant, Property, and Equipment" or "Fixed Assets." The accounting elements are in three parts: the original cost of the property, the depreciation or amortization reserves, and the amount of "net plant." The original cost of property is self-explanatory, although one should be aware that the capitalization policies of companies may vary. Capitalization

13. Financial Accounting Standards Board, Proposed Statement of Financial Accounting Concepts No. 195-A, "Using Cash Flow Information and Present Value in Accounting Measurements," Exposure Draft issued March 31, 1999, p. 5.

14. FASB Statement No. 6, p. 15.

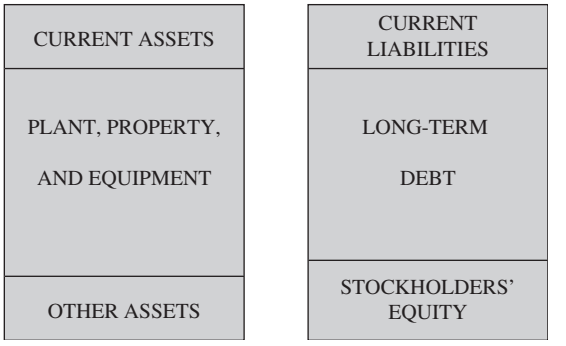

EXHIBIT 5.1 BALANCE SHEET

policy refers to the decision structure by which expenditures are treated as current expense or are capitalized. If capitalized, the expenditure is allocated to future periods by means of depreciation, although the process is more properly referred to as capital recovery. This concept is very well described by the Financial Accounting Standards Board:

> The goal of accrual accounting is to account in the periods in which they occur for the effects on an entity of transactions and other events and circumstances, to the extent that those financial effects are recognizable and measurable.
>
> Many assets yield their benefits to an entity over several periods, for example, prepaid insurance, buildings, and various kinds of equipment. Expenses resulting from their use are normally allocated to the periods of their estimated useful lives (the periods over which they are expected to provide benefits) by a "systematic and rational" allocation procedure, for example, by recognizing depreciation or other amortization.[15]

In this way, there is a matching of revenues and expenses, and the cost of capitalized assets is allocated over the periods in which those assets are expected to be useful to the business. The depreciation or capital recovery reserve is the accumulation of those periodic expense allocations and represents a reduction to the original cost. The balance sheet amount of "Property, Plant, and Equipment" or "net plant" or "net book value" is the net of these two amounts.

(ii) Intangible Assets. According to GAAP, intangible assets whose existence is to be recognized on a balance sheet must have certain characteristics:

- *Identifiability.* Patents, copyrights, franchises, trademarks, and other similar intangible assets that can be specifically identified with reasonably descriptive names. Other types of intangible assets lack specific identification, the most common being goodwill.
- *Manner of Acquisition*. Intangible assets may be purchased or developed internally and may be acquired singly, or in groups, or in business combinations.
- *Determinate or Indeterminate Life*. Patents, copyrights, and most franchises are examples of intangible assets with determinate lives, established by law or by contract. Other intangible assets such as organizational costs, secret processes, and goodwill have no established term of existence, and the expected period of benefit may be indeterminate at the time of acquisition.

15. FASB Statement No. 6, pp. 50, 51.

- *Transferability.* The rights to a patent, copyright, or franchise can be identified separately and bought or sold. Organization costs are an inseparable part of a business, and it is unlikely that a purchaser would purchase the organization costs without the business. Similarly, goodwill is inseparable from a business and is transferable only as an inseparable intangible asset of an enterprise.[16]

These standards are so narrow that few, if any, self-created intangible assets or elements of intellectual property are ever reflected on a balance sheet. Intangible assets that do appear on the balance sheet may be subject to amortization (capital recovery) if they are determined to have a reasonably ascertainable economic life.

(iii) Other Issues in Accounting for Intangible Property. When the managers of a business make an expenditure, it must be accounted for in some fashion. If it was for the purchase of a large and expensive machine, the path is clear because this asset will be useful in the production of income for years into the future. The cost is therefore capitalized as an asset on the balance sheet and is depreciated (charged to income) over some period of useful life. On the other hand, if the expenditure was to pay an employee, it is equally clear that it represents a payment for services rendered currently and should be accounted for as a current expense.

If, however, it was for research, a training program, or advertising materials, the correct answer is not so clear. The essence of the question is whether the expenditure created an asset that will have some benefit to the enterprise beyond the current period. If it will, then overall accounting theory would have us strive to match revenues and expenses as closely as possible and therefore capitalize and amortize the amount. This is the intangible asset accounting dilemma of the ongoing business.

In many cases the numbers make this dilemma very prominent indeed. Early in 2004, as an example, a share of Microsoft common stock was priced in the market at $27.24. With nearly 11 billion shares of stock outstanding, the equity of the company had a market value of over $290 billion. At the same time, the amount recorded in Microsoft's books for its equity was about $65 billion. Why the difference of opinion between investors and accountants? Accounting principles dictate that the amounts spent over the years by Microsoft in advertising, promotion, product development, and quality control were "in doubt" as to their future benefits and were therefore expensed when incurred. Investors, on the other hand, by pricing Microsoft stock the way that they do, implicitly recognize the value (and the earning power) of the brands and products that have been created over the years by these expenditures. The investor outlook is more representative of the way Microsoft's financials would appear if the expenditures had been capitalized over the years.

(iv) International Standards. From the above, it becomes obvious that there is considerable tension between management's desire to display the best earnings and growth and the desire of the accounting profession, driven by regulators, to report earnings in the most realistic possible light. Therefore, management would want to capitalize expenditures whenever possible (to reduce current expense and increase current earnings). Once expenditures were capitalized, management would be motivated not to amortize, or to amortize over the longest possible time period. In most developed countries there is considerable scrutiny focused on these issues. In less developed countries,

16. Jan R. Williams, *Miller GAAP Guide 1999* (New York: Harcourt Brace & Company, 1999), p. 23.04

with less developed accounting regulations, the opportunities for "optimistically creative bookkeeping" are much more prevalent.

The International Accounting Standards Board (IASB), reorganized from the International Accounting Standards Committee (IASC) in 2000, has been working since 1973 to develop accounting standards that can be accepted by nearly 200 participating countries. Its regulations are called International Financial Reporting Standards (IFRS). Considerable progress has been made, although there are still differences between its rules and those of the GAAP of individual countries. The marked increase in cross-border acquisitions and mergers provides considerable incentive for the adoption of standardized accounting practices. World equity markets are growing and maturing, with the accompanying need to provide world investors with consistent financial information.

In spite of these efforts, the accounting treatment of goodwill (intangible assets), whether purchased or self-developed, continues to be an unresolved issue with respect to "world accounting standards," although progress has been made in recent years.

All of the major industrialized countries either allow or require the recognition of purchased identifiable intangible assets and their subsequent amortization. The same countries are consistent in their practice not to reflect the value (or cost) of self-developed intangibles on the balance sheet.

In many ways, the discussions and proposed solutions to this dilemma have been more fertile internationally. Perhaps this is because international standard-setting bodies were addressing more diversity in national practices, and therefore had more freedom in possible solutions. In the United States there is a monolithic standard with a great deal of inertia. Both the Organization for Economic Cooperation and Development (OECD) and the International Accounting Standards Committee (IASC) have worked long and diligently on the accounting/intangible assets issue.

In a roundtable discussion sponsored by the OECD several years ago, a number of tentative conclusions emerged. Several of these captured the essence of this accounting/intangible assets debate, and some suggested courses of action emerged:

- The most important investments are indeed no longer tangible, but few companies disclose information about their intangibles in their accounts. More information should be disclosed to a wide range of interested parties—investors, financial analysts, lenders, employees, economists, and statisticians.
- Companies should disclose in their annual reports quantitative information about intangible expenditures, suitably disaggregated, irrespective of whether such expenditures are recognized as assets on the balance sheet.
- A disaggregation scheme is suggested under two main elements: "technology investments/expenditures" (research and development hardware and software, patents and licenses, and design engineering) and "enabling investments/expenditures" (employee training, information systems, organizational restructuring, marketing, and trademarks/brands).
- A key problem is one of recognition—that is, by what standards we can identify expenditures for intangibles that are genuine long-term investments. Two schools of thought have emerged. The Anglo-American approach is to depend on "separability" (i.e., the asset could be sold separately from the rest of the business), while another approach, proposed by the French, relies on the identifiability of intangibles according to some criteria. Obviously both approaches require judgment, but that has long been a part of standard accounting systems and should not of itself be a barrier.

The member countries of the OECD met subsequently on many occasions to air the issues and construct a solution. We find their discussions perceptive, although perhaps some of the expressed realizations have been a bit long in coming[17]:

> Despite continuing evolution and improvement, there is some concern that accounting standards and practices have not kept pace with rapid economic changes and that statements may no longer be providing the information required in a post-industrial economy. . . . The accounting treatment of intangible assets, which generally requires immediate expensing of all investment into intangibles, such as research and development, human resources, and investment into trademarks and brand names, is another concern.
>
> The capacity to generate and maintain intangible assets is central to the performance of many companies, yet difficult to reflect in financial statements. . . . A central element in the critique of current accounting practice relates to the observation that significant differences often exist between company book values and their market capitalisation. . . . The book to market gap tends to be particularly large in service and high technology firms (for example, bio-technology and software houses) which typically invest little in tangible assets though they often invest heavily in people, processes and technologies.
>
> Irrespective of the opposing views, a significant part of the assets central to company performance (brands, trademarks, licenses, processes, etc.) may not be described in statutory accounts and their absence on balance sheets may affect the decision making processes of governance agents. . . . At present significant attention is being paid to this issue. . . . Considerable interest is also being exhibited by governments, particularly the European Union, who believe intangible assets to be a key to company competitiveness and investment. . . . the discussion seems to be moving towards the voluntary disclosure of intangibles data and a subsequent effort to define best practice.[18]

In a recent speech, the need for accounting consistency for intangible assets was again emphasized:

> As early as 1992, intangible assets accounted for more than 35% of the total public and private investments in the Netherlands. . . . Yet intangible assets are one of the great puzzles of the new, knowledge-based economy. Those who apply standard accounting practices hardly know what to make of them. The majority of standard financial accounts and reports fail to even recognize them as assets. . . . A recent British study showed that, on average, 40% of the value of a company is not shown in any way in its balance sheet. . . . Firstly . . . shareholders and stakeholders need to have a full picture of the value of a company. . . . second . . . we need to counter a negative trend. The potential winners in the new economy—the knowledge-intensive companies—risk drawing the shortest straw in the capital market. . . . thirdly, if knowledge is becoming so important, surely we should be managing it like any other asset?[19]

(v) New Intangible Asset Standard. On October 1, 1998, the International Accounting Standards Committee published IAS 38, a new standard on intangible assets. This was the culmination of a 10-year effort that previously had produced the Exposure Draft (E60) noted earlier. The IASC does not consider its work complete, by any means:

> Knowledge about intangible assets, particularly how to value them, is still in its early days. . . . There is growing demand for further information on the value of intangible assets using financial and non-financial indicators. . . . Debates on the subject are very much alive. ... The IASC will

17. The recognition of the difference between the book value of the underlying assets of a business and the market value of the enterprise, and why that difference exists, has long been a part of the basic valuation body of knowledge. This concept has been lately "rediscovered," and some in the academic community have even coined names for it, implying some newly developed theory.

18. OECD, "Background and Issues Paper for the OECD Symposium on the Role of Disclosure in Strengthening Corporate Governance," February 1998.

19. A. Jorritsma-Lebbink, Minister of Economic Affairs, the Netherlands, in a speech entitled, "Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects," Amsterdam, June 1999.

watch developments . . . and may do more work in the future ...when preparers and users have gained more experience on the value of intangible assets[20]

The provisions of IAS 38 include the following:

- Intangible assets are to be recognized initially in financial statements at their cost only if (1) they are identifiable assets that are controlled and clearly distinguishable from the goodwill of an enterprise, (2) if it is probable that their future economic benefits will flow to the enterprise, and (3) if their cost can be measured reliably.
- Expenditures for intangibles that do not meet the above criteria must be recognized as an expense when incurred.
- More specifically, expenditures for research and development (R&D) are to be recognized as expenses, and assets, such as internally generated goodwill, brands, mastheads, publishing titles, customer lists, and similar items, may not be recognized as intangible assets on financial statements.
- In an acquisition of a business by another, assets that do not meet the above criteria should be reflected as goodwill. This also applies to so-called R&D in progress, which may not be recognized as an expense immediately at the date of acquisition.
- After their initial recognition, intangible assets are measured by their cost less amortization and impairment loss, or at fair value less amortization or impairment loss. However, revaluations are permitted only if fair value can be determined by reference to an active market, a situation expected to be rare for intangible assets.
- Intangible assets are to be amortized over the "best estimate of their useful life." However, there is a rebuttable presumption that their useful life will not exceed 20 years.
- Intangible assets should be tested for impairment at least annually, in accordance with IAS 36.
- IAS 38 is effective for accounting periods beginning on or after July 1, 1999.

Other proposals for addressing the accounting treatment of intangible assets are varied and plentiful. Wallman has suggested what he calls the "colorized approach," in which there might be several levels of accounting and financial reporting.[21] These would range from a top layer of assets that satisfy definitive recognition criteria (i.e., current core financial statement data), through items whose measurement is less reliable, to a layer of items that, in addition, might be difficult to describe, to the last layer of assets that are both difficult to define and less reliable in their measurement, such as going-concern value and intellectual capital. This approach recognizes the relative imprecision of some data while still providing it to users, who would be informed as to its relative reliability.

Others have suggested that it might be a satisfactory compromise to better describe the inputs to the development of intangible assets and intellectual property, rather than attempting to value the results of those inputs. This has been described as a "first step" in the eventual disclosure of intangible asset and intellectual property values. We find little

20. Comments by Sir Bryan Carsberg, Secretary-General of IASC.

21. Steven M. H. Wallman, "The Future of Accounting and Financial Reporting, Part II: The Colorized Approach," *Accounting Horizons*, Vol. 10, No. 2 (June 1996), pp. 138–148.

comfort in such an approach because, as we have described on several occasions in previous chapters, there is little, if any, relationship between the amounts expended in the development of intangible assets or intellectual property and their ultimate value. Therefore, presenting this information even in considerable detail would be only marginally useful at best and could be misleading at worst.

Furthermore, our discussions with corporations strongly suggest that they are extremely reticent to divulge, even on a somewhat aggregated basis, additional information about these types of expenditures, which are extremely sensitive from a competitive standpoint. Our litigious society gives rise to another corporate concern. What if the expenditures reported in detail are not fruitful or not useful to the purpose intended? Will managers be liable for investor litigation?

Companies also are concerned that a focus on the intangible asset inputs, arising from divulging additional information about current expenses, ultimately will result in a move toward capitalizing these expenditures for accounting and/or income tax purposes. This could result in increased accounting costs because the rules for capitalization versus expensing will become more complex. As an example, is money spent for promotions a current expense intended to promote the sale of goods in the near future, while some portion of advertising expense should be capitalized as a trademark-building expenditure? Regarding income taxes, the concern is the fact that if such expenditures are capitalized, for tax purposes, income taxes would tend to increase currently; companies fear that this move would not be accompanied by an income tax rate reduction to make the change tax-neutral. Multinational corporations also feel that enhanced disclosure of expenses related to intangible assets and intellectual property could have implications in the transfer pricing area as well.

The OECD roundtable mentioned previously quite accurately described this dichotomy in measurement principles. This discussion described the cost-based approaches (the measurement of individual assets and liabilities on an *ex-post* basis) as opposed to the valuation approaches, which seek to see the balance sheet as a useful source of information about the value of the business taken as a whole, with intangible assets valued on the basis of expected future cash flows. This latter approach appeals to us far more than the first.

(e) SUMMARY. The promulgation of IAS 38 has brought consistency to accounting for intangible assets in a way that is nearly congruent with longstanding U.S. standards. One might optimistically state that the world is in general agreement on this accounting practice. However, this generally accepted standard still falls short of satisfying some of the concerns about the efficacy of financial statements.

The financial statements of a business "are prepared as a medium of communication between a business entity and interested parties."[22] Parties using these statements are relying on them to make varied and significant decisions. Decisions regarding lending, portfolio investment, business strategy, employment, and contracts are all impacted by the information found in financial statements. Unfortunately, in most cases the most important assets that a company can own are wholly absent. Often intangible assets aren't even mentioned in a footnote.

Intellectual property and intangible assets are not adequately reflected on company balance sheets. Baruch Lev, then professor of business and law at the Haas School of

22. Michael G. Tearney, "Accounting for Goodwill: A Realistic Approach," *Journal of Accountancy* (July 1973).

Business at the University of California, Berkeley, told *CFO Magazine*, "Right now, more and more information in financial reports is meaningless because the future of those companies and their industries is reflected in intangibles like R&D, which are nowhere to be found in financial reports."[23]

In short, academics call for a change in financial statements that will close the gap between book values and "real" values; accountants are struggling with how to reliably juxtapose values and costs; users of financial statements obviously would prefer more information; and companies themselves are dubious about revealing additional, potentially sensitive information.

(i) Research and Development. The Statement of Financial Accounting Standards (SFAS) No. 2 describes research as a "planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service or a new process or technique or in bringing about a significant improvement to an existing product or process."[24] The only costs involved in such activities that would be capitalized under GAAP would be those relating to "materials, equipment, or facilities" that have an alternative future use. All other expenditures would be expensed in the current period.

Accounting rules for capitalizing the costs of software development are a bit complex. In general, software developed for a company's own use is expensed in the period in which the costs are incurred. For software that is being developed as a product for sale, however, the rules change. SFAS 86 applies to the costs of software that are "incurred in purchasing or internally developing and producing computer software products that are sold, leased, or otherwise marketed by an enterprise." These costs include planning, design, and production. These costs are expensed until "technical feasibility is established": "Technical feasibility is established upon completion of all of the activities that are necessary to substantiate that the computer software product can be produced in accordance with its design specifications, including functions, features and technical performance requirements."[25]

When technical feasibility is established, software costs can be capitalized and are to be amortized either on a straight-line basis over the software's estimated useful life or by the ratio of current gross revenue to the total estimated gross revenue for the product. To further complicate the issue, the capitalization of software costs is discontinued when the product is ready to be sold or otherwise marketed.

(f) BACKGROUND OF U.S. GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP). In December 1944 the Committee on Accounting Procedure issued *Accounting Research Bulletin (ARB) 24*, which directed that goodwill could be carried on the balance sheet as an asset, either permanently or amortized on some systematic basis. While direct write-offs against retained earnings (presumably in acquisitions) were discouraged, they were not prohibited. This prohibition was codified in *ARB 43*, issued in 1953, which also required a write-off of intangible assets that had sustained a recognizable loss in value, although that action could be reflected against earnings in the period in which the loss was recognized or against retained earnings.

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23. Randy Myers, "Getting a Grip on Intangibles," *CFO Magazine* (September 1996), p. 2.
24. *Accounting for Research and Development Costs,* SFAS No. 2 (Norwalk, CT: Financial Accounting Standards Board, October 1974), paragraph 8(a).
25. Williams, *Miller GAAP Guide 1999,* p. 41.08

Accounting Principles Board (APB) Opinion 9 in 1966 removed the option of writing off goodwill against retained earnings.

The "merger mania" of the late 1960s caused a careful reexamination of the whole subject of accounting for intangibles. As business executives directed their companies' resources into acquisitions with the objectives of reducing taxes and enhancing earnings per share, the accounting profession and the Securities and Exchange Commission (SEC) were forced to face the issue of how to account for acquired intangibles, in order to prevent what they perceived as a potential for misleading financial statements.

(i) Business Combinations. In the special case of intangible assets acquired as part of a business combination, Opinions 16 and 17 of the Accounting Principles Board (of the American Institute of Certified Public Accountants) were controlling for many years. These 1970 opinions, commonly referred to as APB 16 and APB 17, covered many issues related to the purchase of one company by another, and how such a business combination should be reflected on the books of the surviving business.

Briefly stated, APB 16 provides that an acquisition of a business enterprise can be accounted for as a "pooling of interests" or as a "purchase." In a pooling, the recorded assets and liabilities of the buying and selling companies are summed to become the recorded assets and liabilities of the combined corporation at their historical cost.

The accounting for an acquisition treated as a purchase is similar to that of a purchase of a single asset, except that the "cost" (the price of the entire business enterprise) is attributable to a large group of assets. When assets were acquired as a group, APB 17 directed that the cost was allocated to the individual assets in the group on the basis of their fair value. APB 17 also addressed the proper accounting treatment of intangible assets acquired from individuals or as part of the purchase of a business enterprise. When an intangible asset was purchased separately from a business combination, its cost was to be recorded as an asset. When specifically identifiable intangible assets were purchased as part of a business combination, their cost, for future accounting purposes, was represented by their value at the time of acquisition, and they were to be amortized over their estimated useful lives. Goodwill, similarly acquired, was recorded as the residual between the total purchase price and the identified assets and liabilities assumed and was amortized over its estimated useful life, but no longer than 40 years. In practice, auditors required a conservative amortization over a much shorter period.

The "Plant, Property, and Equipment" of the acquired company was to be appraised, together with any identifiable intangible assets such as contracts, patents, and franchises, whether they were recorded on the balance sheet of the acquired company or not. Other balance sheet assets also may have required appraisal.

The difference between the value of these assets and the purchase price was deemed to be goodwill. When the value of identified assets exceeded the purchase price, negative goodwill might result (as a consequence of a bargain purchase). In this case the values of noncurrent assets were to be reduced proportionately. These values served, then, as the basis for an allocation of the purchase price to the assets acquired, and this allocation became part of the opening balance sheet of the surviving company. Value, rather than historical, original cost, then became the basis for future depreciation calculations and the determination of stockholders' equity.

One must remember, however, that while this practice is a reasonable approach for the acquired assets, the balance sheet of the acquiring company becomes a mixture of original cost and allocated amounts.

5.3 NEW DEVELOPMENTS IN ACCOUNTING FOR INTANGIBLE ASSETS

In June 2001, the Financial Accounting Standards Board issued two statements that substantially alter U.S. accounting for intangible assets and intellectual property acquired in business combinations and thereafter:

- Statement of Financial Accounting Standards No. 141—Business Combinations (SFAS 141)
- Statement of Financial Accounting Standards No. 142—Goodwill and Other Intangible Assets (SFAS 142)

We present a discussion of these changes and a summary of their background. There are several reasons why we believe that this discussion is useful to this book:

- Financial statements are the keystone in the body of information that is necessary in a valuation of intangible assets or intellectual property.
- It is therefore necessary to have a clear understanding of what financial statements are intended to represent. We also need to understand which, if any, of these accounting entries are useful indicators of value.
- If we take the opportunity to examine and understand the theoretical basis for asset accounting, as well as some of the arguments raised in some very difficult decision making about this basis, we can learn a lot about the nature of intangible assets and intellectual property and their significance within a business enterprise.

In Chapter 4, we pointed out the fact that there can be a considerable disparity between the value of business and the value of its underlying assets as they are reflected in financial statements. In that chapter we also cited the views of others that traditional financial statements had become less useful because information about intangibles was excluded. It was these concerns that added momentum to the consideration of significant changes in accounting for assets in the United States.

During this same period of time, a new business model was emerging. This model perfectly exemplified the intangible asset issue, and prompted some to proclaim a "New Economy." This also caused some to link accounting changes to this emergence. We feel that the so-called New Economy enterprises may have added impetus to the consideration of accounting changes, but that the changes were initiated long before the character of the "dot-coms" was recognized.

(a) IS THERE A NEW ECONOMY? During the 1970s and 1980s we witnessed the explosive growth of companies in the semiconductor, software, and personal computer segment. These were companies whose intangible assets and intellectual property were central to their earning power. We began to observe the growing disconnect between the value of these enterprises and the amounts carried on their books. But nowhere is the issue of accounting statement—intangible asset disparity more evident than in the case of the new e-commerce enterprises that have sprung into existence more recently. These were the darlings of Wall Street and easily raised hundreds of millions of dollars from eager investors. While we all observed the fact that these businesses enjoyed incredible market values, we also observed their singular lack of ability to produce profits. We also observed that they were doing this with essentially no visible assets. The application of traditional investment theory could not explain this situation. These enterprises seemed

to defy the investment law of gravity that requires value to be supported by earnings (or at least the near-term prospect of earnings). Many leapt to the conclusion that there must be a new economy emerging, one in which the old rules did not apply.

This conclusion needs to be examined in a larger context. Intangible assets and intellectual property have always been an integral part of a business. We only need to look back to the first Industrial Revolution to learn that John Wilkinson, an eminent English machine tool maker, felt that secrecy was a better means of protecting his innovations than patents, which would make them publicly known. He seems to have been extremely successful in this since his company produced accurately bored cylinders for James Watt's steam engine company for many years. In fact, Watt and his partner, Matthew Boulton, went to great lengths to obtain from Parliament an extension of Watt's condenser patent for almost 20 years, ensuring the market supremacy of the Watt engine. We recall Eli Whitney's unsuccessful efforts to enforce his cotton gin patent and the successful efforts of pioneers such as Henry Bessemer, Edison, Westinghouse, and Ford to defend their patent-protected market positions. These business pioneers (and their investors and lenders) certainly realized the importance of their intangible assets, no matter how they were reflected on financial statements.

In 1955, the concept of "automation" was in everyone's mind. It could very well be that some were referring to it as a herald of a new economy in which the old investment theories no longer held. Many disagreed, however:

> "One of the frustrations of creative engineers and designers is that many of their achievements turn out to be impractical for economic reasons. The field of automation is likely to abound in such examples. A lot of applications will be ruled out by the necessity for fairly stable product designs and the ability of the market to absorb a much higher volume of output. …In short, there will be many instances where automation, while technically feasible, just does not pay. We will rarely hear about such cases: we will hear about technological feasibility much more frequently than about the arithmetic of new investment opportunities that cannot be justified."[26]

Arthur Levitt, then SEC chairman, commented in a speech to the Economic Club of New York in 1999:

> "The dynamic nature of today's capital markets creates issues that increasingly move beyond the bright line of black and white. New industries, spurred by new services and new technology, are creating new questions and challenges that must be addressed. Today, we are witnessing a broad shift from an industrial economy to a more service based one; shift from bricks and mortar to technology and knowledge.
>
> This has important ramifications for our disclosure and financial reporting models. We have long had a good idea of how to value manufacturing inventory or assess what a factory is worth. But today, the value of R&D invested in a software program, or the value of a user base of an Internet shopping site, is a lot harder to quantify. As intangible assets continue to grow in both size and scope, more and more people are questioning whether the true value—and the drivers of that value—is being reflected in a timely manner in publicly available disclosure."

We feel that Mr. Levitt's statement is a better reflection of what has happened and what should be done than the more dramatic proclamations of a "New Economy."

There has been an evolutionary change in the proportions of bricks and mortar and intangible assets as driving forces in business. Intangible assets and intellectual property have not suddenly appeared in the last 10 years.

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26. George P. Shultz and George B. Baldwin, *Automation: A New Dimension of Old Problems*, (Washington, DC: Public Affairs Press, 1955) as quoted in Paul A. Samuelson, Robert L. Bishop, and John R. Coleman, *Readings in Economics*, third edition (New York: McGraw-Hill Book Company, Inc. 1958).

This is well described by Damodaran:

> "The value of a firm is based on its capacity to generate cash flows and the uncertainty associated with those cash flows. Generally, more profitable firms have been valued more highly than less profitable ones. In the case of new technology firms, though, this proposition seems to have been turned on its head. . . . The negative earnings and the presence of intangible assets is used by analysts as a rationale for abandoning traditional valuation models and developing new ways that can be used to justify investing in technology firms…This search for new paradigms is misguided. . . . The value of a firm is still the present value of the expected cash flows from its assets. . . ."[27]

These accounting changes should therefore be viewed not as a result of the emergence of a new economy, but rather in the context of the evolutionary change in the character of U.S. businesses. They are a significant step in response to the long-recognized need to provide more and better financial information to the many constituents of a business enterprise.

(b) BACKGROUND. Many, many opinions have been voiced about how to get more and better financial information in the hands of lenders and investors. Businesspeople, investors, lenders, the accounting profession, valuation professionals, and academics have been among those constituencies that sought to be heard. From our reading, it would appear that the suggestions generally fell within one of the following concepts:

- A whole new financial reporting scheme is required.
- Financial reporting should be modified so that internally-generated intangible assets and intellectual property can be recognized.
- Leave the financial statements alone but add additional supplemental information that would provide outsiders with some information about the intangible asset value drivers of a business.
- Leave the financial statements as they are.

One view of the "start over again" approach was expressed by the Canadian Institute of Chartered Accountants as part of its Canadian performance reporting initiative begun in 1994. In one report that emanated from this initiative, it was noted that:

- "In addition to the pragmatic concerns registered by business executives, a strong theoretical case an be made that the current accounting model does not adequately reflect economic reality for knowledge-intensive businesses."
- "This is, however, not easily remedied, since accounting adequately for knowledge-based business will ultimately require the invention of a new accounting model."[28]

The American Institute of Certified Public Accountants (AICPA) noted that:

> "Increased competition and rapid advances in technology are resulting in dramatic changes. To survive and compete, companies are changing everything—the way they are organized and managed, the way they do work and develop new products, the way they manage risks, and their relationships with other organizations…[they] are changing their information systems and the

27. Aswath Damodaran, *The Dark Side of Valuation* (Upper Saddle River, NJ: Prentice-Hall, Inc., 2001), pp. 11–12.

28. Robert I. G. McLean, *Performance Measures in the New Economy* (Toronto: Canadian Institute of Chartered Accountants, 1995) as reported in Financial Accounting Series No. 219-A, *Special Report: Business and Financial Reporting Challenges from the New Economy*, Wayne S. Upton, Jr., Financial Accounting Standards Board, April 2001, p. 13.

types of information they use to manage their businesses. . . . Can business reporting be immune from the fundamental changes affecting business?"[29]

Surprisingly, the AICPA recommended deferring any consideration of issues such as "accounting for intangible assets, including goodwill," "accounting for business combinations," and "alternative accounting principles."

At the "don't change anything" end of the spectrum, a 1997 magazine article expressed this view:

> "The most troubling idea of the IC [intellectual capital] generation is to tinker with financial statements, so companies full of smart people who don't make profits look more attractive to investors. Some want to include the capitalized value of workers' ideas on the balance sheet. Some want to include cultural factors, such as the gender composition of the workforce, as if it is somehow a driver of the profitability of a company . . . Monkeying with financial statements, for almost any reason, is a terrible idea. Investors have 500 years of practice interpreting financial statements . . . they have developed methods to adjust for many of the anomalies (for example, amortization of goodwill, which can only be defined by describing what it is not) that emerge from our archaic double-entry bookkeeping practices from time to time."[30]

(c) FINANCIAL ACCOUNTING STANDARDS BOARD.

(i) Exposure Draft. Against this confusing backdrop, the FASB began the task of redesigning some critical accounting rules. On September 7, 1999, the FASB issued an exposure draft, "Proposed Statement of Financial Accounting Standards—Business Combinations and Intangible Assets." Written comments on this document were received until December 7, 1999, and public hearings were held in three cities in February 2000. The exposure draft was generally divided into two parts, the first concerning methods for accounting for business combinations, and the second concerning accounting for goodwill. The second portion is of more interest here, and the following discussion will focus on that. The board highlighted several issues on which it was seeking guidance.

ISSUE 6

> "This proposed Statement would require that the excess of the cost of the acquisition price over the fair value of acquired net assets (goodwill) be recognized as an asset. This proposed Statement would require that goodwill be amortized over its useful economic life; however, the amortization may not exceed 20 years."[31]

On this subject, the board posed the following questions:

- Does goodwill meet the assets definition and the criteria for recognition as an asset in other FASB statements?
- Should goodwill be amortized in a manner similar to other assets?
- Is the 20-year maximum amortization period appropriate?

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29. *Improving Business Reporting—A New Customer Focus*, (New York: AICPA, 1994) as reported in Financial Accounting Series No. 219-A, *Special Report: Business and Financial Reporting Challenges from the New Economy*, Wayne S. Upton, Jr., (Financial Accounting Standards Board, April 2001), p. 10.

30. John Rutledge, "You're a Fool If You Buy into This," *Forbes ASAP* (April 1997) as reported in Financial Accounting Series No. 219-A, *Special Report: Business and Financial Reporting Challenges from the New Economy*, Wayne S. Upton, Jr., Financial Accounting Standards Board, April, 2001, p. 4.

31. This and the following statements of "Issues" are quoted from Financial Accounting Series No. 201-A, *Exposure Draft—Proposed Statement of Financial Accounting Standards*, Financial Accounting Standards Board, September 7, 1999.

ISSUE 7

"The Board considered several approaches that would have permitted some or all goodwill to be capitalized and not amortized. However, the Board found that none of these approaches were operational because of the subjectivity involved in identifying and measuring the discernable elements of goodwill, particularly those with indefinite lives and the inability to adequately review goodwill for impairment."

Relative to this issue, FASB posed several questions:

- Can the subjectivity involved in identifying and measuring elements of goodwill be overcome?
- Is there a "robust and operational way" to review goodwill for impairment so that nonamortization of goodwill would be practical?

ISSUE 8

"This proposed Statement would require acquired identifiable intangible assets that can be reliably measured to be recorded separately from goodwill in the financial statements of the acquiring enterprise at their fair value. That requirement is based on the assumption that intangible assets acquired in a business combination can be measured separately from goodwill with a sufficient degree of reliability to meet the asset recognition criteria. Based on information provided by valuation experts, the Board reached a conclusion that various intangible assets can be reliably measured."

The board asked for comment on several questions relating to this issue:

- Is the conclusion that intangible assets can be identified separate and apart from goodwill appropriate?
- Are some types of intangible assets more reliably measurable than others?
- Can the language in the proposed Statement be improved relative to recognizing intangible assets separate from goodwill?
- Are the examples of intangible assets shown in Appendix A [of the exposure draft] appropriate?

ISSUE 9

"Opinion 17 imposed a 40-year maximum amortization period for all intangible assets. If certain criteria are met, this proposed Statement would require an intangible asset (other than goodwill) to be amortized over a period longer than 20 years and in some circumstances to not be amortized at all."

Comments were sought relative to the following questions:

- Are the proposed criteria for extending the useful life beyond 20 years appropriate?
- Are the criteria for nonamortization appropriate?
- Are the illustrations given for the amortization period of certain identifiable intangible assets helpful?

The remaining issues in the exposure draft concerned the review of goodwill value for impairment, the method for reflecting goodwill amortization and impairment losses on the income statement, the disclosure of fair values assigned to intangible assets in notes to the financial statement, and the effective date and transition policy for the application of the proposed statement.

It is obvious that the FASB intended to continue the exclusion of self-created intangible assets and intellectual property from the financial statements:

> "Costs of internally developing, maintaining, or restoring intangible assets that are not specifically identifiable, have indeterminate lives, or are inherent in a continuing business and related to an enterprise as a whole shall be recognized as an expense when incurred."[32]

It is equally obvious that the board was struggling with the definition of goodwill and the question of whether to require the amortization of the fair value assigned to it. Even though the proposed statement calls for amortization of goodwill, the questions being asked indicate to us that the board was not fully decided on this point.

(ii) Statements of Financial Accounting Standards Nos. 141 and 142. The matters addressed in the exposure draft were finalized in *Statement of Financial Accounting Standards No. 141 (Business Combinations)* and *No. 142 (Goodwill and Other Intangible Assets)*. The following discussion relates to both of these documents because some of the same subject matter is addressed in both. Notations are included to identify from which standard the quotations are taken, and the paragraph numbers are those of the documents.

Purchase Price Allocation

At the most general level, we are told that the pooling of interest method of accounting for a business combination is no longer permitted and that the purchase consideration for a group of assets must be allocated to those assets based on their fair value. This is to include intangible assets and goodwill. We are further instructed that goodwill is to be valued on a residual basis and only in the case of a business combination:

> 7. *Allocating cost*. Acquiring assets in groups requires not only ascertaining the cost of the asset . . . group but also allocating that cost to the individual assets . . . that make up the group. The cost of such a group is determined using the concepts described in paragraphs 5 and 6.[33] A portion of the cost of the group is then assigned to each individual asset. . . . acquired on the basis of its fair value. In a business combination, an excess of the cost of the group over the sum of the amounts assigned to the tangible assets, financial assets, and separately recognized intangible assets acquired less liabilities assumed is evidence of an unidentified intangible asset or assets.[34] (SFAS 141)
>
> 9. An intangible asset that is acquired either individually or with a group of other assets (but not those acquired in a business combination) shall be initially recognized and measured based on its fair value . . . The cost of a group of assets acquired in a transaction other than a business combination shall be allocated to the individual assets acquired based on their relative fair values and shall not give rise to goodwill. (SFAS 142)

Value Premise

In Exhibit 5.2 we have shown the assets and liabilities typically acquired in a business combination, together with the valuation premise for each.

(iii) Defining Intangible Assets. In our discussion of the exposure draft, we commented on the board's struggle to define identifiable intangible assets and to differentiate them from goodwill. SFAS 141 considerably refines the criteria for recognizing an intangible

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32. This paragraph 36 of the exposure draft was carried forward from Opinion 17 without any change by the board.

33. The fair values of the net assets acquired and the consideration paid are assumed to be equal. The "cost" of an asset in this case is assumed to be equal to its market value.

34. This and other quotations identified by a paragraph number are from SFAS 141 or SFAS 142. We have added occasional emphasis by underlining text.

Assets	
Current Assets	
Marketable Securities	FV
Accounts Receivable	PV
Inventories	
Finished Goods	SP-(D+P)
Work in Progress	SP-(C+D+P)
Raw Materials	RC
Plant and Equipment	
To Be Used	RCNLD
To Be Sold	FV-D
Intangible Assets	FV
Other Assets	FV
Liabilities	
Accounts and Notes Payable	PV
Long-Term Debt	PV
Liabilities Associated with Pension or Postretirement Plans	see FASB Statements 87 & 106
Accruals	PV
Other Liabilities and Commitments	PV

Where:

PV	=	Present value at a current interest rate reflective of risk of receiving the income, less allowances, if appropriate
FV	=	Fair value
SP	=	Selling price
C	=	Completion cost
P	=	Profit
D	=	Disposal cost
RC	=	Current replacement cost
RCNLD	=	Current replacement cost less depreciation or used-asset market value

EXHIBIT 5.2 VALUE PREMISES FOR ALLOCATION OF PURCHASE CONSIDERATION

asset separate and apart from goodwill. The primary criterion is that the asset arise from contractual or other legal rights. Examples given include a favorable lease contract, the license to operate a nuclear power plant, and a patent.

> If an acquired intangible asset does *not* arise from contractual or legal rights, it can be identified as a separate asset if it is capable of being separated or divided from the acquired entity and sold, transferred, licensed, rented, or exchanged. This criterion can be met irrespective of whether the acquiring entity intends to enter into any of these transactions. Examples given are customer and subscriber lists which are frequently leased. Further, an asset can meet the separability criterion even if it might only be separable in combination with other assets, such as a trademark, related secret formula, and proprietary technology used to manufacture a single product. All three of these assets would meet the separability criterion because they belong to a separable "package."
>
> An intangible asset shall be recognized as an asset apart from goodwill if it *arises from contractual or other legal rights* (regardless of whether those rights are transferable or separable from the acquired entity or from other rights and obligations). If an intangible asset does not arise from contractual or other legal rights, it shall be recognized as an asset apart from goodwill *only if it is separable*, that is, it is capable of being separated or divided from the acquired entity and sold, transferred, licensed, rented, or exchanged (regardless of whether there is an intent to

> do so). For purposes of this Statement, however, an intangible asset that cannot be sold, transferred, licensed, rented, or exchanged individually *is considered separable if it can be sold, transferred, licensed, rented, or exchanged in combination with a related contract, asset*, or liability. For purposes of this Statement, *an assembled workforce shall not be recognized as an intangible asset apart from goodwill*. Appendix A [to SFAS 141] provides additional guidance relating to the recognition of acquired intangible assets apart from goodwill, including an illustrative list of intangible assets that meet the recognition criteria in this paragraph. (SFAS 141)

This separability standard is one that the reader will recognize as being absent from our presentations in this book. We (and a number of other valuation professionals who commented on the exposure draft) do not regard separability as a defining characteristic of an intangible asset. We cited an assembled workforce as an example. Our comments were in vain, however. When these statements were issued we learned why. The board did not consider replacement cost as a reliable measure of value and, since that is the valuation method of choice for an assembled workforce, the board directed that the asset represented by an assembled workforce be considered part of goodwill:

> 43. The excess of the cost of an acquired entity over the net of the amounts assigned to assets acquired and liabilities assumed shall be recognized as an asset referred to as goodwill. An acquired intangible asset that does not meet the criteria in paragraph 39 shall be included in the amount recognized as goodwill. (SFAS 141)

SFAS 141 (paragraph a14) provides a new list of intangible assets that would be expected to meet the criteria for recognition apart from goodwill. We have reproduced this list as Appendix 5B to this chapter. This new list is organized into five asset groups: *marketing-related, customer-related, artistic-related, contract-based*, and *technology-based*. This better organization arose, we believe, from the comments received by the FASB relative to the list presented as Appendix A of the exposure draft. Two of the asset categories contained in the original list—workforce-based assets and corporate organizational and financial assets—do not appear in the final list of examples. For the most part, the assets listed under these classifications would not meet the new criteria and would therefore be lumped with goodwill.

As expected, the board confirmed its decision to exclude any reflection of self-created intangible assets or intellectual property from the financial statements:

> 10. Costs of internally developing, maintaining, or restoring intangible assets (including goodwill) that are not specifically identifiable, that have indeterminate lives, or that are inherent in a continuing business and related to an entity as a whole, shall be recognized as an expense when incurred. (SFAS 142)

(iv) Useful Economic Life. On the subject of economic life, SFAS 142 essentially retained the concepts introduced in the exposure draft. The reader can compare the economic life analysis described in the excerpt that follows with the concepts that we present in Chapter 11:

> 11. The accounting for a recognized intangible asset is based on its useful life to the reporting entity. An intangible asset with a finite useful life is amortized; an intangible asset with an indefinite useful life is not amortized. The *useful life of an intangible asset to an entity is the period over which the asset is expected to contribute directly or indirectly to the future cash flows of that entity.* The estimate of the useful life of an intangible asset to an entity shall be based on an analysis of all pertinent factors, in particular:
>
> **a.** The expected use of the asset by the entity
>
> **b.** The expected useful life of another asset or a group of assets to which the useful life of the intangible asset may relate (such as mineral rights to depleting assets)

c. Any legal, regulatory, or contractual provisions that may limit the useful life.

d. Any legal, regulatory, or contractual provisions that enable renewal or extension of the asset's legal or contractual life without substantial cost (provided there is evidence to support renewal or extension and renewal or extension can be accomplished without material modifications of the existing terms and conditions)

e. The effects of obsolescence, demand, competition, and other economic factors (such as the stability of the industry, known technological advances, legislative action that results in an uncertain or changing regulatory environment, and expected changes in distribution channels)

f. The level of maintenance expenditures required to obtain the expected future cash flows from the asset (for example, a material level of required maintenance in relation to the carrying amount of the asset may suggest a very limited useful life).[35]

If no legal, regulatory, contractual, competitive, economic, or other factors limit the useful life of an intangible asset to the reporting entity, the useful life of the asset shall be considered to be indefinite. The term *indefinite* does not mean infinite. (SFAS 142)

Most of these suggestions are useful, possibly with the exception of the last item. It does not seem to us that the level of maintenance expenditures attributed to an asset is relevant to a judgment about its economic life. Such maintenance expenditures are made for the purpose of prolonging life and, once made, prolong life.

Item d. is noteworthy. The board has correctly recognized that some intangible assets such as licenses, franchises, and certifications may have an economic life *longer* than their legal life. Many such assets are routinely renewed at little or no cost, as long as compliance remains.

Also noteworthy is the subject of economic life as it relates to the category of marketing-related intangibles, which includes:

- Trademarks, tradenames
- Service marks, collective marks, certification marks
- Trade dress (unique color, shape, or package design)
- Newspaper mastheads
- Internet domain names
- Noncompetition agreements

Of the assets in this group, only noncompetition agreements would commonly have a finite life, defined by contract. The other assets would very likely be judged to have indefinite lives and thus not be amortized. We must be careful not to adopt this as the "conventional wisdom,"[36] however, although it will often be true. With these recent Statements there will, for the first time, be a strong motivation to identify and properly value these trademark assets in an acquisition.

35. As in determining the useful life of depreciable tangible assets, regular maintenance may be assumed but enhancements may not.

36. While their legal life is assumed to be perpetual, trademarks often stop producing cash flow for their owners. They are subject to economic, functional, event, technological, product, and cultural obsolescence. See Gordon V. Smith, *Trademark Valuation* (Hoboken, NJ: John Wiley & Sons, Inc., 1997), Chapter 5.

More importantly, SFAS 142 echoes the concept introduced in the exposure draft in its specification that "the method of amortization shall reflect the *pattern* in which the economic benefits of the intangible assets are consumed or otherwise used up" (¶12). Most intangible assets in fact do deteriorate in value over a pattern that is not a straight line. This fact was given a great deal of attention in the past relative to the amortization of intangible assets for tax purposes. There were many confrontations between taxpayers and the Internal Revenue Service, and some were extensively litigated. There is a considerable body of knowledge extant on this subject. The need for that attention was legislated out of existence in the tax law, but is now being revived in these new accounting requirements.

The SEC has offered its own comment relative to the accounting for customer relationship intangibles, which were often the focal point of the taxpayer/IRS disputes:

> "Some intangible assets recognized in a purchase business combination derive their value from future cash flows expected to be derived from the acquired business' identified customers. Companies may also recognize this type of intangible asset when they acquire groups of customer accounts or a customer list. Most commonly, valuable continuing relationships are demonstrated by existing contracts or subscriptions.
>
> When acquired in a business combination or as part of a larger group of assets, the fair value of this intangible is often measured as the present value of the estimated net cash flows from the contracts, including expected renewals. The most reliable indication of life expectancy of a subscriber base or similar customer group is the historical life experience of similar customer accounts. The actuarial-based retirement rate is the method generally accepted in the appraisal profession to estimate life expectancy. That analysis may be developed if customer initiation and termination data are maintained for each acquired customer group.
>
> Typically, customer relationships within a large group of accounts tend to dissipate at a more rapid rate in the earlier periods following a company's succession to the contracts, with the rate of attrition declining over time until relatively few customers remain who persist for an extended period. Under this pattern, the preponderance of cash flows derived from the acquired customer base will be recognized in income in the earlier periods, and they fall to a materially reduced level in later years. In this circumstance, straight-line cost amortization over the period of expected cash flows particularly will exaggerate net earnings when the business is growing, leaving disproportionate expense to be recognized when the rate of growth declines. The staff believes that an accelerated method of amortization, rather than the straight-line method, will result in the most appropriate and systematic allocation of the intangible's cost to the periods benefited. The straight-line method is appropriate only if the estimated life of the intangible assets is shortened to assure that recognition of the cost of the revenues, represented by amortization of the intangible asset, better corresponds with the distribution of expected revenues."[37]

(v) Goodwill Amortization. We can now observe how the board resolved the dilemma that we highlighted in our discussion of the exposure draft. The board eliminated the amortization of goodwill and in doing so eased the pain of acquiring companies caused by the loss of the pooling methodology. Understandably, the board could not accept the idea that goodwill, once recorded, would reside on the balance sheet of the acquiring company forever. Thus, the board extended the concept of measuring impairment to the goodwill asset.

(vi) Measuring Impairment. The measurement of goodwill impairment is somewhat complex and involves the establishment of so-called "reporting units." A reporting unit within a company is an organization (1) with characteristics similar to those of a business segment, (2) for which separate financial information is available, and (3) for which there is a management team that reviews the operating results. Goodwill, including

37. SEC Division of Corporation Finance, "Current Accounting and Disclosure Issues," prepared by member of the staff, August 31, 2001. See www.sec.gov/divisions/corpfin/acctdisc.htm.

goodwill that exists in the financial statements as of the effective date of these statements, must be allocated to reporting units.

The goodwill assigned to a reporting unit must be tested for impairment at least annually, and more often if there is an event that would affect the reporting unit. Such events might include an adverse business climate or litigation, loss of key personnel, unanticipated competition, or other events that could be expected to be detrimental to the business health of the reporting unit. Impairment testing proceeds in a two-step process, as described next:

> 18. Goodwill shall not be amortized. Goodwill shall be tested for impairment at a level of reporting referred to as a reporting unit . . . Impairment is the condition that exists when the carrying amount of goodwill exceeds its implied fair value.[38] The *two-step impairment test* discussed in paragraphs 19–22 shall be used to identify potential goodwill impairment and measure the amount of a goodwill impairment loss to be recognized (if any). (SFAS 142)

Step One

> 19. The first step of the goodwill impairment test, used to identify potential impairment, *compares the fair value of a reporting unit with its carrying amount, including goodwill*. The guidance in paragraphs 23–25 shall be used to determine the fair value of a reporting unit. If the fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired, thus the second step of the impairment test is unnecessary. If the carrying amount of a reporting unit exceeds its fair value, the second step of the goodwill impairment test shall be performed to measure the amount of impairment loss, if any. (SFAS 142)

Step Two

> 20. The second step of the goodwill impairment test, used to measure the amount of impairment loss, *compares the implied fair value of reporting unit goodwill with the carrying amount of that goodwill*. [see para.21] If the carrying amount of reporting unit goodwill exceeds the implied fair value of that goodwill, an impairment loss shall be recognized in an amount equal to that excess. . . . After a goodwill impairment loss is recognized, the adjusted carrying amount of goodwill shall be its new accounting basis. . . . (SFAS 142)
>
> 21. The implied fair value of goodwill shall be determined in the same manner as the amount of goodwill recognized in a business combination is determined. That is, an entity shall allocate the fair value of a reporting unit to all of the assets and liabilities of that unit (including any unrecognized intangible assets) as if the reporting unit had been acquired in a business combination and the fair value of the reporting unit was the price paid to acquire the reporting unit. The excess of the fair value of a reporting unit over the amounts assigned to its assets and liabilities is the implied fair value of goodwill. . . . (SFAS 142)

The starting point in the impairment test is to establish the fair value of each reporting unit. If that fair value substantially exceeds the book value ("carrying value") of all the assets, including goodwill, it is assumed that there is no impairment and the process may stop there.

If the sum of book values is close to, or higher than, the fair value of the reporting unit, then some impairment is assumed. It becomes necessary to appraise all of the tangible and identifiable intangible assets. The sum of these values is subtracted from the unit value to calculate the value of "implied goodwill." If the implied goodwill is less than the value of goodwill on the books of the unit, the difference is the impairment loss. The implied goodwill value becomes the new book value of goodwill in the unit. The other assets are not revalued.

---

38. The fair value of goodwill can be measured only as a residual and cannot be measured directly. Therefore, this statement includes a methodology to determine an amount that achieves a reasonable estimate of the value of goodwill for purposes of measuring an impairment loss. That estimate is referred to herein as the *implied fair value of goodwill*.

Since there is some latitude in the selection of what will be "reporting units," most managers will make the selection strategically.[39] Companies with existing goodwill must allocate it to reporting units. In doing so, however, they may discover an initial goodwill impairment.[40] Such an impairment loss may be reflected in their income statement as a loss due to a "change of accounting." This is more palatable than a future impairment discovery.

A goodwill impairment loss in the future must go through the income statement as an operating loss—not an attractive prospect. Managers will be attentive to how much of the existing goodwill the contemplated reporting units will attract in the allocation process. They will be evaluating the potential value of identifiable intangibles a reporting unit is likely to have. They will analyze this in the light of the business outlook for a unit.

SFAS 141 and 142 apply initially only to companies that have goodwill on their books. As companies make acquisitions, they will come under these rules.

(vii) Disclosure Requirements. One of the more interesting portions of SFAS 141 and 142 is the disclosure requirements. If the companies that are subject to these requirements closely follow the disclosure specifications, much useful information will become available following their acquisitions. Obviously the intent of the board was to cause this information to become available to the companies' stakeholders—investors and lenders. This is in accordance with the original impetus for these new requirements. As valuation professionals, we are interested in the availability of this information, in that it will provide additional data points relating to how other professionals have valued intangible assets and intellectual property.

> 44. For intangible assets acquired either individually or with a group of assets, the following information shall be disclosed in the notes to the financial statements in the period of acquisition:
>
> **a.** For intangible assets *subject to amortization*:
>
> **1)** The total amount assigned and the *amount assigned to any major intangible asset class*
>
> **2)** The amount of any significant *residual value*, in total and by major intangible asset class
>
> **3)** The *weighted-average amortization period*, in total and by major intangible asset class
>
> **b.** For intangible assets *not subject to amortization*, the total amount assigned and the amount assigned to any major intangible asset class
>
> **c.** The *amount of research and development* assets acquired and written off in the period and the line item in the income statement in which the amounts written off are aggregated.
>
> 45. The following information shall be disclosed in the financial statements or the notes to the financial statements *for each period* for which a statement of financial position is presented:
>
> **a.** For intangible assets subject to amortization:
>
> **1)** The gross carrying amount and accumulated amortization, in total and by major intangible asset class
>
> **2)** The aggregate amortization expense for the period

39. SFAS 142, paragraph 35.
40. SFAS 142, paragraph 56.

3) The estimated aggregate amortization expense for each of the five succeeding fiscal years

b. For intangible assets *not* subject to amortization, the total carrying amount and the carrying amount for each major intangible asset class

c. The changes in the carrying amount of goodwill during the period including:

1) The aggregate amount of goodwill acquired
2) The aggregate amount of impairment losses recognized
3) The amount of goodwill included in the gain or loss on disposal of all or a portion of a reporting unit.

Entities that report segment information in accordance with Statement 131 shall provide the above information about *goodwill in total and for each reportable segment* and shall disclose any significant changes in the allocation of goodwill by reportable segment. If any portion of goodwill has not yet been allocated to a reporting unit at the date the financial statements are issued, that unallocated amount and the reasons for not allocating that amount shall be disclosed. (SFAS 142)

SEC Accounting Staff members have made additional suggestions relative to disclosures about intangible assets. Some of these are rather extreme, but indicate the direction of their thinking:

"Registrants should consider the need for more extensive narrative and quantitative information about the intangibles that are important to their business. These disclosures often are appropriate in *Description of Business or Management's Discussion & Analysis*. Some disclosures required by GAAP or Commission rules provide useful information to investors about intangibles, such as amounts annually expended for advertising and research & development. More insight could be provided if management elected to disaggregate those disclosed amounts by project or purpose. Statistics about workforce composition and turnover could highlight the condition of that human resource intangible. Disclosure of annual expenditures relating to training and new technologies could help investors distinguish one company's intangibles from another. More specific information about patents, copyrights and licenses, including their duration, royalties, and competitive risks can be important to investors. Insight into the intangible value of management talent could be provided by supplementing financial information with performance measures used to assess management's effectiveness."[41]

(viii) FASB Proposed Project. The FASB, in August 2001, issued a Request for Comments on a proposal for a project on disclosure about intangibles. Comments were due by October 5, 2001. This document recognizes that "intangible assets are generally recognized only if acquired, either separately or as part of a business combination. Intangible assets that are generated internally, and some acquired assets that are written off immediately after being acquired, are not reflected in financial statements, and little quantitative or qualitative information about them is reported in the notes to the financial statements."[42] The board describes this proposed project as having two goals:

1. Make new information available to investors and creditors and to improve the quality of information currently being provided
2. To take the first step in what might become an evolution toward recognition in an entity's financial statements of internally generated intangible assets

41. SEC Division of Corporation Finance, "Current Accounting and Disclosure Issues," prepared by member of the staff, August 31, 2001. See www.sec.gov/divisions/corpfin/acctdisc.htm.

42. Proposal for a New Agenda Project, "Disclosure of Information About Intangible Assets Not Recognized in Financial Statements," Financial Accounting Standards Board, p. 1.

One of the interesting comments made by the board in this proposal is that current accounting practices make it "difficult to compare the financial statements of an entity that has built up substantial intangible assets internally with those of another entity that has purchased most of its intangible assets." The board notes that investors and lenders could make more meaningful comparisons between companies if heretofore unrecognized intangibles were disclosed in the financial statements.

The proposed project would focus on four issues:

1. What intangible assets are to be included?

The proposed scope includes intangible assets that are not currently recognized, but which would have been recognized had they been acquired from others. Also to be considered would be in-process research and development assets written off immediately after an acquisition.

2. What information should be disclosed about intangible assets?

In this regard, the project proposes potential quantitative and qualitative disclosures:

- Major classes of intangible assets and their characteristics
- Expenditures to develop and maintain them
- Value of those assets
- Significant events that could change the anticipated future benefits arising from intangible assets

3. Should the disclosures be voluntary or required?

The board recognized that some industry groups might be more likely than others to volunteer disclosures. That might reduce the resistance to this type of disclosure. The board also recognized that voluntary participation might be very limited.

4. Should the disclosures be made annually or more frequently?

By limiting the focus of this project to intangible assets that are not recognized currently, but would be recognized if acquired separately or in a business combination, the board has made this project more feasible. The board also pointed out, however, that it had considered, and rejected, additional scope for the project that included:

1. "Disclosure of nonfinancial indicators about intangible factors, such as market size and share, customer satisfactions levels, new product success rates, and employee retention rates."

2. "Recognition and measurement, in statements of financial position, of research and development and other project-related intangible assets."

3. "Separate recognition and measurement of intangible assets or liabilities embedded in tangible or financial assets, for example, banks' core deposit intangibles and insurers' claim-handling obligations."

We can envision considerable resistance on the part of companies to disclosing some of this information, and it is well that the board rejected going into these areas at this time. There will be resistance enough relative to what has been proposed. It will be most interesting to observe the responses to this proposed project. Stay tuned.

5.4 COST AND VALUE

To conclude our discussion of accounting principles and how they relate to intangible assets and intellectual property and value, we take a small excursion into valuation of the balance sheet. This will provide a top-level picture of the much more detailed presentation to follow.

(a) VALUE VERSUS COST. If one makes the simplifying assumption that the equity of a business enterprise comprises only common stock, then it becomes obvious that there can be considerable disparity between its value as shown on a balance sheet (as a residual between assets and liabilities) and its value to an investor who is applying completely different criteria to its quantification.

To an investor, and to an analyst who places himself or herself in the position of an investor surrogate, the financial statements of a business are just a starting point in the valuation process. These professionals are primarily concerned with the present and prospective earning power of the business. They are less interested in the individual elements of the financial statements than in how these elements interact to produce earning power. They are quantifying the value of the enterprise, which is usually far different from the accounting results of historical operations.

(b) AN ECONOMIC BALANCE SHEET. Exhibit 5.3 illustrates a balance sheet as it appears to an investor or someone else concerned with the value of a business. The items inside the solid lines are what is typically recorded on a cost basis for accounting purposes. The dashed lines indicate how the reflection of fair market value might change this accounting record.

This representation shows the most common difference between a balance sheet of cost versus one of value—the addition of intangible assets whose increased value is reflected in added value of common equity. All the assets of a business can be valued, and those values can be both above and below their recorded cost. A balance sheet restated to value would therefore not necessarily appear as in Exhibit 5.3.

Thus, when an investor values the common stock of a business in an amount that exceeds the accounting value ("book value"), he or she is recognizing either that some

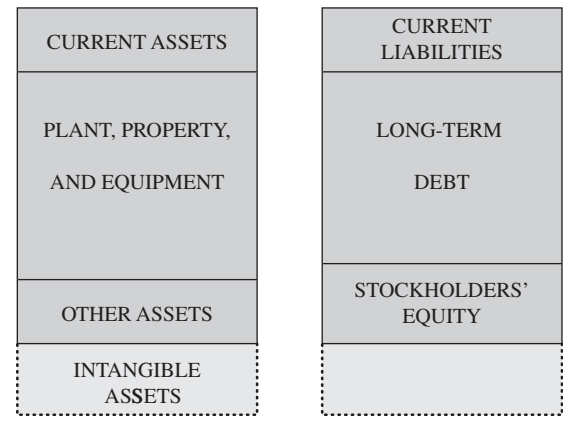

EXHIBIT 5.3 BALANCE SHEET ILLUSTRATING ENTERPRISE VALUE

"accounting assets" have a value in excess of their recorded value or that there are intangible assets of value not reflected on the balance sheet. Stated another way, the investor may determine that the fair market value of the business enterprise exceeds the recorded book value of the asset side of the balance sheet. This could result from a number of conditions:

- A strong patent that protects an important product line may not be recorded on the books of account at all but may have substantial fair market value.
- An established trademark can have substantial value and little, if any, recorded cost.
- Oil reserves recorded on the balance sheet at their cost may have a higher fair market value due to changes in oil prices.
- Real estate may have a fair market value considerably higher than its original cost.
- Assets were acquired at amounts greater or less than their fair market value.
- Depreciation and/or amortization is proceeding at a rate not commensurate with loss in asset value.

The big financial news in midsummer 2004 was the initial public offering of Google Inc. This was an extreme illustration of the accounting/valuation dichotomy. At the time of the IPO, Google's equity had a recorded book value of about $2.2 billion. After the first day of trading, Google's shares were selling in the market for slightly over $100, indicating a market value of equity in excess of $15 billion. A graphic representation of Google's underlying asset market values is shown as Exhibit 5.4, indicating that the marketplace has placed a value of over $14 billion (93.3% of the total) on Google's intangible assets and intellectual property.

(c) LIABILITY VALUE. Liabilities as recorded on the balance sheet also can have value different from their recorded cost. As an example, long-term debt at a favorable interest

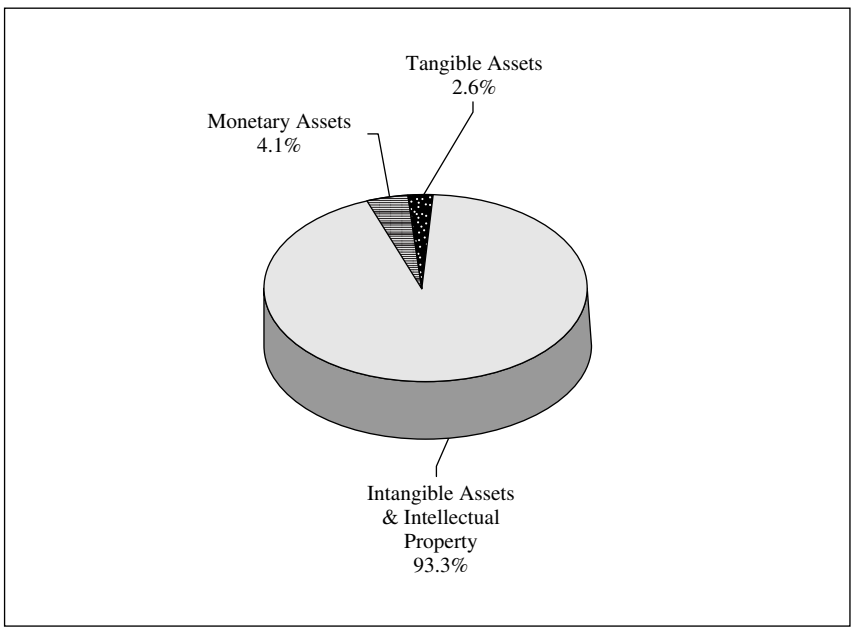

EXHIBIT 5.4 GOOGLE INC. UNDERLYING ASSETS VALUES IN AUGUST 2004

rate may have a current value less than its face amount as recorded in the financial statements. A reduction in liabilities increases the net worth of the business. Stated another way, capital that is available to the business at less than market rates enhances earnings and, hence, the value of the business.

Debt securities typically include bonds, mortgages, or long-term notes. All are subject to various covenants or restrictions that might refer to interest rate, date(s) due, property used as collateral, sinking fund payments, restrictions on working capital or dividends, and whether additional debt can be issued.

The multiplicity and variety of these conditions can make valuation difficult, but in a simple form, debt securities are valued by calculating the present worth of the interest expense and principal repayments at a discount rate equal to that of similar-risk debt at the time of the appraisal. Many homeowners have made a similar calculation as home mortgage rates fall. The purpose is to determine whether the present worth of a new repayment schedule at a lower interest rate is sufficiently below the existing schedule to warrant the expense of refinancing.

Assume that an enterprise has debt on its balance sheet in the form of bonds. The face amount of the bond is recorded as long-term debt (e.g., $100,000), and the business pays interest annually at a rate of 5% ($5,000). In 10 years, the bonds come due and the face amount must be returned to the bondholders. If the interest rate in the market for similar-risk bonds as of the appraisal date is 8%, the value of the debt to the bondholder is $79,869.

The value of these bonds to the business (debtor) is $120,130, because the same $100,000 of capital at current interest rates would require interest of $8,000 annually, or $3,000 more. The company has an annual expense advantage of $3,000 which, discounted at 8%, equates to $20,130. Stated another way, the business enjoys annual earnings $3,000 greater than otherwise. This, of course, ignores the tax implications of both bondholder and company, but illustrates the valuation principle.

(d) SUMMARY. Appraisers view a business enterprise as follows:

- An aggregation of assets (some of which may be "favorable liabilities") that always includes monetary, tangible, and intangible assets
- An entity with earning capability to which each individual asset contributes
- An entity that, while it may itself have an indefinable life, has individual assets, most of which have determinable economic remaining lives

APPENDIX 5A

INTANGIBLE ASSET LIST—EXPOSURE DRAFT

Customer-based or market-based assets—intangible assets that relate to customer structure or market factors of the business:

- **a.** Lists (advertising, customer, dealer, mailing, subscription, and so forth)
- **b.** Customer base
- **c.** Financial institution depositor or borrower relationships
- **d.** Customer routes
- **e.** Delivery system, distribution channels
- **f.** Customer service capability, product or service support
- **g.** Effective advertising programs
- **h.** Trademarked brand names
- **i.** Newspaper mastheads
- **j.** Presence in geographic locations or markets
- **k.** Value of insurance-in-force, insurance expirations
- **l.** Production backlog
- **m.** Concession stands
- **n.** Airport gates and slots
- **o.** Retail shelf space
- **p.** Files and records (credit, medical)

Contract-based assets—intangible assets that have a fixed or definite term:

- **a.** Agreements (consulting, income, licensing, manufacturing, royalty, standstill)
- **b.** Contracts (advertising, construction, consulting, customer, employment, insurance, maintenance, management, marketing, mortgage, presold, purchase, service, supply)
- **c.** Covenants (not to compete)
- **d.** Easements
- **e.** Leases (valuable or favorable terms)
- **f.** Permits (construction)
- **g.** Rights (broadcasting, development, gas allocation, landing, lease, mineral, mortgage servicing, reacquired franchise, servicing, timer cutting, use, water)

Technology-based assets—intangible assets that relate to innovations or technological advances within the business:

- **a.** Computer software and license, computer programs, information systems, program formats, Internet domain names and portals

- **b.** Secret formulas and processes, recipes
- **c.** Technical drawings, technical and procedural manuals, blueprints
- **d.** Databases, title plants
- **e.** Manufacturing processes, procedures, production line
- **f.** Research and development
- **g.** Technological know-how

Statutory-based assets—intangible assets with statutorily established useful lives:

- **a.** Patents
- **b.** Copyrights (manuscripts, literary works, musical compositions)
- **c.** Franchises (cable, radio, television)
- **d.** Trademarks, trade names

Workforce-based assets—intangible assets that relate to the value of the established employees or workforce of a company:

- **a.** Assembled workforce, trained staff
- **b.** Nonunion status, strong labor relations, favorable wage rates
- **c.** Superior management or other key employees
- **d.** Technical expertise
- **e.** Ongoing training programs, recruiting programs

Corporate organizational and financial assets—intangible assets relating to the organizational structure of an entity:

- **a.** Savings value of escrow fund
- **b.** Favorable financial arrangements, outstanding credit rating
- **c.** Fundraising capabilities, access to capital markets
- **d.** Favorable government relations

APPENDIX 5B

INTANGIBLE ASSET LIST—FINAL SFAS NO. 141

a. Marketing-related intangible assets

1. Trademarks, trade names
2. Service marks, collective marks, certification marks
3. Trade dress (unique color, shape, or package design)
4. Newspaper mastheads
5. Internet domain names
6. Noncompetition agreements

b. Customer-related intangible assets

1. Customer lists*
2. Order or production backlog
3. Customer contracts and related customer relationships
4. Noncontractual customer relationships*

c. Artistic-related intangible assets

1. Plays, operas, ballets
2. Books, magazines, newspapers, other literary works
3. Musical works such as compositions, song lyrics, advertising jingles
4. Pictures, photographs
5. Video and audiovisual material, including motion pictures, music videos, television programs

d. Contract-based intangible assets

1. Licensing, royalty, standstill agreements
2. Advertising, construction, management, service or supply contracts
3. Lease agreements
4. Construction permits
5. Franchise agreements
6. Operating and broadcast rights
7. Use rights such as drilling, water, air, mineral, timber cutting, and route authorities
8. Servicing contracts such as mortgage servicing contracts
9. Employment contracts

e. Technology-based intangible assets

1. Patented technology
2. Computer software and mask works
3. Unpatented technology*
4. Databases, including title plants*
5. Trade secrets, such as secret formulas, processes, recipes

*Denotes assets that do not arise from contractual or other legal rights, but are recognized because they meet the separability criterion.

All other assets meet the contractual/legal criterion.

APPENDIX 5C

RELEVANT DOCUMENTS IN THE DEVELOPMENT OF SFAS NO. 141 AND SFAS NO. 142

No. 201-A: Financial Accounting Series—September 7, 1999
Exposure Draft: Proposed Statement of Financial Accounting Standards
Business Combinations and Intangible Assets

Comment deadline: December 7, 1999

Hearings: February 3 and 4, 2000, in San Francisco, CA
February 8, 2000, in Norwalk, CT
February 10 and 11, 2000, in New York, NY

Independence Standards Board (ISB)—September 1999
Discussion Memorandum DM 99-3
Appraisal and Valuation Services

No. 219-A: Financial Accounting Series—April 2001
Special Report
Business and Financial Reporting, Challenges from the New Economy
Wayne S. Upton, Jr.

Financial Accounting Series—May 17, 2001
Statement of Financial Accounting Standards No. 142
Business Combinations

Confidential Draft
Later became No. 141
No. 221-B: Financial Accounting Series—June 2001
Statement of Financial Accounting Standards No. 141
Business Combinations

Published by Financial Accounting Standards Board of the Financial Accounting Foundation

Supercedes APB Opinion No. 16, *Business Combinations*, and FASB Statement No. 38, *Accounting for Preacquisition Contingencies of Purchased Enterprises*
No. 221-C: Financial Accounting Series—June 2001
Statement of Financial Accounting Standards No. 142
Goodwill and Other Intangible Assets

Supercedes APB Opinion No. 17, *Intangible Assets*

CHAPTER 6

TAX ISSUES

6.1 TAX CONSIDERATIONS

In the United States, a long-standing element of income tax law has concerned intangible assets and intellectual property, that have been partially recognized as amortizable. Amortization results in a tax-deductible expense. The basis for this recognition came from Section 167 of the 1954 Internal Revenue Code (IRC), which provided, in Section 1.167(a)-3, that:

> If an intangible asset is known from experience or other factors to be of use in the business or in the production of income for only a limited period, the length of which can be estimated with reasonable accuracy, such an intangible asset may be the subject of a depreciation allowance. Examples are patents and copyrights. An intangible asset, the useful life of which is not limited, is not subject to an allowance for depreciation. . . . No deduction for depreciation is allowable with respect to goodwill. . . .

The burden of proof was on the taxpayer to identify such assets and to support the position that they have limited economic life.

This tax philosophy mirrors that of the accounting principles described earlier in that intangibles are usually fully recognized following an acquisition of an entire business enterprise. In such a transaction, it is to the benefit of the purchaser to attribute as much of the purchase consideration as possible to identifiable intangibles with limited life and as little as possible to goodwill, which, by statute, cannot be amortized. We agree with William A. Paton that this was a decision by legislation and not necessarily one by reason: "With reference to goodwill amortization . . . the fact that the courts went astray does not justify the conclusion that acquired goodwill may not properly be regarded as an amortizable asset."[1]

Whatever originally gave rise to this approach for income tax handling of intangible assets in acquisitions, the result was massive disagreement between taxpayers and the Internal Revenue Service (IRS), resulting in substantial litigation. Taxpayers, of course, wished to amortize purchased intangible assets over the shortest possible time, and the IRS claimed either that a much longer amortization period was necessary or that the assets were not amortizable at all.

This situation, together with the realization that the IRS had not fared well in the courts (refer to the *Newark Morning Ledger* case), led Congress to adopt legislation on this subject as part of the Omnibus Budget Reconciliation Act of 1993, enacted into law on August 10, 1993. New Section 197 of the IRC defines several classes of intangible assets the cost of which, when purchased, may be amortized using the straight-line

1. *Accounting for Goodwill—Accounting Research Study No. 10*, p. 147.

method over a 15-year period. Included are most of the intangible assets that were the former subjects of bitter contest:

Goodwill

Going concern value

Other intangible assets, to include workforce in place, business books and records, other information bases (lists of current or prospective customers)

Patents, copyrights, formulas, processes, designs, patterns, know-how, format, or similar items

Customer-based intangibles, such as composition of market, market share, or other value resulting from future provision of goods or services pursuant to business relationships

Supplier-based intangibles, resulting from future acquisitions of goods and services pursuant to relationships with suppliers

Any similar item

Licenses, permits, or rights granted by governmental unit

Covenants not to compete, or agreements that have substantially the same effect

Franchises, trademarks, trade names

Excluded from amortization under Section 197 are financial interests, interests in land, certain computer software (to be amortized over 36 months), certain interests in film, sound recording, videotape, book, or similar property, interests under leases or debt instruments, a professional sports franchise, residential mortgage servicing rights (to be amortized over 108 months), and certain transaction costs.

(a) TRANSFER PRICING. As multinational enterprises proliferate, cross-border (national) transactions multiply accordingly. Each of these transactions is a potential income tax deduction in one nation and taxable income in another. This commerce was certain to get the attention of tax collectors worldwide, and it has. This is a situation of interest to us in that the almost universal standard that is applied is to compare a given transfer price to what it would be in an arm's-length situation.

A key element in any price for goods or services is the payment for the use of assets employed by the seller. Many of those assets are intangible. The payment for their use is represented by an appropriate investment return on their value. An arm's-length standard is defined in words almost identical to those we use to describe market value. At the core of transfer pricing issues are the concepts of value, intangible assets, intellectual property, and investment rates of return. That is why this subject is of interest.

(i) U.S. Experience. In the United States there have long been tax regulations concerning transfer pricing between related entities.

To best understand this situation, consider two businesses controlled by a single entity. They could be divisions of the same company, parent and subsidiary, joint venture partners, or two corporations whose stock is owned by the same party. Add to this situation the fact that they are located in two different tax jurisdictions and that they do business with one another (sell goods and services back and forth).

If the income tax rate in the two jurisdictions is not the same, then it is easy to imagine that the controlling entity might arrange the prices being paid for goods and services so that the business in the jurisdiction with the higher taxes shows as little taxable income as possible. The tax collector in that jurisdiction would be understandably dismayed, especially if he or she feels that the transfer price that caused this apparent imbalance in taxable income was unrealistically set.

Transfer pricing regulations have been a part of the U.S. tax law since World War I. They really began to assume their present form as Section 482 of the Internal Revenue Code of 1968. The Tax Reform Act of 1986 amended Section 482 to require that the payment for the use of intangible property (between controlled parties) be "commensurate with the income attributable" to the property. A white paper study on intercompany pricing was issued in October of 1988 and comments were sought. In it, the IRS proposed two methods for establishing the commensurate-with-income standard. After digesting the comments on the white paper, the IRS, in January of 1992, issued proposed regulations introducing three new pricing methods, all based on the use of data from "comparable" transactions.

Other countries were concerned about transfer pricing issues, and comments were received from overseas through the Organization for Economic Cooperation and Development (OECD), which also released, on July 8, 1994, a "Discussion Draft of Part I: Principles and Methods of Its 'Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrators.'" Final regulations were issued July 1, 1994, were effective July 8, 1994, and generally apply to taxable years beginning after October 6, 1994. The governments of the United States, Japan, Canada, and Australia have concentrated on these issues, with the member nations of the OECD not far behind. It is safe to say that nearly every country in the world has enacted and is enforcing some form of transfer pricing regulations. Tax regulations relative to transfer pricing are very complex, and an extensive discussion is beyond our scope here. One of the foundations of an arm's-length transfer price, however, is the value of the assets that each of the parties brings to the transaction and the investment return that each should reasonably expect to receive. So once again, intangible assets and intellectual property (including trademarks) become the keystone in a tax-related issue.[2]

Why should we concern ourselves with such a tax situation in a book on intangible asset and intellectual property valuation? Because, increasingly, intangible assets and intellectual property (or rights thereto) are involved in cross-border transactions. We were told, on a recent trip to China, that the equity contributions of foreign corporations to Chinese joint ventures have often been intangible assets and intellectual property (rather than cash, as they were in the past). The payment for the use of these rights will now come under scrutiny by the tax authorities of both China and the home country of the joint venture partner. A primary focus of that scrutiny is the market value of the intangible assets or intellectual property rights transferred. China, as an example, even goes further, requiring government approval of the value of the intangible assets or intellectual property at the time the joint venture is established, to judge whether the joint venture transaction is equitable to the Chinese partner (who usually contributes land rights, buildings, machines, and a business infrastructure).

We also will find that the income approach to the valuation of intangible assets or intellectual property contains the essential elements required in a transfer pricing analysis. A

2. The reader is directed for further information on transfer pricing to Robert Feinschreiber, *Transfer Pricing Handbook,* 2nd Ed. (Hoboken, NJ: John Wiley & Sons, 1998).

transfer pricing examination requires us to identify the economic benefit of the property, analyze how it will be used, estimate the amount and duration of the income that may flow from its use, and evaluate the risks associated with its exploitation. We also believe that transfer pricing issues will become very important to valuation practitioners, owners of intangible assets and intellectual property, and intellectual property attorneys. Even those not directly involved in tax matters will find themselves drawn into transfer pricing questions.

One of the primary criteria in judging whether a transaction is arm's length is whether other, unrelated parties act the same way, or whether the party being tested acts the same way toward unrelated parties. This train of thought will lead taxing authorities as well as tax managers and attorneys directly to an examination of a company's existing licenses to third parties. The people who were involved in those transactions may well find themselves in the tax arena. Additionally, the new requirements for documentation are very stringent; those whose responsibility this is may well seek the assistance of corporate licensing managers, who earlier were not directly concerned with tax matters.

As a brief preface, the following four illustrations depict the essence of transfer pricing issues. Exhibit 6.1 shows a typical chain of transactions involving several businesses (A through F) that combine to turn copper ore into electrical equipment and sell it at retail. As these entities are independent of each other, no transfer pricing matters are at issue.

Exhibit 6.2 introduces the complexity that companies B, C, D, and E are now commonly controlled businesses.[3] Now there can be transfer pricing issues related to the transactions among them.

In Exhibit 6.3 we illustrate the most difficult transfer pricing condition by placing each of these controlled companies in a separate taxing jurisdiction. Four sets of tax authorities are now looking at the transfer prices among B, C, D, and E.

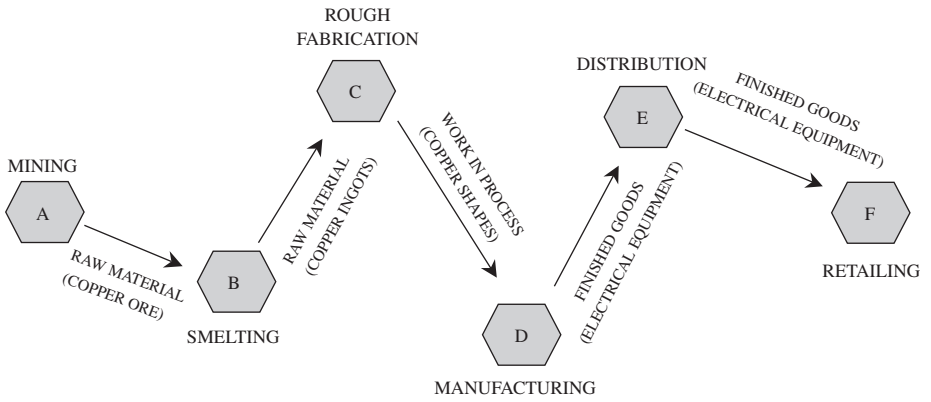

EXHIBIT 6.1 TYPICAL CHAIN OF TRANSACTIONS INVOLVING SEVERAL BUSINESSES (A THROUGH F)

3. The Internal Revenue Code uses the term "controlled" to refer to a transaction (or a party to it) in which the participating parties are under common control, as opposed to an "uncontrolled transaction," in which the parties are not affiliated in any way (and are assumed to be dealing at arm's length). In similar fashion, references to the "tested party" mean the company or transaction that is being examined as to its arm's-length status.

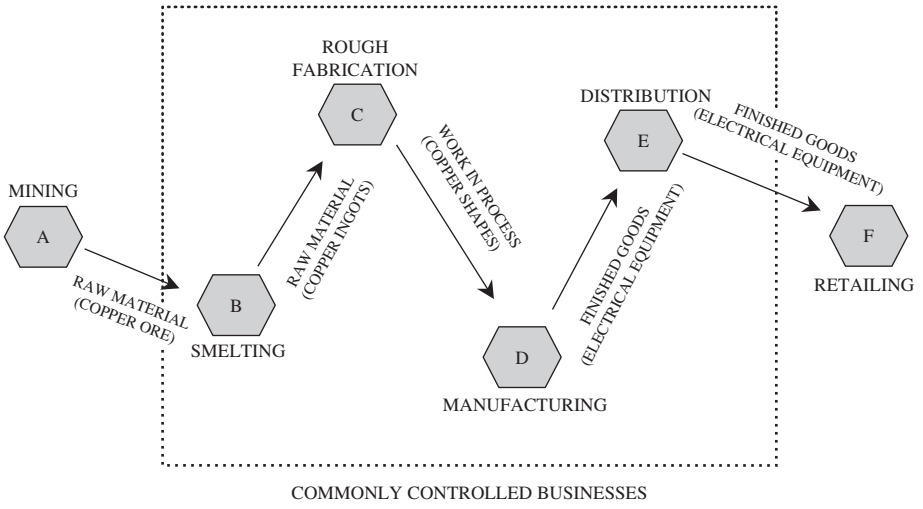

EXHIBIT 6.2 INTRODUCING COMMONLY CONTROLLED BUSINESSES

In Exhibit 6.4, we introduce a further complexity, in that company C is selling copper shapes to an uncontrolled entity X (as well as to controlled company D) in what is presumed to be an arm's-length transaction. This means, in effect, that we have a "benchmark" arm's-length price in the middle of a series of controlled transactions. That benchmark may determine a proper price from C to D. If it does, we must work forward and backward from this benchmark in our analysis of the controlled transfer prices.

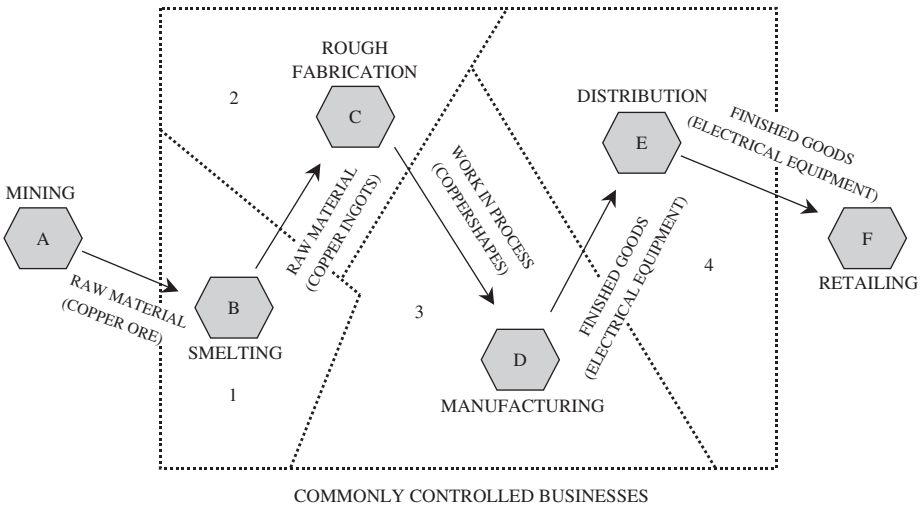

EXHIBIT 6.3 FOUR SETS OF TAX AUTHORITIES LOOK AT THE TRANSFER PRICES AMONG COMPANIES B, C, D, AND E

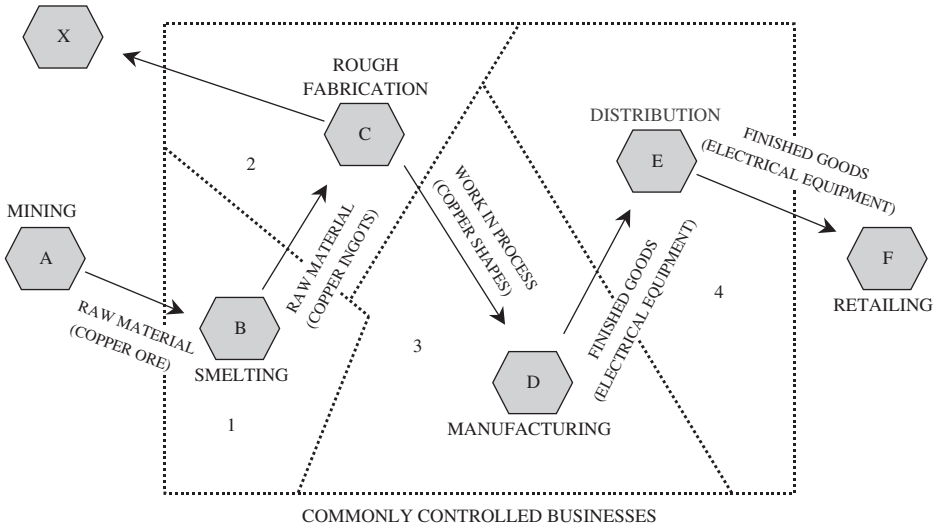

EXHIBIT 6.4 "BENCHMARK" ARM'S-LENGTH PRICE IN THE MIDDLE OF A SERIES OF CONTROLLED TRANSACTIONS

6.2 PRIMARY STANDARDS

(a) VALUE. We use the term "value" as a surrogate for market value. We have defined "market value" as the amount at which the subject property might exchange between a willing buyer and a willing seller, neither being under compulsion, each having full knowledge of all relevant facts, and with equity to both. Another, more practical definition, for our purposes, equates market value to the present value of the future economic benefits of ownership. We invite the reader to focus on this latter definition, because the future economic benefits of ownership are key to transfer pricing issues.

(b) ARM'S-LENGTH STANDARD. The regulations emphasize that "In determining the true taxable income of a controlled taxpayer, the standard to be applied in every case is that of a taxpayer dealing at arm's length with an uncontrolled taxpayer."[4] Our fair market value definition therefore captures the essence of an arm's-length transaction.

On this subject, the OECD Model Convention (Article 9)[5] defines the international standard for analyzing transfer pricing in this way:

> Where conditions are made or imposed between two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly.

A bit more wordy, but we interpret the OECD version of arm's length as the same as that of the IRS.

4. Reg. Sec. 1.482-1(b)(1).
5. *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrators* (Geneva, OECD, 1999).

The OECD also makes some interesting comments relative to intangible assets pertaining to the arm's-length standard, recognizing that there can be logical and explainable differences as to how controlled and uncontrolled parties may choose to exploit intangible assets or intellectual property:

> A practical difficulty in applying the arm's length principle is that associated enterprises may engage in transactions that independent enterprises would not undertake. . . . For example, an independent enterprise may not be willing to sell an intangible (e.g., the right to exploit the fruits of all future research) for a fixed price if the profit potential of the intangible cannot be adequately estimated and there are other means of exploiting the intangible. . . .
>
> In such a case, an independent enterprise may not want to risk an outright sale because the price might not reflect the potential for the intangible to become extremely profitable. Similarly, the owner of an intangible may be hesitant to enter into licensing arrangements with independent enterprises for fear of the value of the intangible being degraded. In contrast, the intangible owner may be prepared to offer terms to associated enterprises that are less restrictive because the use of the intangible can be more closely monitored.[6]

(c) COMPARABILITY. The judgment as to whether a controlled transaction meets the arm's-length test usually is based on a comparison of the results of that transaction with those of an uncontrolled comparable transaction.[7] The use of comparable transactions and data is a common thread throughout the regulations. As an example, if unaffiliated distributors in France typically earn 3% net operating income, then a U.S. taxpayer's transfer prices should be set so as to produce the same profits for its French subsidiary that operates as a distributor. This simple application of a comparable methodology sounds logical (and it is, when properly applied), and the concept permeates the regulations because its use does not depend on extensive taxpayer information and judgment and mitigates one of the enforcement stumbling blocks. However, like many simple approaches to a problem, dependence on information about comparable transactions and/or companies presents practical problems that may not be apparent on the surface.

The regulations tell us that comparability (of a transaction or the parties to it) depends on several factors:

- *Functions*. Who does what to whom? What functions do the parties perform, such as R&D, design/engineering, manufacturing, materials management, marketing, distribution, warehousing, legal, accounting, collections, and the like.
- *Contractual Terms*. Consideration paid, sales/purchase volumes, warranty terms, technical support, rights to updates or revisions, duration, termination or renegotiation rights, collateral transactions, credit and payment terms. This information might be taken from a third-party license executed by the tested party.
- *Risks*. Include consideration of all business and financial risks, including market and currency risk, credit and collection, product liability, and risk of success or failure of R&D. The primary concern is which of the parties to the transaction bears these risks.
- *Economic Conditions*. Similarity of market size, geography, share, competition, and the level of sales (retail, wholesale, etc.).
- *Property or Services*. Comparability of the products and/or services being transferred in the transactions. Of particular interest to us is the recognition that there may be intangible assets embedded in tangible property or services being transferred.

6. Ibid., Chapter 8, (B)(i)(1.10).
7. Reg. Sec. 1.482-1(d)(1).

These are the general standards of comparability. Certain refinements apply specifically to intangible assets and intellectual property transferred in the tested and supposedly comparable transactions.[8] Included are these standards:

Assets should be used in similar products and processes within the same industry or market.

Assets should have similar profit potential as measured by "the net present value of the benefits to be realized (based on prospective profits to be realized or costs to be saved)." Included in this calculation should be a consideration of "capital investment and start-up expenses required, the risks to be assumed, and other relevant considerations."

The terms of transfer should be similar, including the exploitation rights, exclusivity, geographic limitations, duration, grant-back rights, and functions or services to be performed by the parties.

The tested and comparable intangible assets or intellectual property should be in the same stage of development and possess a similar degree of uniqueness.

Clearly these standards of comparability are high indeed, especially when applied to specific intangible assets or intellectual property. If, as an example, a U.S. parent has licensed the right to use proprietary technology to a foreign subsidiary, the amount of the royalty payment may be called into question. How likely is it that this U.S. taxpayer will be able to discover license agreements between other, uncontrolled parties that have sufficient similarity to support the arm's-length nature of this transaction? Not very—unless the taxpayer itself has third-party licenses of the same intellectual property.

Because, however, of the IRS's predilection to depend on comparable transaction techniques, we anticipate that taxpayers will be pushed to attempt such searches and to reveal much internal licensing data, whether comparable or not. It is also very likely that industry "rules of thumb" will surface, and taxpayers will be presented with them as arm's-length comparables, notwithstanding their homogeneous nature and inherent lack of comparability.

It seems to us that intangible assets and intellectual property, by their very nature, have a degree of uniqueness that disables the application of strictly comparable techniques.

The OECD is a bit more concise with respect to comparability:

> Conditions of transactions are comparable if there are no differences in those conditions that could materially affect the condition being examined in the methodology (e.g., price or margin), or if reasonably accurate adjustments can be made to eliminate the effect of such differences.[9]

(d) FUNCTIONAL ANALYSIS. The first descriptive task in the determination of comparability is to observe the functions performed by the parties to the tested transaction. This step, in reality, assumes much more importance than the space given to its description in the regulations would indicate. It is key to the analysis of transfer pricing, and the reason is not complex. The parties to a transaction expect to be compensated for that which they bring to the deal. Every deal is this way. If we rent office space, there are several dozen questions to be answered by landlord and tenant as to what their respective responsibilities will be—Who will pay the property taxes, electric bill, cleaning bill? Who guarantees payment? What uses are permitted?—and on and on. The answers to these questions determine the rental rate, so they are critical to the economics of the deal.

8. Reg. Sec. 1.482-4(c)(2)(iii)(B)(1).
9. Ibid., Chapter 1, (c)(i)(a)(1.15).

In the same way, we cannot begin to evaluate the proper (arm's-length) payment for goods, services, or intangible assets without having a full understanding of the responsibilities of the parties to the transaction. Thus, the "functional analysis" of the regulations is key. Because we are here concerned with the influence of intangible assets on transfer pricing issues, we can focus on that part of a functional analysis.

Astronomers discovered the planet Neptune because, while it was itself unobserved, its gravitational pull affected the orbits of planets that could be observed. Neptune's presence was therefore postulated before it was observed. The same process often applies when we search for intangible assets, because we sense their effect before we know what is causing it.

As an example, when we observe a profitable enterprise or business segment, our search begins with identification of the primary profit drivers. We begin to ask hypothetical questions as to what they are: Is it the trademarks, the distribution system, the workforce, patented or unpatented technology, or favorable contracts? To test these hypotheses, we mentally remove each asset from the enterprise and attempt to measure the effect. If the business lost its trademarks, would it also lose its market position and become an also-ran commodity? Or is it the skill of the workforce that customers recognize, or the patent-protected features of the product?

Financially, we would begin with the income and assets of the business per its books and make a rough estimate whether there is sufficient income to provide a reasonable return on the monetary and tangible assets of the unit. We might use the average of gross and net book value as a guide to tangible asset value. If there appear to be earnings in excess of a return on these assets, it is reasonable to assume that some intangible assets are at work.

We recommend what we have called an upstream search to identify the intangible assets present. It is "upstream" because we find it most useful to begin with the customer and work toward the raw materials (to use a manufacturing example). We might or might not actually contact customers, but at least we would begin with the marketing function to learn what is driving sales revenue. Beyond that, our analysis would cover the other functional areas of the business. This is discussed more fully in Chapter 10.

(e) BEST METHOD. The regulations tell us that "the arm's length result of a controlled transaction must be determined under the method that, under the facts and circumstances, provides the most reliable measure of an arm's length result."[10] We describe some of these methods in following sections. It is incumbent on the taxpayer to choose the method best suited to the facts of a particular transfer pricing situation. As we also note, it is the taxpayer's further responsibility to clearly state why the method was chosen and why other methods were rejected.

6.3 PROPERTY DEFINITIONS

(a) TANGIBLE ASSETS. The term tangible assets, relative to transfer pricing situations, refers generally to goods that are in the manufacturing process and will ultimately be sold as product. Included would be materials and supplies, raw materials, work in process, and finished goods inventories. In Exhibit 6.1 we illustrated the transfer of tangible assets of this type. There is a transfer price between each of these entities.

10. Reg. Sec. 1.482-1(c)(1).

(b) INTANGIBLE ASSETS. The regulations define "intangible" as "an asset that comprises any of the following items and has substantial value independent of the services of any individual."[11] The regulations then list six categories of intangible assets:

1. Patents, inventions, formulae, processes, designs, patterns, or know-how. This category could also be described as patented and unpatented technology.
2. Copyrights and literary, musical, or artistic compositions
3. Trademarks, trade names, or brand names
4. Franchises, licenses, or contracts
5. Methods, programs, systems, procedures, campaigns, surveys, studies, forecasts, estimates, customer lists, or technical data
6. Other similar items

For transfer pricing purposes, an item is considered similar to items 1 through 5 "if it derives its value not from its physical attributes but from its intellectual content or other intangible properties."[12]

The OECD defines the term "intangible property" to include rights to use industrial assets such as patents, trademarks, trade names, designs, or models. It also includes literary and artistic property rights and intellectual property such as know-how and trade secrets. The OECD discussion on intangible assets concentrates on business rights that are associated with commercial activities, including marketing activities. It comments that "these intangibles are assets that may have considerable value even though they may have no book value in the company's balance sheet. There also may be considerable risks associated with them (e.g., contract or product liability and environmental damages)."[13]

6.4 METHODS FOR DETERMINING INTANGIBLE ASSET TRANSFER PRICES

The regulations tell us[14] that the arm's-length consideration for the transfer of intangible assets must be commensurate with the income attributable to the intangible asset, and that it must be determined using one of four methods:

1. The comparable uncontrolled transaction method (CUT)
2. The comparable profits method (CPM)
3. The profit split method
4. Unspecified methods

(a) COMPARABLE UNCONTROLLED TRANSACTION METHOD (CUT). By this method, we evaluate whether a controlled transaction is arm's length by reference to a comparable uncontrolled transaction:

> If an uncontrolled transaction involves the transfer of the same intangible under the same, or substantially the same, circumstances . . ., the results . . . [from applying the CUT method] . . . will generally be the most direct and reliable measure of the arm's length result for the controlled transfer.[15]

11. Reg. Sec. 1.482-4(b)(1)-(6).
12. Ibid.
13. Ibid., Chapter 6, (A)(6.2).
14. Reg. Sec. 1.482-4(a)(1)-(4).
15. Reg. Sec. 1.482-4(c)(2)(ii).

This endorsement of the reliability of the CUT method is not surprising. If we are appraising a home, the best of all possible worlds is to discover that the identical home next door sold yesterday in an arm's-length transaction. Nice work if you can get it. With intangible assets, it is a condition so rare as to be nonexistent. We cannot imagine being so fortunate as to discover (and learn all of the necessary facts about!) an intangible asset transaction in the same industry as our subject, involving the same type of asset (e.g., a trade secret), with the same profit potential, terms of transfer, stage of development, and so on and so forth.

(b) COMPARABLE PROFITS METHOD (CPM). This is the same as the comparable profits method used for tangible property transfers. An arm's-length indicator is the benchmark. Adjustments can be made between the tested party and the uncontrolled profit indicators. A number of financial ratios (operating profit/sales, gross profit/operating expenses, etc.) can be used to compare the controlled transaction (or the operations of a controlled subsidiary) with the uncontrolled.

With respect to intangible assets, however, we must compare profit measures of uncontrolled companies that have the same complement of intangible assets as the tested party. We can attempt to lighten the comparability burden by selecting as the tested party the entity that does not use valuable intangibles, but that is not always an available solution. So, using the same facts as in the preceding example, we must discover a U.S. subsidiary of a foreign corporation, in the same industry, that licenses from its parent a similarly important patented technology, under similar terms, and for a similar royalty. If we can demonstrate that the profits achieved by the tested party are close to those earned by this comparable company, then the transfer price (royalty) must be all right, and we may have passed the test.

Are we any more likely to discover a comparable company whose profits we can compare than we are a comparable uncontrolled transaction? We doubt it—even though the standards of comparability have been relaxed somewhat from earlier suggested regulations, and even if we are permitted to make adjustments in the uncontrolled transaction to achieve an acceptable level of comparability. It is very likely, in our view, that attempts at actual application of this method when there are significant intangible assets on both sides of the transaction will push the comparability standards to their limits and beyond.

(c) PROFIT SPLIT METHOD. The concept of dividing profits among assets is both the crux of the problem and its solution. The essence of the method lies in the answers to these two questions:

1. What is the value of the intangible assets and functions brought by each party to the transaction?
2. What returns are they entitled to, based on these values, the functions performed, and their relative risks?

The answers to these two questions will lead one to an appropriate transfer price by the profit split method.

The problem, from an enforcement standpoint, is that the answers to these questions depend on both taxpayer information (which may have been forthcoming only in delayed and incomplete form) and market information (which undeniably has a subjective element). Regulatory authorities would prefer to avoid both of these potential sinkholes and anchor instead to the supposed rock of comparability, but in our view the profit split method better comports with the way in which businesspeople actually evaluate intangible asset and intellectual property transactions.

> The profit split method evaluates whether the allocation of the combined operating profit or loss attributable to one or more controlled transactions is arm's length by reference to the relative value of each controlled taxpayer's contribution to that combined operating profit or loss.[16]

Easier said than done. But as in many endeavors, the toughest way is the best. We must look to the actual operations and functions of the entities involved in the transaction as well as the specifics of the transaction itself in order to discover what is arm's length and what is not. We are very unlikely to find "outside," "third-party," "uncontrolled" transactions of intangible asset or intellectual property transfer that are of any use at all in answering the arm's-length question.

Continuing the description of the profit split method, the regulations tell us that:

> the relative value of each controlled taxpayer's contribution . . . must be determined in a manner that reflects the functions performed, risks assumed, and resources employed by each participant. . . . Such . . . allocation is intended to correspond to the division of profit or loss that would result from an arrangement between uncontrolled taxpayers.[17]

More specifically, the regulations call for the use of either the comparable profit split method or the residual profit split method.

(d) COMPARABLE PROFIT SPLIT. As one would suppose, the comparable profit split method looks to the division of operating profit experienced by uncontrolled taxpayers for an appropriate division in the tested situation. The regulations correctly point out that issues of comparability are especially important to the reliability of any result using this method.

We must remember that we are now addressing the values and contributions of intangible assets. Therefore, not only must we discover uncontrolled companies that meet the comparability standards of the CUT and comparable profits methods, but each party to the uncontrolled transaction must have a complement of intangible assets and intellectual property similar to that of the tested parties.

(e) RESIDUAL PROFIT SPLIT. The residual profit split method follows a two-step process of (1) allocating income to "routine contributions" and then (2) allocating the residual profit. Routine contributions are:

> contributions of the same or a similar kind to those made by uncontrolled taxpayers involved in similar business activities for which it is possible to identify market returns. Routine contributions ordinarily include contributions of tangible property, services and intangibles that are generally owned by uncontrolled taxpayers engaged in similar activities.[18]

Residual profit is that which remains after profit is allocated to routine contributions, because that first allocation "will not reflect profits attributable to the controlled group's valuable intangible property."[19] This concept is discussed in Chapter 10.

(f) AN "OTHER" METHOD. Is there some other way to estimate value for the special intangible assets of the tested parties? We think there is, even though we cannot directly apply a capitalization rate to an identifiable income stream.

Referring back to Exhibit 6.2, we observe that the sales revenue of controlled distributor E is set by uncontrolled F's retail marketplace. In similar fashion, the costs of controlled smelter B are set by the market for copper ore, in which uncontrolled miner A

16. Reg. Sec. 1.482-6(a).
17. Reg. Sec. 1.482-6(b).
18. Reg. Sec. 1.482-6(c)(3)(A).
19. Reg. Sec. 1.482-6(c)(B).

operates. So, overall, in the production chain from A to F, market forces prevail, and the aggregate operating profit achieved by B, C, D, and E represents the earning power of their combined portfolio of assets—monetary, tangible, and intangible.

If, however, we need to quantify the earning power of the asset portfolio of C, we have a problem. C's expenses are determined by B's selling price (controlled), and C's revenues are determined by its selling price to D (controlled). So the only meaningful benchmarks we have are the total value of the enterprise represented by the operations of B, C, D, and E, their total earnings, and the fair market value of the assets we can identify.

We can work with these known (or "estimatable") quantities to estimate the value of the special intangible assets of the tested parties. To illustrate how this can be done, we will reduce the number of tested parties to two, but the same technique could be used for the entities of Exhibit 6.1.

The first step is to estimate the value of the total controlled business enterprise. This is a meaningful value, because we know that outside the boundaries of this enterprise, market forces are determining costs and revenues. This is illustrated as Step 1 in Exhibit 6.5.

The second step is to estimate values for the "typical" assets[20] (monetary, tangible, and intangible) in the tested parties' portfolios. This does not have to be an extremely complex and detailed process. Some book values can, no doubt, be used. A cost approach can be used for an assembled workforce, elements of a going concern, and the like. We can test the tentative conclusions by applying an overall rate of return to the aggregated values to see if there is excess income. There should be, if we are right about the existence of special intangibles in the first place. Once we have a value estimated with which we are satisfied, we can subtract that from the total business enterprise value as illustrated in Exhibit 6.6. We now have (1) the business enterprise value and (2) the total value of the special intangibles.

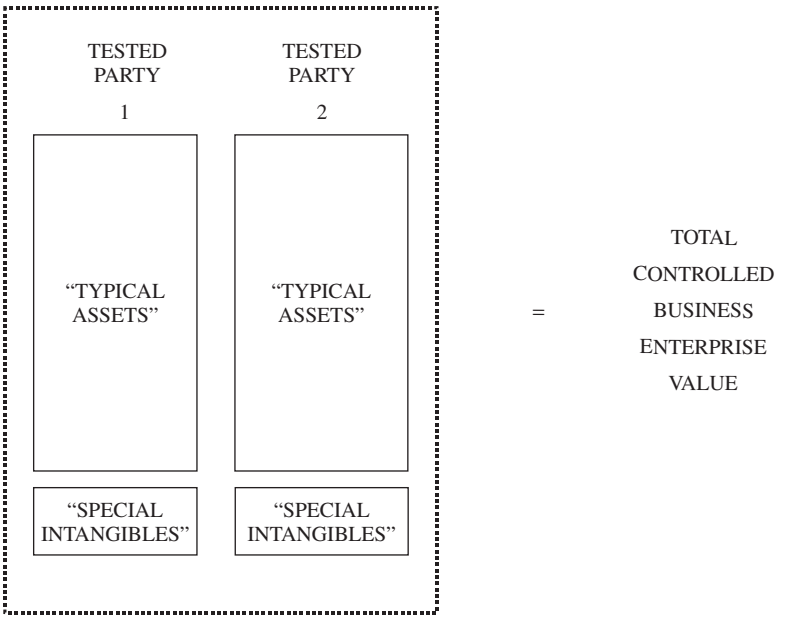

EXHIBIT 6.5 STEP 1: ESTIMATING THE VALUE OF THE TOTAL CONTROLLED BUSINESS ENTERPRISE

20. We use the terms "typical intangibles" and "special intangibles" to replace the regulations' "routine" and "valuable" terminology, which we feel is confusing.

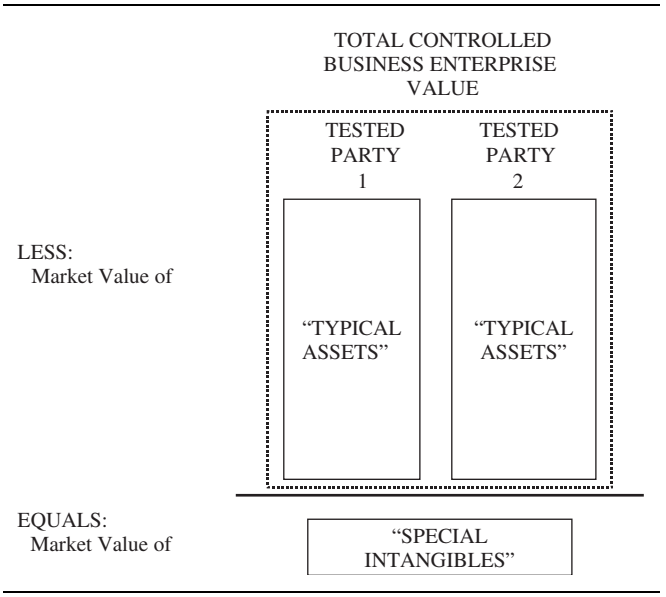

EXHIBIT 6.6 STEP 2: SUBTRACTING THE VALUE OF "TYPICAL ASSETS" FROM THE TOTAL BUSINESS ENTERPRISE VALUE

The next step is to estimate the amount of operating income attributable to the special intangibles. We accomplish this by computing the returns required by the typical assets and subtracting this amount from the total operating income of the combined enterprise. This is illustrated in Exhibit 6.7, and provides us with another ingredient in our formula, the return allocable to "special intangibles."

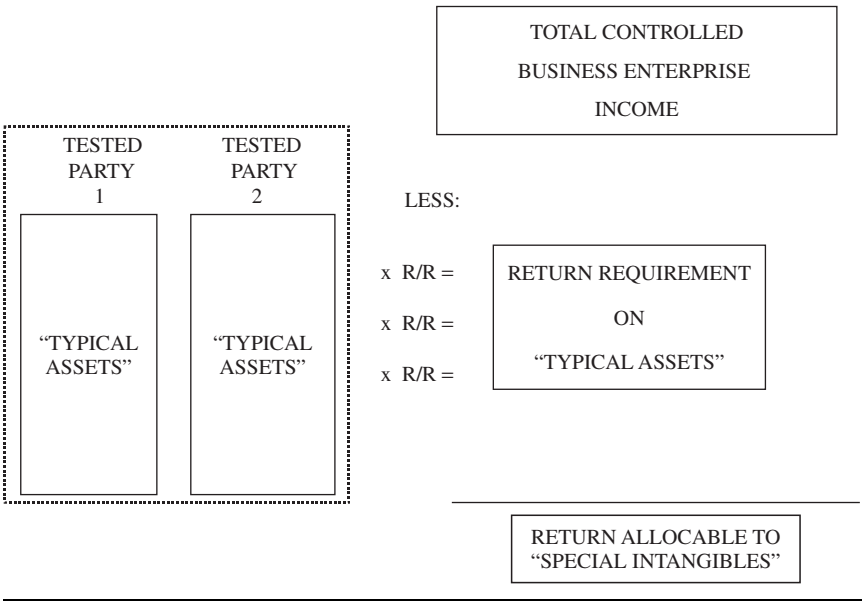

EXHIBIT 6.7 STEP 3: ESTIMATING THE AMOUNT OF OPERATING INCOME ATTRIBUTABLE TO THE "SPECIAL INTANGIBLES"

We now have a problem with two unknowns: the value of the special intangibles of Tested Party 1 (TP1) and the value of the special intangibles of Tested Party 2 (TP2). To solve this problem, one final ingredient is needed—estimates of the relative risks associated with the TP1 and TP2 entities. To evaluate their relative risks, we need to refer again to the information gathered in our functional analysis. We also need to apply some common sense and the principles we have stressed in earlier chapters:

- The return required on special intangibles ought to be higher than the overall return required on the typical assets of TP1 and TP2.
- The return rates should be in the range of reasonableness for similar assets and investments.

This analysis requires application of the suggestions discussed in Chapter 10 regarding how to discover the economic contributions of intellectual property. This investigation must be thorough, because B, C, D, and E represent an integrated business, and the location of an intangible asset may be separated from its economic benefit. Referring back to Exhibit 6.1, intangible assets or intellectual property at entity B may produce a cost saving at entity D. Intangible assets or intellectual property (such as a trademark) developed by entity C may result in a premium price to entity E. These are the facts we must know in order to make the judgments about the value of the special intangible assets that may be present in the entities along the chain.

In an iterative process, these trial rates of return are applied to various assumed values for the special intangibles of TP1 and TP2. The assumed values are, of course, limited by the total income allocable to those intangibles and the total value of the combined business enterprise. The results have to be tested for reasonableness. There is judgment in this process, no doubt about it. The estimating of two residual values, considering the number of variables in the whole equation, must be overseen by some seasoned judgment. This complex process is illustrated in Exhibit 6.8.

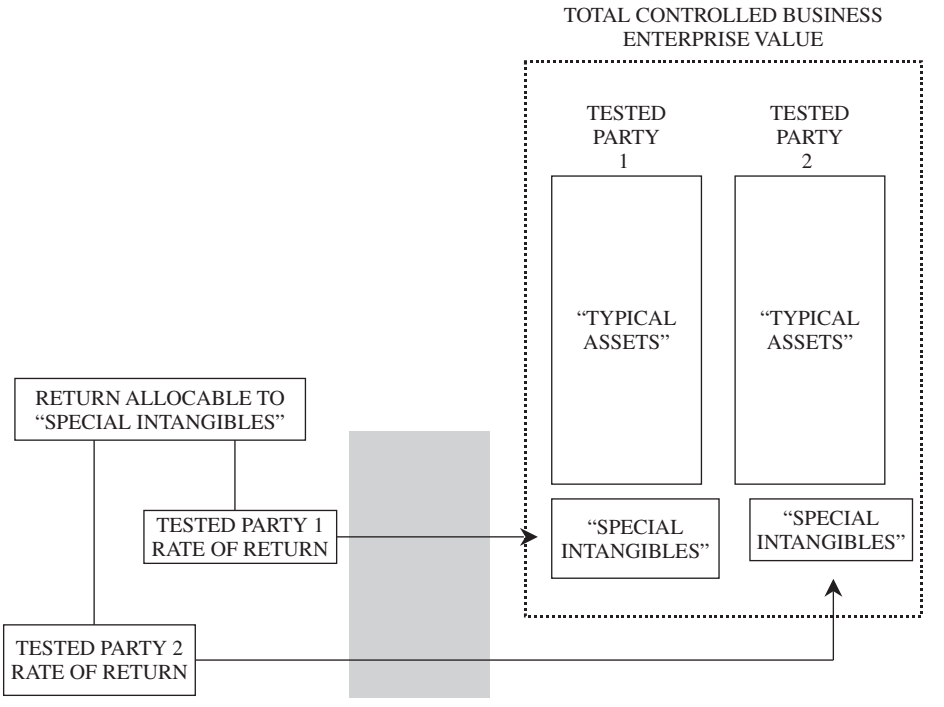

EXHIBIT 6.8 STEP 4: ESTIMATING TWO RESIDUAL VALUES

6.5 COST-SHARING ARRANGEMENTS

On December 19, 1995, the IRS released final regulations on cost-sharing arrangements (CSAs) relating to the shared use of rights to intangible property. Regulations relating to CSAs were revised several times before being released in final form. Again, we focus on the financial relationship between two related entities, each operating in a separate international tax jurisdiction.

A party can develop intangible assets or intellectual property and give the other entity the rights to utilize that property in exchange for some payment. This arrangement, of course, would be covered by the more usual transfer pricing regulations, which instruct us to analyze the transaction by one of the following methodologies:

- The comparable uncontrolled transaction method
- A profit split method
- The comparable profits method
- An unspecified methodology

Earlier we discussed some of the advantages and disadvantages of these methodologies for determining an appropriate arm's-length transfer price for intangible property. In general, our feeling is that a profit split method is the most reliable method even though it is not much in favor with taxing authorities, and can be somewhat complex.

The parties could enter into a CSA whereby the entities share the cost of developing the intangible asset or intellectual property and then share in the economic benefit of its use. On the surface, this type of relationship would appear to have some distinct advantages. First, it may be less controversial with taxing authorities in that the tax deductions in each jurisdiction are based on demonstrable costs and not on more subjective profitability measures. This arrangement probably is also less contentious if the project ends in complete or partial failure, in that, again, costs are being used as the measure rather than operating losses, which tend to get much more attention. It is also our understanding that in many countries cost-sharing payments are not subject to withholding taxes as royalties would be in the case of a typical transfer pricing transaction.

In the following discussion, we highlight some of the valuation issues that arise in the use of a CSA.

(a) COST-SHARING ARRANGEMENT DEFINED. A cost-sharing arrangement is defined as "an Agreement under which the parties agree to share the costs of development of one or more intangibles in proportion to their shares of reasonably anticipated benefits from their individual exploitation of the interests in the intangibles assigned to them under the arrangement."[21] A qualified CSA must include two or more participants, provide a method to calculate each participant's share of intangible development costs, provide for adjustment to the participants' shares of intangible development costs to account for changes in economic conditions, and be recorded in a document that is contemporaneous with the formation of the CSA.

(b) "BUY-IN" PROVISION. Since each of the participants in a CSA is deemed to have some proportionate share in the intangible property being developed, any change in their relative positions or any increase or decrease in the number of participants will cause a reallocation of their interest in the property and, therefore, may trigger so-called buy-in

21. Treas. Reg. § 1.482-7(a).

payments. A fairly common situation of this type is the case in which one of the participants makes preexisting intangible property available to the CSA. In that case, each of the other participants must make a buy-in payment to the owner. These payments would be based on the fair market value of the preexisting intangible property made available to the CSA. The payments could be in the form of lump sums, installment payments, or royalties. Such a transaction would trigger the need for a valuation of some complexity.

- It is necessary to define very carefully the specific interest in the intangible property that will be transferred to the CSA participants. The entity that developed and owns the intangible property might transfer all of the rights of ownership to the CSA. In this case, this determination is fairly straightforward. However, the entity that developed and owns the intangible property might retain certain rights to it, making this determination more complex. As we have pointed out, the value of this transaction is highly related to the specific rights being transferred.
- It is necessary to firmly establish the "as-of date" of the transfer, since the intangible property transferred may be in some intermediate stage of development. Again, the value of the property rights transferred would be very sensitive to their stage of development.
- A careful evaluation must be made of the risk associated with the exploitation of the intangible property in the hands of the CSA participants. This risk may be different from the business risk associated with its use by the owning entity.
- It is, of course, necessary, if compensation is to be in the form of installment payments or royalties, to make a careful financial analysis to ensure that the present value of the expected stream of payments or royalties will in fact compensate the owner of the intangible property for the value of the rights transferred.

If a new participant joins the CSA during the intangible property development process, the new entrant must compensate the other participants for its share of the then-fair market value of the property.[22] The same concerns apply in this case: the parties' interests must be carefully defined, the stage of development must be considered, and the risk must be examined.

Obviously, the buy-in provisions of Treas. Reg. § 1.482-7 may well generate some very complex valuation issues relating not only to the fair market values of various proportionate shares of intangible property but also to the ever-changing fair market value of intellectual property under development.

(c) ANTICIPATED ECONOMIC BENEFITS. Treas. Reg. § 1.482-7(f)(3) contains the description of the requirement by which the participants in a CSA must estimate the "reasonably anticipated benefits" that they will derive from the intangibles issuing from the CSA.[23] That allocation of the future benefits is used to apportion the costs of intangible property development among the participants.

> A controlled participant's share of reasonably anticipated benefits under a qualified cost sharing arrangement is equal to its reasonably anticipated benefits divided by the sum of the reasonably anticipated benefits of all the controlled participants. The anticipated benefits of an

22. Treas. Reg. § 1.482-7(g)(8).

23. Treas. Reg. § 1.482-7(e)(1). Benefits are additional income generated or costs saved by the use of covered intangibles.

> uncontrolled participant will not be included for purposes of determining each controlled participant's share of anticipated benefits. A controlled participant's share of reasonably anticipated benefits will be determined using the most reliable estimate of reasonably anticipated benefits.[24]

In this instruction, the regulations recognize that there may be uncontrolled entities within a CSA. While the future economic benefits of the uncontrolled participant may not enter into the arithmetic of the allocation between the controlled participants, the estimate of total economic benefit (including that of the uncontrolled entity) may well have to be made because those estimates are based on forecasts of total market and market share for a product or service arising from the CSA. This would imply some sharing of information between controlled and uncontrolled entities that competitive pressures may make difficult to obtain.

A number of direct and indirect measures are suggested as ways to quantify these relative future benefits.

> In order to estimate a controlled participant's share of anticipated benefits from covered intangibles, the amount of benefits that each of the controlled participants is reasonably anticipated to derive from covered intangibles must be measured on a basis that is consistent for all such participants. . . . Anticipated benefits are measured either on a direct basis, by reference to estimated additional income to be generated or costs to be saved by the use of covered intangibles, or on an indirect basis, by reference to certain measurements that reasonably can be assumed to be related to income generated or costs saved.[25]
>
> Indirect bases for measuring anticipated benefits from participation in a qualified cost sharing arrangement include . . . units used, produced or sold[;] . . . sales[;] [and] . . . operating profit. . . . [O]ther bases for measuring anticipated benefits may, in some circumstances, be appropriate, but only to the extent that there is expected to be a reasonably identifiable relationship between the basis of measurement used and additional income generated or costs saved by the use of covered intangibles.[26]

All of these measures require forecasts on the part of the participants as to what their individual benefits are expected to be as a result of exploiting intangibles developed by the CSA. If the actual economic benefits are not apportioned among the participants as forecasted at the outset, the expenses that the participants incurred (based on that original apportionment) can be discarded by the IRS as "unreliable" and redistributed. The test of whether the original estimates were reliable is whether they are within 20% of the actual results.

The requirement that taxpayers' estimates of future economic benefits be within 20% of the actual results poses some difficult choices. If the CSA will be developing intangible assets from their embryonic stage, then the forecast of economic benefits becomes very difficult, and it is highly unlikely that the actual results will be within the 20% range; therefore, the forecast will be judged "unreliable" and the expenses will be subject to redistribution by the IRS. The regulations do offer some solace in that the IRS may not make a redistribution if the divergence between forecast and actual is due to an "extraordinary event."[27] An extraordinary event is not defined, however.

As an alternative, a taxpayer might select to perform the early-stage development in one entity in order to bring the intangible asset nearer to commercialization. In such cases, it is more likely that the forecast of future economic benefits will be within the 20% range when compared with the actual results. This strategy, of course, involves a buy-in by the other participants.

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24. Treas. Reg. § 1.482-7(f)(3)(i).
25. Treas. Reg. § 1.482-7(f)(3)(ii).
26. Treas. Reg. § 1.482-7(f)(3)(iii)(A)-(D).
27. Treas. Reg. § 1.482-7(f)(3)(iv)(B).

The reader will no doubt begin to sense the similarity between the requirement to forecast anticipated economic benefits and the discounted cash flow valuation techniques presented throughout this book. Forecasts of economic benefits are obviously a keystone of this exercise. The regulations describe these projections as follows:

> The reliability of an estimate of anticipated benefits also depends upon the reliability of projections used in . . . making the estimate. Projections required for this purpose generally include a determination of the time period between the inception of the research and development and the receipt of benefits, a projection of the time over which benefits will be received, and a projection of the benefits anticipated for each year in which it is anticipated that the intangible will generate benefits. A projection of the relevant basis for measuring anticipated benefits may require a projection of the factors that underlie it. . . . A projection of operating profits may require a projection of sales, cost of sales, operating expenses, and other factors that affect operating profits.[28]

Such a detailed forecast will be a challenge for most taxpayers, combining as it does the necessity of forecasting total future economic benefit with its timing, year by year. The onset of economic benefits must be forecast as well as their demise. This latter aspect may be quite difficult if the intangible property to be developed by the CSA is a new product line that may, in turn, foster the development of a trademark or brand. The economic life of a trademark can be indefinite. The situation is further complicated if one of the controlled entities develops a brand extension outside of the CSA. In theory, that entity would have to make some buy-in payment to the CSA participants for that use of property developed within the CSA. That could pose a difficult valuation problem.

The regulations permit expense apportionments that are based on the present value of future benefits rather than on some actual measure of future benefits. That is, Treas. Reg. § 1.482-7(f)(3)(iv)(A) tells us that:

> If it is anticipated that there will be significant variation among controlled participants in the timing of their receipt of benefits, and consequently benefit shares are expected to vary significantly over the years in which the benefits will be received, it may be necessary to use the present discounted value of the projected benefits to reliably determine each controlled participant's share of those benefits.

With the introduction of the present value concept, the calculation of anticipated economic benefits for each of the entities in a CSA becomes identical to the discounted cash flow calculations we have used in this book. There could be a series of such discounted cash flow forecasts, one for each participant, and perhaps one representing the overall exploitation of the intangible property to be developed in the CSA. Our calculations suggest that such present value calculations may be more forgiving with respect to an ultimate comparison with actual results vis-à-vis the 20% margin for error. This would depend to a large extent on the discount rate used in the present value calculation and the timing of the anticipated economic benefits among the parties.

An additional advantage of basing the participants' benefit shares on a present value calculation is that, by the very nature of the method, one must evaluate future streams of sales or earnings in their entirety. This would smooth the effect of specific periods or years that are atypical.

(d) "LOOK-BACK." Implicit in the regulations concerning cost-sharing arrangements is the "look-back" concept. This concept stems from the fact that any comparison of actual versus forecast results of a CSA must be made after the fact, and proposed IRS adjustments therefore are made retroactively. This is a significant departure from the

28. Treas. Reg. § 1-482-7(f)(3)(iv)(A).

arm's-length principle because it implies that uncontrolled parties, in an arm's-length transaction, would agree to a constant reevaluation of a transaction. In the context of tangible and intangible asset transfer pricing, this is equivalent to assuming that the parties to a licensing transaction would agree to an annual reevaluation of the transaction and the relative benefits to the parties, with the result that the royalty, or payment for the use of licensed intellectual property rights, would be subject to annual change. This is totally contrary to what happens in the real world. There are relatively rare occasions in which, when embryonic technology is licensed, the parties may agree to defer negotiation of a royalty rate until the technology development picture becomes clearer. In other situations, licenses contain a window of opportunity during which royalty rates may be renegotiated. These situations are not common, however, and the typical situation in the real world is that the parties to a license must abide by the originally negotiated transaction, in spite of subsequent changes.

Most taxpayer focus to date has been on the transfer of goods and the prices that govern those transactions. These tend to be the most visible transactions and therefore get the attention. Yet there has been considerable commerce in intellectual property, an area that continues to grow. Trademarks are a focus of the tax regulations and will, we believe, soon be a focus of multinational taxpayers and tax collectors. Every multinational that we know that has overseas subsidiaries acting as distributors allows its subsidiaries to use the trademarks of the parent. This gives the subsidiaries a different stature than if they were independent. In subsequent chapters we will examine the role of trademarks in industrial and commercial trade, because this will become an issue as taxpayers attempt to accurately reflect the real substance of their intracompany transactions.

6.6 INVESTMENT HOLDING COMPANIES

We refer here to a business entity created for the purpose of owning intangible assets and/or intellectual property. It is termed a holding company because its primary reason for existence is to own and manage a portfolio of intangible assets. In many companies the ownership of intangibles is distributed among the business units in which they were created or acquired. A holding company can centralize ownership and management and focus responsibility for the protection and exploitation of these important corporate assets. Most holding companies are structured so that the business units that use the intangibles license them from the holding company and pay royalties for their use. There may or may not be tax benefits, depending on the location of the holding company and its structure.

(a) ESTABLISHING A HOLDING COMPANY.

(i) Transferring the Assets. After the holding company is organized, the intangible assets are transferred by the parent to the company in exchange for stock of the holding company. Although such an exchange between companies should not be subject to federal taxation under either Section 351 or 368(a)(1)(B) of the Internal Revenue Code,[29] a federal tax specialist should review these tax-free exchanges prior to the transfers.

(ii) Valuing the Assets. In some instances, it may be necessary to value the intangible assets or intellectual property at an amount that is realistic and reflective of an arm's-length transaction. This is most often defined by fair market value, or the amount at

29. USCA Sec. 351 and 368(a)(1)(B); IRC Sec. 351 and 368(a)(1)(B).

which the asset would exchange between a willing buyer and a willing seller, neither being under compulsion, each having full knowledge of all relevant facts, and with equity to both.

The amount of the transfer consideration should be supported by an appraisal, and many taxpayers are of the opinion that it should be independently prepared. The valuation of the intangible asset will most often be measured by a capitalization of income approach. This is because the costs to develop such assets are rarely indicative of their value, and a market approach is impractical due to the absence of an active market for similar properties. A valuation by a capitalization of income approach may therefore be dependent on the amount of the royalties that will be received in the future by the holding company in accordance with the license agreement (as discussed next).

(iii) Licensing Back. Once the holding company owns the intangible assets or intellectual property, they are licensed back to the parent, affiliates, or third parties in exchange for fees paid to the holding company. Written licensing agreements are essential. Under them the parent, affiliates, or third parties will pay fees to the holding company (probably based on a percentage of the gross revenues generated by use of the assets). The agreements should be objective and reasonable.

(iv) Royalty Rate. The royalty rate paid by the using company to the holding company must have some economic basis and arm's-length characteristics. First, the royalty must make economic sense to the company using the assets. We believe that a rigorous analysis should be made prior to the establishment of a royalty rate. This analysis should give consideration to reasonable rates of return on the assets employed in the using company's enterprise and some evaluation of the transferred assets' contribution to profitability. One can look to the standards used in IRS Section 482 concerning transfer pricing situations. While there is not necessarily any congruence between federal and state tax philosophy, we think that the extensive analysis going on at the federal level with respect to transfer pricing issues can provide some insight as to how state tax authorities might come to analyze a holding company transaction.

(v) Some Special Circumstances.

Evolving Assets

Some intangible assets, such as proprietary technology, formulas, recipes, and the like, are subject to continual change. The impact of this situation relative to a holding company is, of course, that the intangible asset transferred must be continually "refreshed" in the hands of the holding company, or it will outlive its economic life and the justification for continuing royalty payments will be lost. The source of the new information to keep the property of the holding company current is the entity paying the royalties and using the technology. This is because it is the owning entity that usually is responsible for continuing research and development. The party doing the development must continually transmit to the holding company the most current technology, processes, or manufacturing techniques. This transfer could be accomplished by writing into the license agreement the obligation of the licensee to keep the intangible asset current through research and to transfer title of the results of that research to the licensor (the holding company). A true arm's-length transaction probably would result in the royalty being lower than otherwise, due to the obligation of the licensee to grant back the results of continuing research. Some mechanism must be found to accomplish this objective, however; otherwise, the originally transferred proprietary technology or know-how will be out of date.

It is also possible that, as a result of research and development, the intangible asset or intellectual property in the hands of the holding company might substantially increase in value to the point where a royalty rate higher than the one originally negotiated would be justified. The terms of the license agreement should permit this flexibility.

Transfers of Value

It is not unusual for the economic benefit attributable to one intangible asset to be transferred to another, over time. An example of this would be a drug patent that results in the development of a highly successful drug preparation that is put on the market in a trademarked form. Over time, the economic benefits tend to shift to the trademark, and, in some circumstances, the economic benefit to the owner could continue beyond the expiration of the original patent. The continued economic benefits would then really be the result of the effect of the trademark in the marketplace. The economic benefits might be reduced because of competition introduced when the drug went off patent, but some economic advantage might still be attributable to the trademark. Both licensee and licensor, in the situation of a holding company, should continually reevaluate their situation to ensure that the agreement between them continues to have business substance.

Quality Assurance—A Caution

Because the licensing agreement should be reasonable and at arm's length, it frequently includes some system to ensure the quality connected with the intangible asset. These quality control arrangements are important for infringement actions and contribute to the substance of the holding company.

On the other hand, the holding company must be careful not to conduct activities beyond the maintenance and management of its intangible investments. For example, it is the position of the Delaware Division of Revenue that a holding company may occasionally run tests on a chemical process to ensure that its patent is being properly applied without losing its Section 1902(b)(8) exemption. However, a franchisor, such as McDonald's, that polices the quality of food, standardizes napkins, bags, and plates, and mandates the type of facility, parking requirements, and so on, could be carrying on activities beyond that of merely maintaining and managing intangible investments and, therefore, might fail to qualify as a holding company. In summary, a quality control system (1) is reasonable in an arm's-length licensing agreement, (2) is important for infringement actions, and (3) establishes substance for the holding company. However, caution must be exercised to ensure that it is not so inclusive that the holding company is carrying on extensive activities beyond the maintenance and management of the trademark or patent.

Trademark Assignment

There is precedent in trademark law holding that the sale of trademark rights apart from the goodwill that they symbolize can render the trademark voidable. Such a transaction is known as a naked assignment, and the absence of the quality control function noted above is an indication of this condition. Anyone contemplating the transfer of a trademark as part of the creation of an intellectual property holding company should be aware of this. A full discussion of the legal ramifications of such a transfer is contained in "A State Tax Strategy for Trademarks."[30]

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30. Bell, Smith, and Simensky, "A State Tax Strategy for Trademarks," *The Trademark Reporter*, Vol. 81, No. 5, October 1991, U.S. Trademark Association, New York.

Licensing Income

The income received from licensing fees and royalties can be moved to the parent in two ways. First, the holding company can dividend amounts up to the parent. Many states permit a corporation to deduct a portion of or all dividends received from corporations that are members of an affiliated group. This method, however, would increase the equity of the parent and decrease the equity of the subsidiary, and could result in greater capital stock or franchise taxes being paid by the parent.

Another method for moving funds would be for the parent to borrow from the subsidiary. This would not increase the parent's potential taxable equity, and the parent also would obtain an interest deduction for state tax purposes. For federal purposes, the interest deduction for the parent would offset the interest income of the subsidiary if parent and subsidiary file a consolidated federal return, and there would be no net taxable income.

(b) SUMMARY. The transfer of an intangible asset or intellectual property to an investment holding company can provide significant state income tax benefits to the owner of that property. There is no question, however, that state taxing authorities have become very knowledgeable about this situation, and many have become quite aggressive in examining the investment holding companies owned by companies within their jurisdictions. The relationship between an investment holding company and the operating companies, the license governing that relationship, and the intangible assets and intellectual property that underlie that relationship should be continually reevaluated by the parties. The value of intangible assets and intellectual property is subject to influence from a myriad of outside forces and can change constantly. The relationship between licensor and licensee in this situation should change with those conditions in order to reflect economic reality.

CHAPTER 7

VALUATION PRINCIPLES AND TECHNIQUES

Some basic valuation principles must be understood before any attempt is made to address the very specialized challenges of valuing intangible assets and intellectual property. Because these assets are nearly always part of the aggregation of assets that constitute a business enterprise, this chapter addresses the appraisal principles that underlie a business enterprise valuation.

7.1 VALUATION PRINCIPLES

Everyone who must address valuation issues draws on a body of knowledge that has been developed over time, originally in connection with the appraisal of real property. These principles also have been used, in whole or in part, to appraise machinery, gemstones, and works of art, and, as presented here, they are equally appropriate for intangible assets and intellectual property. There has been considerable development and refinement of the means to analyze and utilize the information ingredients, but the basic principles have remained unchanged.

An appraisal is an opinion about the attributes of something. An appraisal can address the attractiveness, style, quality, size, weight, or color of an object. Herein the terms "appraisal" and "valuation" are used interchangeably to mean an opinion of the monetary value of property. An alternative way of defining a valuation is that it describes an assumed (or "virtual") transaction. That is, it is an estimate of the consideration (the agreed-upon price) in a transaction that has not taken place. Therefore, a valuation must describe the property rights presumed to be the focus of the transaction and the terms assumed, in order to make clear the meaning of the consideration estimated. Stated another way, we must completely describe the virtual transaction in order to understand its result.

Because the terms "value" and "property" are used so commonly, it is important to examine their various meanings and to specify their use in this context. This discussion forms a foundation for more detailed analyses in subsequent chapters. In building this foundation, we include some valuation concepts that are not directly applicable to intangible assets and intellectual property. This is necessary in order to eliminate the considerable confusion in valuation terminology and to sort out those valuation concepts that are applicable to a particular property.

(a) PREMISE OF VALUE. Henry Babcock describes value as being "expressible in terms of a single lump sum of money considered as payable or expended at a particular point in time in exchange for property, that is, the right to receive future benefits beginning at that particular timepoint."[1]

Oliver Wendell Holmes recognized that value has many meanings when he said: "A word (value) is not a crystal, transparent and unchanged; it is the skin of a living thought, and may vary greatly in color and content according to the circumstances and the time in which it is used."[2]

Value is not the same as price or cost, although at times they are equivalent. When we speak of "getting a bargain" or "paying dearly" for something, we are verbalizing a perceived difference between price and value, as Oscar Wilde did when he described a cynic as "a man who knows the price of everything and the value of nothing."[3]

Value is the representation of all future benefits of ownership, compressed into a single payment. If property rights are exchanged in an arm's-length transaction between knowledgeable parties, the agreed-upon price is both the market value at that moment and, to the buyer, the "cost." Both buyer and seller have considered the future economic benefits of owning the property rights and have come to an agreement about their present value. As time passes, however, the price (of that transaction) never changes, and the cost to the buyer therefore remains the same. The market value of the rights, however, is subject to continual change as the future benefits increase or decrease with the passage of time. As a result, an opinion of value can be expressed only relative to a given moment or "as of" a specific date.

In addition, the future benefits of ownership cannot be quantified without defining whose ownership is assumed and/or the underlying purpose of the valuation. The distinction of ownership and purpose is essential to the appraisal process. A valuation cannot proceed without a definitive premise of value. One cannot, for example, develop a meaningful answer to the question "What is my car worth?" because additional information is necessary. Value does not exist in the abstract and must be addressed within the context of time, place, potential owners, and potential uses. If my car's value "is in the eye of the beholder," we need to know who the beholder will be. Is it:

An insurance company?

A used car dealer?

A neighbor?

A tax assessor?

An accountant?

The executor of my estate?

A dealer in scrap metal?

Sometimes identifying the recipient of the appraisal will define the value premise, since by custom or law the requirement of certain users has been defined. In other cases, it is necessary to determine how the valuation will be used. Some examples include using the valuation to:

Estimate the cost of replacing property

Determine how much insurance to carry

1. Henry A. Babcock, FASA, *Appraisal Principles and Procedures* (Washington, DC: American Society of Appraisers), Chapter 6, p. 95.
2. Ibid., *The Appraisal of Real Estate* (1978), p. 21.
3. Oscar Wilde, *Lady Windemere's Fan*, Act III.

Assist in setting a selling price

Set the amount of a charitable donation

Calculate the amount of estate, gift, or income taxes

Determine the amount of a damage claim

Estimate the value of property as collateral in a loan transaction

Estimate the price a property would bring at auction

Each of these combinations of appraisal use and purpose has a specific premise of value that is appropriate.

These same questions and answers can be applied to intellectual property. As an example, if I am a university owner of intellectual property, I would be interested in discovering the best means to exploit it. I would first have to form an opinion of its most promising use and consider that together with alternate means of realization. For example, could I:

- Continue its development and attempt to market it myself?
- Form a joint venture with someone already in the business?
- License it to others?

Other questions include: What is its highest and best use? How do I measure it? Naturally, the highest and best use is that which provides the highest net return. That may vary considerably, depending on how the intellectual property is exploited, when it is exploited, and with whom it is exploited.

A careful definition of value is most important in appraisals of certain types of property. The more that a property is designed, constructed, or suited for a special purpose, the more difference there will be in value measured by different premises. This is especially true of intangible assets and intellectual property, which usually have a very special purpose and which often have their highest value only within the business enterprise of which they are a part.

At the other extreme, if one were called upon to appraise a new $20 bill, the premise of value would be immaterial to the result. It would not matter for whom the appraisal was made, for what purpose, or at what time (assuming the conclusion were to be stated in terms of dollars, and not buying power). This property's complete liquidity negates the value differences that would result from assuming different value premises. Exhibit 14.1 shows a graphic representation of value premise difference as applied to various types of business assets.

In following sections we introduce several definitions of value as well as several types of cost, and indicate for each its most common usage in the valuation process. Examples of valuation concepts applied to physical property are also presented in order to better illustrate the underlying theories.

(b) PROPERTY DEFINITION. One might imagine that the task of defining a property to be appraised would not loom large, compared to the other requirements of the process. Most readers may think of property definition as being the same as a physical description. To be sure, that is part of it. In order to express an opinion about the value of a plot of land, one must determine its boundaries and area. We must also know something about its physical character—whether it is flat, hilly, dry or wet, and so forth. To appraise

a machine, we must have a description of what it does; how old it is; its make, model, and serial number; its condition; and the like. This sort of information is just the first level of information that we need, but it is not trivial.

The asset we are really appraising is the right to use the property, not its physical embodiment. We therefore must define not only the physical nature of the property but also the rights that will be the basis of the future economic benefits. There is obviously a great difference in value between the full right of ownership to a machine and the right to use the machine for three years in the manufacture of a specific product.

We will be discussing these factors in greater detail when we present the subject of intellectual property exploitation. At this point we simply wish to caution the reader that a premise of value and a description of the property are two very essential ingredients in a valuation.

Just as an expert skier recognizes many different types of snow conditions, and just as an expert sailor can detect a myriad of wind and water conditions (because their skills permit them to make seemingly minute adjustments for factors that go unnoticed to the uninitiated), an expert appraiser must recognize the nuances of property and its ownership.

(c) MARKET VALUE. This measure of value is the most commonly used and is also, unfortunately, the most misunderstood. The terms "fair market value," "fair value," "true value," and "exchange value" are also found in appraisal literature, the law, and court cases.

In fairness, the appraisal profession must take some of the blame for this confusion, for not having been quicker to reach internal agreement and for not working more effectively to educate the public. Putting that aside for the moment, we will proceed with yet another attempt to clarify this concept.

(i) Market Value—Conditions of Exchange. There are two recognized definitions of market value. First, market value embodies the concept of an exchange of property. Further, it defines the conditions of that exchange. There are, therefore, different types of market value, as those conditions change. All, however, proceed from five basic concepts:

1. Market value is the amount at which a property would exchange . . .

   Two persons are coming together for the purpose of exchanging property for money (since an appraisal is made in terms of money).

2. . . . between a willing buyer and a willing seller . . .

   These two persons want to make the exchange.

3. . . . neither being under compulsion . . .

   Neither of the parties is being forced, by the other or by circumstances, to make the transaction.

4. . . . each having full knowledge of all relevant facts . . .

   Both parties are aware of what is included in the sale, the condition of the property, its history and possible use, and liabilities against it.

5. . . . and with equity to both.

   The exchange will be fair to both parties, and neither will gain advantage in negotiation or in the terms of the sale.

This is the definition of market value in its purest form. Appraisers will, at times, introduce minor modifications, such as the words "might exchange" rather than "would exchange." This is because no one knows the precise amount. Defining the amount is the purpose of the appraisal. Another common modification is the substitution of "reasonable knowledge" for "full knowledge," presumably because no one ever has absolutely full knowledge of anything. With the possibility of these minor changes, that is the essence of market value.

The Appraisal of Real Estate presents an interesting graphic representation (Exhibit 7.1) of the buyer-seller relationship as it concerns the concept of market value. It is readily applied to intellectual property and is described as follows:

> Curve YS [in Exhibit 7.1] represents the subjective value estimates at various times for a parcel of real estate as assigned to it by the owner of the fee or owner of the right to use the property. The curve OB represents the subjective value estimates at various times, as assigned to the property by a prospective buyer who is assumed to be a typical buyer in the market. . . . The curves YS and OB intersect at I where the value estimates of the owner and the prospective buyer coincide. At this point neither the buyer nor the seller would gain from a transfer at the expense of the other. . . . Between IB and IS (the shaded area) a market exists; here the real estate appraiser's activity centers. . . . This is an area of negotiation. . . . and within which market value is found. . . . an opinion of market value can be certified to at some point in this area, say at point D where a sale can be made; or if the opinion allows additional waiting time, Point T could be reached.[4]

(ii) Market Value—Economic Criteria. A second definition of fair market value is quite important and provides a most useful guide in the valuation process itself. By this standard, *market value is equal to the present value of the future economic benefits of ownership.*

We will, in subsequent chapters, provide an explanation of the methods to estimate present value and therefore directly estimate market value.

The definition of market value often is amplified to accommodate different types of property or different exchange conditions.

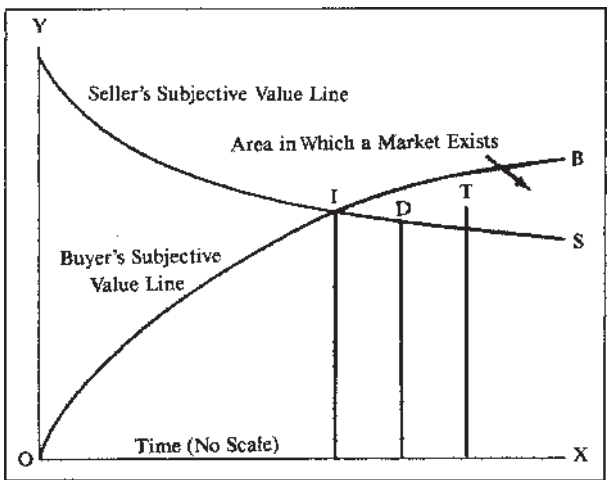


EXHIBIT 7.1 BUYER-SELLER SUBJECT VALUE CONCEPT

Source: Redrawn from Thurston H. Ross, *Some Economic Aspects of Urban Land Valuation* (Los Angeles: University of Southern California Press, 1933).

4. Ibid., *The Appraisal of Real Estate*, pp. 28–29.

(iii) Property. Certain kinds of property, such as the $20 bill, need no amplification of the market value definition because they are a single-purpose property whose use is clear.

Land is always appraised at market value, and often the pure definition is used because it is customary to assume that knowledgeable parties know the permitted uses of the subject land and the use that will yield the highest economic return. Under this assumption, the appraiser forms an opinion of the "highest and best use" of the property and bases the analysis on that, irrespective of how it is being used at the time. No knowledgeable buyer would purchase waterfront property in Atlantic City, New Jersey, for the purpose of farming, and the appraiser of such land does not have to define market value in such a way as to avoid a potential misunderstanding. The appraiser's statement of the opinion of highest and best use removes any doubt regarding the basis of the conclusion.

The concept of "highest and best use" will be discussed again as it relates to intangible assets and intellectual property. Reasonable potential uses of property must be considered in any valuation. If the highest and best use of property is as a part of the business enterprise to which it has been dedicated, that should be so stated as part of the valuation. One common way of doing this is to add the phrase: ". . . and assuming that the property will continue in its present use (or in continued operation)."

(iv) Exchange Conditions. There are times when a valuation should recognize that there are unwilling buyers and/or sellers, or that there is an element of compulsion present, or that property being used for one purpose by the seller is purchased by the buyer for another purpose. These conditions introduce further modifications to the definition.

For example, if a 12-meter yacht that had never won a race was offered for sale, this might result in an exchange under various circumstances, probably all of which could be defined as some form of liquidation. By this we mean that the present owner wishes to convert the property into money because the property is no longer useful in its present role (winning) or capable of earning an adequate return as an investment. The term "liquidation" also connotes some form of compulsion on the part of the owner (seller), perhaps because the financial return on the property has not met expectations or because there are other, better opportunities for investment. The speed with which the seller hopes to achieve liquidity is a key value factor.

(v) Orderly Liquidation. Orderly liquidation is a situation in which there is a "reasonable" time in which to accomplish the sale. What is reasonable can vary considerably, depending on the type of property. The 12-meter yacht is very special, is probably high priced (even under these circumstances), and has an appeal to a very small market. It might take 6 months to a year to advertise, engage brokers, and locate someone in the world with enough interest, money, and able-bodied relatives and friends (for crew) to strike a deal. Another buyer might purchase with the intent of an alternate use, such as a floating restaurant or school training vessel. The exchange price would certainly be lower than for continued use, because the buyer would consider the renovation costs or the cost of a more ordinary boat that could provide the same service.

A steel mill or petrochemical plant might require several years of worldwide marketing efforts and substantial conversion costs to achieve the same objective.

If intellectual property were placed on the market, it could easily require a year or more to locate a buyer whose particular business circumstances would result in a reasonable exchange price. Chapter 14 will provide a more detailed discussion of liquidation value, as it pertains to intellectual property.

(vi) Forced Liquidation. Forced liquidation implies the same transaction carried out more quickly, even at some sacrifice in selling price. Often this means selling to an intermediary, such as a real estate developer or other dealer, who buys with the intent of "repackaging" the property and reselling it at a profit. The exchange price would be further reduced by the dealer's anticipated holding costs and return on investment.

(vii) Auction. An auction is likely to result in the lowest exchange price because there is no particular effort to contact the best possible buyer prospects and because there is an objective to dispose of the property *now.* Auctions of machinery and equipment, store fixtures, and so on, are usually on an as-is, where-is basis. Therefore, the buyer also considers (in the price to be paid) the cost to remove and transport the property.

Intangible assets and intellectual property are rarely exchanged separately from the business enterprise of which they are a part and rarely under conditions of forced sale. This is because as stand-alone property they tend to have little value, although this is not always true. This is discussed later in our description of special valuation situations.

(viii) Conclusion. Market value has a number of permutations. In its purest form, it represents an exchange between knowledgeable persons who are not coerced in any way. It also can refer to situations in which one of the parties is under pressure to complete the transaction or in which the time available for its completion is limited. The market value of business property is inextricably linked to its earning capability.

(d) COST OF REPRODUCTION. Cost of reproduction is the cost that would be incurred as of the appraisal date to construct a replica of the subject property. This would be represented, for example, by the work effort that would be necessary to reproduce a software system that had all of the modifications, patches, no longer used portions of code, and obsolete command language that are contained in the original.

Cost of reproduction is useful as a starting point to develop other measures of value. It is also useful to measure a partial loss for insurance purposes, since it is assumed that the damaged property will be restored in keeping with the whole.

(e) COST OF REPLACEMENT. Cost of replacement is the cost, as of the appraisal date, that would be incurred to obtain a property with equivalent utility to the subject. For computer software, it would be a system written in the newest, most efficient language for current hardware configurations. It also would suit the most current usage. It would have the same utility as the old system but would likely accomplish its required tasks in a quite different manner. Cost of replacement is used:

In budgeting for property replacement or additions

As a starting point in determining other measures of value

To determine insurance coverage or to measure insurable losses

In the insurance industry, the term "replacement cost" is not the same as cost of replacement described here; rather it is cost of reproduction, as previously defined.

(f) COST OF REPRODUCTION/REPLACEMENT LESS DEPRECIATION. Cost of reproduction/replacement less depreciation refers to a type of value calculated by reducing either cost of reproduction or cost of replacement by an amount to reflect the loss in value due to physical deterioration and, in some cases, obsolescence. The analyst uses this measure of value as a value conclusion when the appraisal is for insurance purposes and as an intermediate figure in the determination of other forms of value.

This measure of value is in common use in the insurance industry and is often referred to as "actual cash value." In the insurance context, depreciation is almost always limited to that arising from physical deterioration. Property that might generally be considered obsolete could be very useful in some businesses or for specific purposes and require replacement in kind. There have been, however, circumstances in which obsolescence has been recognized for insurance purposes, such as the case of an abandoned school building destroyed by fire.

The term "sound value" is also used, most often in an insurance context, as a synonym for actual cash value.

(g) ORIGINAL COST. Original cost is the amount recorded at some previous time for the purchase, construction, or creation of an asset. It is typically the amount recorded on the books of an enterprise and may be a combination of materials, labor, overhead, taxes, interest, and other costs. It represents the costs incurred by a specific party, at a particular time, and in accordance with particular conditions. It is related to value only by coincidence, since the costs, even at the time they were incurred, may have been unusually high or low.

In the valuation of intangible assets and intellectual property, one must be particularly cautious in using any accounting or tax-based "value," even original cost. The reasons for this caution were fully explored in Chapter 5. It is useful here to understand that original cost is useful as:

A rough guide to the cost of reproduction at an earlier time

Part of the balance sheet of a business enterprise

A starting point in the development of reproduction cost by the use of price trends

(h) BOOK COST. Book cost is also referred to as "book value" or "net book value," and it refers to original cost reduced by accounting depreciation as carried on the books of a business. In order to distinguish between "accounting depreciation" and "appraisal depreciation," we will use the term "capital recovery" to refer to depreciation for accounting purposes.

Capital recovery is an allocation of cost. When an asset is purchased and expected to be useful in a business for several years, it would distort the financial statements to reflect that expenditure entirely in the period of initial purchase. The cost is therefore spread over the time when the asset will be used so there will be an appropriate matching of cost and the benefits that ought to result from the property:

$$\frac{\text{Original Cost}}{\text{Useful life}} = \frac{\$1{,}000{,}000}{40 \text{ years}} = \$25{,}000 \text{ per year}$$

Using this example, the net book value of this asset is reduced by $25,000 per year until, in the 40th year, it is zero. The cost of intangible assets and intellectual property is rarely shown on financial statements because the cost to create them is usually expensed in the year incurred.

Although many businesspeople think book cost is equivalent to some form of value, it is not. Property accounting practices vary widely. In some cases, property disposed of is not removed (retired) from the books, and in others, property that is fully depreciated is written off and disappears from the accounting records. Capital recovery practices also vary widely, and so methods and lives are not consistent from company to company.

Although most managers would prefer not to admit it, capital recovery rates are sometimes changed to "manage" earnings per share. Therefore it is unlikely that "accounting" depreciation matches the decline in value over time. Even if the original cost starting point was representative of value at some previous moment, depreciated original cost is not likely to equal current value.

Net book value does have relevance to the appraiser in the valuation of utility property under traditional regulation, in that earnings permitted by a regulatory commission are a function of book cost.

Book cost is, except for the regulated environment, useful only as a very rough benchmark suitable for "order of magnitude" comparisons. We occasionally use a permutation of book value as a surrogate for market value, but the caveats above should be borne in mind.

(i) TAX BASIS. Tax basis is similar to book value as described above except that the calculation of capital recovery is in accordance with tax requirements. Capital recovery usually is calculated by some form of accelerated method, and the life is the result of some legislation rather than a value based on actual service life.

Tax depreciation methods and lives have been changed so often and so significantly over the years that tax basis is of no use as a measure of any form of value.

7.2 VALUATION METHODS

There are three accepted valuation methodologies that utilize the cost, market, and income techniques. One can find other methods named and described in articles and texts, but analysis will reveal that these are really forms of the basic three. In many instances, "new" valuation methods are based on alternative techniques for analyzing or obtaining ingredient inputs to the core methods named above.

(a) COST APPROACH. The cost approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject property. This was defined above as cost of replacement. The assumption underlying this approach is that the price of new property is commensurate with the present economic value of the service that the property can provide during its life. The marketplace is the test of this equation. If, for example, the price of a new machine were set at a level far above the present value of the future economic benefits of owning the machine, then none would be sold. If the opposite were true, then demand would outstrip supply, and presumably the price would rise. The price of a new machine, absent some market aberration, is therefore equal to its market value.

(i) Depreciation. One is rarely called upon to render an opinion of value on new property, however, and therefore the use of the cost approach nearly always brings with it the complexity of quantifying the reduction from (new) value due to the action of depreciation. Appraisal depreciation is the result of physical deterioration, functional obsolescence, and economic obsolescence. The proper reflection of all three is essential to estimating market value by the cost approach. These factors are discussed in detail in Chapter 8.

(b) MARKET APPROACH. The market approach is the most direct and the most easily understood appraisal technique. It measures the present value of future benefits by obtaining a consensus of what others in the marketplace have judged it to be. There are two primary requisites: an active, public market and an exchange of comparable properties contemporaneous to the valuation date.

In essence, we are seeking a population of transactions from which we can select those that best match the description of the virtual transaction we are constructing.

The residential real estate market is a good example of a market where these conditions are usually present. There is generally some activity in this market in a given area, and selling, asking, and exchange prices are public. Of course not all residential properties are similar, but given enough activity, reasonable comparisons can be made. Where these optimal market conditions do not exist, using this approach involves more judgment, and it may become a less reliable measure of value. As we will discuss in Chapter 9, this technique is not often used for the valuation of intangible assets and intellectual property, largely because of the absence of the conditions noted below.

(i) Active Market. The ideal situation is to have a number of property exchanges to use in this analysis. One sale does not make a market. There are, for example, publicly traded common stocks in which only a few shares are traded in a year. Their exchange price has much less validity as a measure of their value than, for instance, that of General Motors stock, in which thousands of shares are traded each day, though all the other requisites except activity are present.

(ii) Public Market. To be useful, the exchange consideration must be known or discoverable. The prices of common stock in the primary exchanges are precisely known. For other types of property, it becomes more and more difficult to discover the exchange price. Even with real estate, the published price may be misleading due to financing arrangements between buyer and seller that are not made public. Transactions between businesses, such as the sale of a plant, product line, or subsidiary, may be very difficult or impossible to evaluate because competitive pressure motivates the participants to keep the details confidential.

(iii) Adjustments for Comparability. The best of all worlds for a real estate appraiser is to find, for a subject property, an arm's-length sale of an exact replica property, across the street, the day before the appraisal. Unfortunately, this does not happen with enough regularity to eliminate the need to make adjustments when the "comparable sales" are not exactly comparable. Real estate appraisers continually grapple with the problem of quantifying differences in property, so that the location, amenities, zoning, size, shape, and topography of comparable sales can be equated to the subject's and thus provide an indication of value. Analysts using this approach for other types of property have the same challenge, but comparability tends to be more obvious—one either has it or not—and there are fewer nuances.

(iv) Adjustments for Time. Sometimes it is necessary to utilize sale information that is not contemporaneous with the appraisal. In this case, the appraiser must adjust for price changes over time. This may necessitate a separate study of changes in property value in the subject area during a recent period of time so as to develop some specialized indices to use in the adjustment process.

(v) Summary. With this background, the reader can gain a picture of the strengths and weaknesses of the market approach. Where there is a good base of information about the sales of properties that are similar to the subject, the market approach can be the strongest indicator of value. As the number of comparable sales or the information about them

dwindles, or when the lack of comparability makes adjustment speculative, then this approach ceases to be useful. The market approach is then most effective for:

- Real estate
- Machinery and equipment in general use
- Vehicles
- General-purpose computer software
- Computer hardware
- Liquor licenses
- Franchises

The market approach is very often useful in the valuation of capital stock, other types of securities, or an entire business enterprise.

The market approach is typically least effective for:

- Special-purpose machinery and equipment
- Most intangible assets and intellectual property
- Properties highly restricted by zoning, environmental restrictions, or other forms of regulation

The market approach takes the analyst right to the bottom line of market value. The assumption is that other buyers of comparable property were willing, had knowledge of all relevant facts, and struck a deal that was fair and, therefore, their transactions represented market value at that time and for that property. It is assumed that the market measures and adjusts for all forms of appraisal depreciation: physical, functional, and economic.

(c) INCOME APPROACH. The income approach focuses on a consideration of the income-producing capability of the property. This book is about the valuation of business property whose raison d'être is to provide a return on and return of the investment required to create it. As when buying common stock, our puzzle is to estimate the price a virtual buyer would be willing to pay for the anticipated returns from the property.

So the underlying theory is that the value of property can be measured by the present value of the net economic benefit (cash receipts less cash outlays) to be received over its life. This concept was nicely described by Campbell and Taylor:

> It has often been stated, but bears repeating, that assets (whether bricks and mortar, land, equipment or corporate shares) are only worth in the open market what they can earn, and the true measure of worth is the assets' earnings when related to the risk inherent in the business situation.[5]

(i) Present Value Concept. Some background is provided here for the reader who may not be familiar with the concept of the "time value of money"—that a dollar to be received in the future is worth less today than a dollar to be received immediately. To assist to explain this concept, we provide the following example:

> Let us make the pleasant assumption that, as a result of some clever basement tinkering, we have designed a putter that unerringly propels a golf ball into the hole. . . . we have carefully guarded our design and have been awarded a patent. Let us further assume that our decision is to

5. Ian R. Campbell and John D. Taylor, "Valuation of Elusive Intangibles," *Canadian Chartered Accountant* (May 1972), p. 41.

exploit this intellectual property by selling it. We have approached the golf equipment companies, and two of them have made offers. Zing Golf Corporation has offered a cash payment of $550,000. Cougar Club Company has offered $300,000 cash and $300,000 a year from now.

The choice would be clear if the two offers were an immediate payment of cash. The proposed delay in Cougar's second payment complicates the decision. The additional fifty thousand dollars is certainly attractive, but we must consider all the uncertainties surrounding the second offer. Will Cougar Co. still be in business a year from now? Will it have the money to make the payment? What if the putter design does not turn out to be the answer to every duffer's prayer, and Cougar is unhappy with the deal? What if the design turns out to be very expensive to manufacture, and the market won't accept the high price? We must find a way to put the two offers on the same basis so they can be compared.

What is the essential difference between the offers of Cougar and Zing? This example presents the concept of the time value of money as measured by its "present value." The present value of a cash offer is obvious, and the comparison of two different cash offers can be made without difficulty. When we introduce the element of time, the complication begins. What is the present value of $300,000 to be received in one year? And what do we need to know about the situation in order to calculate it? The first consideration we must address is how confident we feel that the payment will be made, in full and on time. If we feel really confident about the buyer's integrity and ability to pay, our reasoning could be as follows:

1. If I had the $300,000 today instead of in one year, I could put it in my money market fund and earn 2%. At that rate, the $300,000 would be worth $306,055 (compounded monthly). This calculation uses the basic formula that we learned in early mathematics schooling, $I = Prt$ (Interest equals Principal multiplied by Rate multiplied by Time). To calculate the future amount directly, the formula is transformed to:

$$\text{Amount} = P(1 + rt)$$

2. Looking at the other side of the coin, we ask ourselves, how much would I have to put into my money market fund today in order to have $300,000 in one year? The answer is $294,118. This calculation uses another permutation of the basic interest formula:

$$\text{Present Value} = \text{Future Value} / (1 + rt)$$

3. Therefore, the present value of the right to receive 300,000 in one year is $294,118 at an interest rate of 2%.

If I feel that Cougar Club Company is as financially reliable as the holder of my money market fund, then my analysis is complete. If, on the other hand, I am not so confident about receiving the $300,000 payment on time (or at all!), I would want a greater return for accepting that additional risk. The interest rate in the calculation is the measure of my perceived risk. The present value of $300,000 to be received in one year at an interest rate of 15% is $260,870. At a rate of 25%, it is only $240,000. A comparison of the prospective sales is shown in Exhibit 7.2.

Armed with this calculation we can see that, depending on the level of confidence we have in Cougar honoring its commitment to pay the remaining $300,000 in a year, their offer could either be better or worse than that of Zing. What do we require in order to make these calculations? We need to know the amount of the delayed payment, when it is to be made, and how much risk is associated with receiving it.

(ii) Amount of Income. In the example above, the amount of the payments to be received is clear ($300,000 now, $300,000 in one year). In the real world, the "amount" portion of the equation can be much more obscure, and can comprise payments to be received, as well as expenses to be borne.

ZING'S OFFER		$550,000		$550,000		$ 550,000
COUGAR'S OFFER						
Cash upfront		$300,000		$300,000		$ 300,000
Cash in 1 year	@2%	294,118	@15%	260,870	@25%	240,000
Total		$594,118		$560,870		$ 540,000
Cougar advantage		$ 44,118		$ 10,870		$(10,000)

EXHIBIT 7.2 PRESENT VALUE COMPARISON

(iii) When the Income Is to Be Received. Sometimes the "when" of receipts or obligations is clear (as when they are to be made according to a prearranged schedule), but more often it is dependent on other events. . . . The "when" is a very important element in a present value calculation. The present value of the $300,000 payment to be received at different times in the future can vary as shown in Exhibit 7.3.

As illustrated in Exhibit 7.3, the relative effect of "when" is also greatly altered by the rate of interest assumed. At high interest rates, the deterioration in value is accelerated as receipt is delayed. The present value concept is applicable to any pattern of cash flow as well. At a rate of 15% compounded monthly, both of the following payment schemes have a present value of $300,000:

12 monthly payments of $27,077

$100,000 in cash plus 12 monthly payments of $18,052

(iv) Risk of Achieving the Income. A difficult ingredient is the quantification of risk, as measured by the rate of interest, or discount rate. We will use the term "discount rate" henceforth, because expressing the receipt of future benefits in current terms is a process of discounting. There are a number of methods used to estimate an appropriate discount rate and many of these are discussed in Appendix A. The essence of these, however, is a consensus of returns required by investors on investments of different types in the marketplace.

As an example, investors in U.S. government securities typically accept rates of return at the lowest end of the range of possible investment returns, currently around 4%. At the other end of the range, investors in the common stock of a start-up, high-technology enterprise may require a rate of return of 30%, 40%, or 50%.

Discount Rate	1 Year	2 Years	5 Years	10 Years
2%	$294,118	$288,462	$272,727	$250,000
15%	$260,870	$230,769	$171,429	$120,000
25%	$240,000	$200,000	$133,333	$85,714

EXHIBIT 7.3 EFFECT OF TIME AND RATE ON PRESENT VALUE

(v) Discounted Cash Flow Example. A calculation of the present value of future income is often referred to as a discounted cash flow (DCF) model. That is, one "discounts" the amount of future income to reflect its loss in value due to the delay in receiving it. The classic illustration of this technique is the purchase of a security, such as a share of common stock. Assume the following:

1. Today's market price of one share of the stock is $45.00.
2. The company currently pays a quarterly dividend of $.56 per share.
3. Earnings of the company are currently $3.75 per share, and are expected to grow at 8% annually.
4. We expect to hold the stock for 3 years.

Under these conditions, we could expect that the dividends paid by the company will grow at 8% per year and, if no market aberrations are expected, the price of the stock will also grow at that rate. If we purchase a share of this stock, the transaction will produce a series of positive and negative cash flows. First, there will be a negative cash flow when we reduce our savings and pay out the $45.00. Then, there will be a series of positive quarterly cash flows starting at $.56 and growing. Finally, when we sell the share of stock in 3 years, there will be a positive cash flow of $56.69 ($45.00 grown at an 8% annual compound rate for 3 years).

If all this were to go according to plan, what rate of return would we have achieved on this investment? To calculate this, we need to calculate the summation of the present values of the negative and positive cash flows, using different discount rates until they net to zero. Some refer to this as a calculation of the internal rate of return (IRR). This is a trial-and-error process best left to a computer or financial calculator. The result of this is the rate of return we would achieve if we entered into this transaction and if the dividends and future stock price were as expected. In this example, the discount rate is 12.37%. As an investor, we must decide whether that rate of return is appropriate relative to what we perceive as the risk of the investment. If it is, we purchase the stock. If it is higher than we require, we purchase it eagerly. If lower, we wait for the price to come down or look for an alternative investment.

If we apply these principles to the valuation of intangible assets or intellectual property, we can observe that the three essential ingredients of the income approach are:

1. The economic benefit that can be reasonably expected from the exploitation of the property
2. The pattern by which that economic benefit will be received
3. An assumption as to the risk associated with realizing the amount of economic benefit in the expected pattern.

These elements can be related to one another by means of a simple formula, $V = I/r$, where:

V = Present value of the economic benefit attributable to the property

I = Economic benefit derived from employment of the property, representing the net of cash inflows and outflows

r = Capitalization rate reflecting all the business, economic, and regulatory conditions affecting the risk associated with employing the property and achieving the prospective earnings

For example, if an income of $100 will be received in perpetuity, and the appropriate rate of capitalization is 10%, then the value of that income is:

$$\frac{\$100}{.10} = \$1000$$

This is obviously the simplest of examples and one that never occurs in real life. Property ownership is rarely expected to produce income perpetually. Therefore, the calculation is always more complex, and the determination of an appropriate capitalization rate is more complex as well. Because business property is owned for the express purpose of earning a return on investment, the income approach is the strongest indicator of value for this type of property.

A number of methods can assist analysts in estimating the amount of income that can be realized from the ownership of an asset and an appropriate discount rate (risk factor). These are discussed at length in Chapter 10 and in Appendix A. As to the expected duration of income, one may be again relying on a consideration of the three forms of depreciation. That is, the assets that are the source of the income may be subject to a decline in both value and earning power. The income that they are capable of producing may decline proportionately, and this decline would become part of the calculation by the income approach.

The income approach is best suited for the appraisal of the following:

- Contracts
- Licenses and royalty agreements
- Patents, trademarks, and copyrights
- Franchises
- Securities
- Business enterprises

The income approach indicates fair market value directly and without intermediate calculations involving the three forms of appraisal depreciation.

(d) CORRELATION. Valuation practice suggests that all three methods be employed when possible and appropriate. At the very least they should each be considered. Circumstances are often such that one or more of the methods is obviously inappropriate and should not be pursued, but it is not unlikely that an appraiser will have to reconcile two or three indications of value. Even more indications of value may be present if multiple assumptions were employed in the use of one method or another. This process is often referred to as "correlation."

In this process, the appraiser considers such factors as:

- The appropriateness of the method used
- The quantity and quality of information available as input to each method
- The extent to which judgment or alternative assumptions were employed
- The sensitivity of the value indication to various inputs and their relative reliability
- Whether the results of a single method should be relied upon or whether some weighting of results is appropriate

7.3 SUMMARY

The cost, market, and income approaches are the tools of valuation. Virtually any type of property can be valued using them. In the next chapters we discuss these three methods in more depth and illustrate the analysis tools that are available to develop the inputs that are necessary for their employment. The analyst should consider using all three for every property because a comparison of their values may confirm the conclusions or highlight inconsistencies that should be investigated.

CHAPTER 8

COST APPROACH

The cost approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject intellectual property. The assumption underlying this approach is that the cost to purchase or develop new property is commensurate with the economic value of the service that the property can provide during its life. The cost approach does not directly consider the amount of economic benefits that can be achieved or the time period over which they might continue. This approach is often employed together with the assumption that economic benefits indeed exist and are of sufficient amount and duration to justify the developmental expenditures. Using a cost approach to develop an indication of market value, however, requires a consideration of economic obsolescence, and in this instance the appraiser must decide to what extent future economic benefits will support an investment at the indicated value.

First, we will discuss the general concepts of the cost approach as they typically apply to the valuation of fixed assets. This includes production equipment, office furnishings, truck fleets, and many of the tangible items that are used in a business enterprise. Then application of the cost approach for intangible assets will be discussed.

8.1 GENERAL COST APPROACH PRINCIPLES

If the price of a new computer-controlled machine tool were set at a level exceeding the present value of the future economic benefits of owning the machine, none would be sold. Likewise, if there were limited future benefits associated with intellectual property ownership, the property would not be desirable. If the opposite is true and the price of the machine were set at a level lower than the present value of the future economics benefits, demand would be strong. Either the seller will get wise to the situation or competitors will enter the market and force a better match between price and future economic benefit. As a general rule, then, the price of a new tangible asset is accepted as being equal to the future economic benefit of ownership.

Unlike tangible property, intellectual property and intangible assets are not manufactured and offered for sale in the marketplace. We therefore do not have market prices to guide us to a starting point in the employment of a cost approach. We therefore must start with estimates of the cost to create, and, as we will point out, there can be a great disparity between the cost of creating intellectual property and its value. The basic cost/benefit theory is applicable nonetheless.

Most often we are concerned with determining the value of existing property, whether it is a machine or intellectual property. When we first identify the costs needed to create a property, the aggregate amount does not reflect the negative effects on the utility of the property that have accumulated as the property has aged. This involves the concept of depreciation and the associated diminution in value.

(a) DEPRECIATION. It is rare that anyone is called upon to render an opinion of value on brand-new property. Most often we are concerned with the value of property that is in use. Use of the cost approach nearly always brings with it the complexity of quantifying the reduction from brand-new value due to the action of depreciation. The passage of time depreciates the value of most property. While intellectual property typically is not affected by wear and tear, time still can cause obsolescence to infiltrate intellectual property so that, at some time in the future, no value will remain. Exhibit 8.1 illustrates this concept.

The future service to be provided by the property is represented by the area under the curve to the right of the measurement point. Thus, at the beginning of the property's life, the area under the entire curve represents future service, and value can be described as "100%," or equal to cost. As one moves to the right along the time axis, the area under the curve to the right of the measurement point is reduced. This reduction occurs not just because of the passage of time, of course, but due to all the factors that contribute to loss in value.

Assuming that the areas on either side of the dashed line are equal, that line in Exhibit 8.1 represents the point at which half of the total (when new) service capacity has been exhausted. That point is not necessarily the point at which half of the chronological life has elapsed. The illustrated situation is one in which value deteriorates faster than chronological age. This decline in value begins to take place from the moment property is placed in service. It results from three causes:

- *Physical wear and tear* that renders it increasingly unable to perform with the speed, dependability, and accuracy of a new counterpart. An example is production machinery.
- *Advancing technology* that brings more capable, lower-priced, or more efficient (in operating costs) machines to the marketplace.
- *Economic conditions* that reduce consumer demand and yield excess industry capacity.

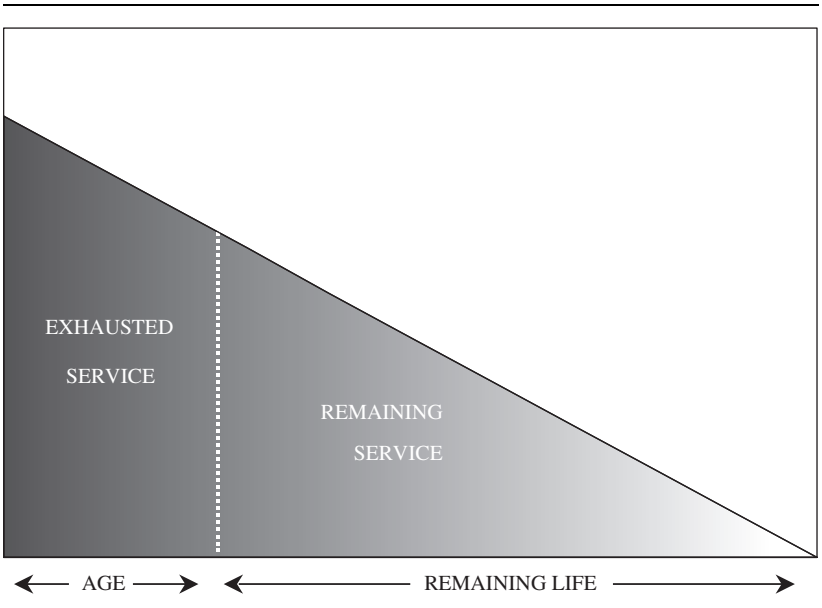


EXHIBIT 8.1 DEPRECIATION CONCEPTS

Exhibit 8.1 illustrates a "straight line" pattern of decline in value and is analogous to the pattern of capital recovery required by GAAP and most other accounting systems. In the following paragraphs we will illustrate typical patterns of decline related to value, and the reader will observe the differences. It is these differences that support the realization that accounting net book value is not synonymous with market value.

The speed and pattern of decline in value can vary considerably, as can the relative importance of the factors just noted. The following examples may serve to illustrate:

- A stapler would be expected to have a relatively long life, with little physical deterioration, up to the time it is broken. Since stapling technology is not expected to change significantly, a loss in value from functional obsolescence would not be rapid. The availability of low-cost staplers on the market could have some effect because the value of a stapler at a point in time cannot exceed the cost of a new replacement. The pattern of decline in value would look something like that shown in Exhibit 8.2.
- A pump, on the other hand, would be expected to deteriorate in value according to its physical condition. Advances in pump design occur more slowly than deterioration, and therefore physical factors and some functional obsolescence would be controlling. The pattern might appear as in Exhibit 8.3.
- A personal computer would be the reverse of the pump, with physical deterioration being much slower than functional obsolescence due to advances in technology. These advances would be rapid and controlling with respect to value. The computer's decline in value would be sharp in the early years, as illustrated by Exhibit 8.4, which presents a pattern of decline in value that, in our experience, is also illustrative of many types of intangible assets and intellectual property.

The graphic representations will assist the reader in understanding the various patterns of appraisal depreciation (loss in value over time). They and other types of survivor curves should not be used indiscriminantly as a basis to estimate appraisal depreciation. Charles E. Jerominski, vice president of AUS Consultants, has written an article on this subject, reproduced as Appendix C.

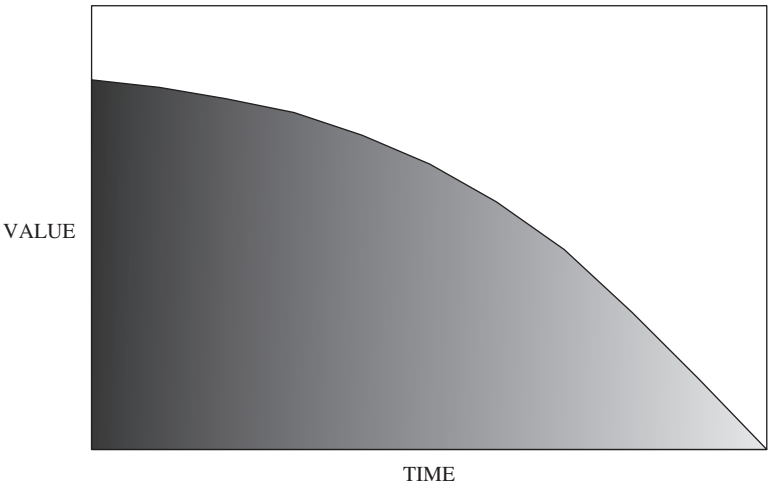


EXHIBIT 8.2 DEPRECIATION—PRIMARILY PHYSICAL

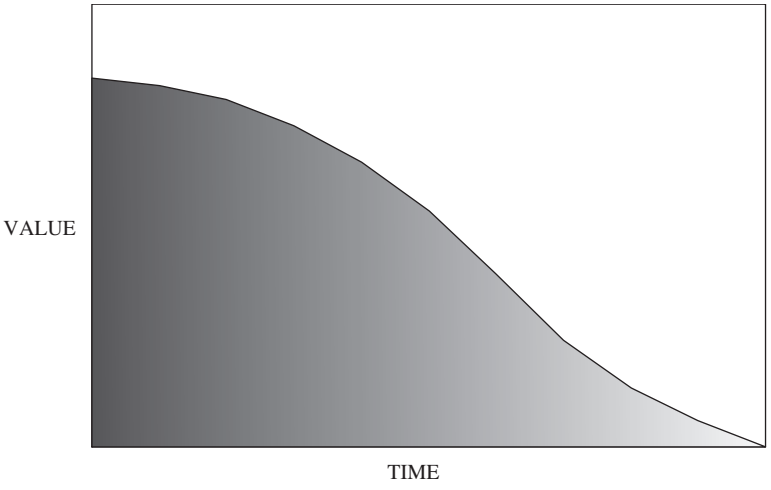


EXHIBIT 8.3 DEPRECIATION—PHYSICAL AND FUNCTIONAL

(b) COST APPROACH VALUATION. Determination of value using the cost approach usually begins either with a determination of the current (as of the appraisal date) cost to obtain an unused replica of the subject property, which is called cost of reproduction new (CRN), or with the cost of obtaining a property of equivalent utility, which is called cost of replacement (COR). When there is a difference between these two amounts, it is usually because COR represents a less costly substitute, which is one element of functional obsolescence.

(c) APPLYING THE COST APPROACH. One method that can be employed to obtain an estimate of the cost to reproduce a new replica of the property is a trending of historical costs.

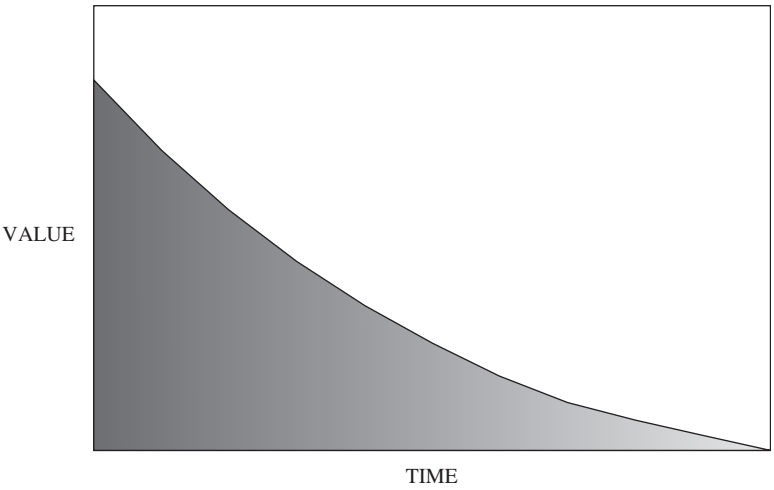


EXHIBIT 8.4 DEPRECIATION—PRIMARILY FUNCTIONAL

Year	Original Development Cost
1997	$ 50,000
1998	340,000
1999	178,000
2000	20,000
2001	68,000
2002	131,000
2003	35,000
2004	16,000
	$838,000

EXHIBIT 8.5 ORIGINAL COST INPUT

(i) Historical Cost Trending. Some corporations keep detailed records of the costs that were incurred in the development of a specific intangible asset. Restatement of these historical costs in current dollars provides an indication of the total cost that would need to be invested in order to reproduce the property.

Exhibit 8.5 is a summary of the aggregate development costs that are associated with a hypothetical software system for each of the 8 years in which development occurred. The development project started with a planning phase and proceeded to a period of intense development. After the software went "online" another development cycle was initiated to enhance the system. It is useful to research such a project from sources other than just accounting ones, so as to develop a clearer picture of when the project started meaningfully, whether the second development effort replaced or added to software created in the initial effort, and whether the project significantly changed direction. Every company has its own capital-expense policy and that may have an influence on the character of the dollars in the cost record. We also need to form an opinion as to whether a similar work effort would be required today in order to replace the software or other property valued by this method, so we need to consider whether the development methods or tools would be the same.

The cost to reproduce is expressed as the historic costs trended to current dollars. This is completed by application of a price index, an example of which is shown in Exhibit 8.6. There are many sources of price indices, including those available from the U.S. government that track the price changes of major commodities, labor costs, and manufactured products. Specialized price indices are also published by industry associations and private research and consulting firms. We have also shown, in Exhibit 8.6, the

Year	Price Index	Translator 2004 = 100.0
1997	1.09	1.954
1998	1.12	1.902
1999	1.43	1.490
2000	1.66	1.283
2001	1.78	1.197
2002	1.92	1.109
2003	2.05	1.039
2004	2.13	1.000

EXHIBIT 8.6 CALCULATING A TRANSLATOR

calculation of a so-called translator. A translator is useful to rebase the index to the desired year of reproduction (in this case 2004) and to create a multiplier.

Applying the translator, as shown in Exhibit 8.7, we calculate the trended original cost of the subject software. We can observe that the software that originally cost $838,000 between 1997 and 2004 would require $1,314,174 to recreate in 2004. This trended original cost represents the amount, in 2004, that would have to be expended to create the software in the same manner that was used in the prior years. Presumably, the recreated software would be "new" as it was when originally created. In 2004, however, the software is no longer new, nor is it likely that we would recreate its functionality using the same methods. Therefore it will be necessary to reflect functional and economic obsolescence in order to obtain an indication of market value by the cost approach.

(ii) Unit Cost Method. Another means by which to derive the cost to reproduce or replace an asset is a direct estimate of the efforts and costs necessary for creating a similar asset. Some of the information that would be important to identify in valuing a technological asset using this form of the cost approach includes:

- Scientists and engineers who worked on the product development effort
- Salaries and benefits of those involved with the project
- Overhead costs for utilities and research space
- Overhead costs for clerical support and technicians
- Raw materials used in the development process
- Prototype construction and testing expenses
- Outside services for independent evaluation and certifications
- Pilot plant costs

In the case of specialized software, important information would include the following:

- Salaries and benefits that would be paid to computer programmers
- Salaries and benefits that would be paid to software users to create specifications and test the software output
- The amount of overhead and support costs for developmental computer time, office space, utilities, clerical support, and so on
- The time and costs associated with documentation and installation of the program on company computers and the time needed to achieve full implementation of the program

Year	Original Development Cost	Translator 2004 = 1.000	Trended Original Cost
1997	$ 50,000	1.954	$ 97,706
1998	340,000	1.902	646,607
1999	178,000	1.490	265,133
2000	20,000	1.283	25,663
2001	68,000	1.197	81,371
2002	131,000	1.109	145,328
2003	35,000	1.039	36,366
2004	16,000	1.000	16,000
	$838,000		$1,314,174

EXHIBIT 8.7 CALCULATING TRENDED ORIGINAL COST

The aggregate of all of the expenses from the above efforts is an indication of the cost to reproduce the asset. An example of this calculation is presented as Exhibit 8.8.

(iii) Unit of Production Method. Another cost estimation in common use is to derive the cost of replacement based on current costs *per unit of production*. The cost to construct certain types of properties is uniform enough that rules of thumb develop among those who deal with them. Thus we might be able to estimate the current cost of a fast food outlet at $\$X$ per seat or serving station, a petroleum refinery at $\$Y$ per barrel, a three-lane highway at $\$Z$ per mile, or building construction at $\$V$ per square foot.

(iv) Appraisal Depreciation. These procedures provide an indication of the costs necessary to reproduce or replace the subject property in a form that is "brand new." Adjustments for elements of obsolescence must then be considered.

The next step is to reflect physical depreciation, since presumably the subject is not new. How much of the future service is gone due to wear and tear? If the replica is not state of the art, or suffers from design or operating deficiencies that reduce its desirability when compared with similar properties that are available in the marketplace, then functional obsolescence must be reflected in order to obtain cost of replacement less depreciation (*CORLD*). We can now state a formula:

$$CORLD = CRN - PD - FO$$

where:

CORLD = Cost of replacement less depreciation
CRN = Cost of replacement new, which is sometimes alternately expressed as *COR* (cost of replacement)
PD = Physical depreciation
FO = Functional obsolescence

It is not always necessary to step through this progression if one can determine an intermediate value directly.

The last element necessary to determine fair market value using the cost approach is to reflect economic obsolescence, which is the third in the big three of depreciation factors. It is similar in concept to "highest and best use" as applied to real estate. This concept is based on the assumption that property devoted to business use achieves full market value only when it is capable of contributing to the earnings of that business and when those earnings are capable of providing a reasonable rate of return on all the property devoted to the enterprise. In other words, a brand-new, state-of-the-art production

	Hours	Rate	Direct Labor	Overhead and Profit	Total Cost
Management specification development	230	$70.25	$ 16,158	125%	$ 36,354
IT project management	420	43.50	18,270	120%	40,194
Computer operations testing	210	23.75	4,988	90%	9,476
Systems analysis	1,375	33.85	46,544	110%	97,742
Programming & testing	3,350	31.50	105,525	110%	221,603
Documentation	180	32.00	5,760	110%	12,096
	5,765		$197,244		$417,465

EXHIBIT 8.8 EXAMPLE OF SOFTWARE VALUATION BY UNIT COST METHOD

line for hula hoops has a low market value not because of physical deterioration or functional obsolescence but because it is devoted to a business that is unlikely to earn a return that would be adequate to justify an investment at its replacement cost less physical and functional depreciation. Thus, the market value of a company's assets is dependent to some degree on factors that arise entirely outside of the particular circumstances of the individual asset. The market value of an asset can be significantly degraded by the economics of the business to which it is devoted. The extent to which it is degraded depends on the type of asset it is.

Unique assets (e.g., intangible assets and intellectual property) may suffer considerably because they may have little use outside of a particular business. Other assets that have general use may suffer in value only to the extent of the costs that would be incurred to remove them from the business and transport and install them in a new business and location for use in a more profitable industry. For example, assume the existence of a restaurant under three different scenarios. The restaurant has been in operation at the same location for 20 years. The three scenarios are:

1. The owner is doing well in the business but desires to sell the enterprise because he wants to retire.
   Result: The owner is selling a going business with earnings that are adequate to justify an investment by a purchaser equal to the current market value of the land and building as well as the franchise, goodwill, and other intangible assets. That market value might be $800,000.
2. The owner is making very little profit in this business and wants to liquidate in order to invest the proceeds elsewhere.
   Result: The owner is offering a marginal business. A potential buyer may be one who feels that he or she could be successful by more efficient operation, or one who will convert the location to another type of operation. In this case, the buyer is interested in the physical property and will not consider any intangible assets to have significant value. Such a buyer might also reduce the offering price by the cost to convert to a new restaurant concept. The market value might be $500,000.
3. The owner is losing money and the location is no longer suitable for restaurant operation.
   Result: The owner will have to offer the location to an alternate user. The price would likely equal the market value of the land plus any value that might exist in the building for other uses. In an extreme case, the building might have no value, or the value of the land might be reduced by the cost of removing the improvements in order to clear the land for other use. The value of intangible assets would likely be zero. The fair market value of the asset package might be $250,000.

The difference among these three scenarios is the earning power of the assets being offered for sale. The physical depreciation and functional obsolescence present in the fixed assets are the same in each case. If business property is incapable of earning a reasonable return on an investment at its presumed market value in continued use, then the market value will be based, at least in part, on a liquidation premise. Under this assumption, intangible assets may have little, if any, value.

If the owner of a manufacturing plant is consistently unable to generate adequate earnings from the facility, then he would liquidate the investment and seek alternate investment opportunities. Examples of this are reported daily in the financial press in the form of reported plant closings or the sale of complete operating divisions. Thus, we are continually reminded that the market value of a business and individual assets within that business are dependent on their earning power.

The very same situation exists with other forms of investment. An investor in the common stock of a company whose prospects are dimming sees that investment declining in value due to the market decisions of other investors in the stock. The market value of the equity in the business falls as a result. The same thing happens to the market value of a similar business whose stock is not traded, except that there is not a daily record of its demise. There is an indestructible link between the market value of business property and its earning power. We can now complete the equation and describe the full course of the cost approach in determining fair market value:

$$FMV = CRN - PD - FO - EO$$

where:

FMV = Fair market value

CRN = Cost of replacement new, which is also alternately expressed as *COR* (cost of replacement)

PD = Physical depreciation

FO = Functional obsolescence

EO = Economic obsolescence

In this formula, one begins with the cost of a new replica of the subject property and, after considering all forms of depreciation, ends with an indication of market value by the cost approach. The flow diagram of this approach is illustrated in Exhibit 8.9.

The cost approach is especially useful for appraising highly specialized property, such as a foundry, a reservoir, a steel mill, coal unloading facilities, a nuclear reactor, telephone switching centers, power plants, electric substations, or a satellite earth station. The cost approach is also very useful as a valuation method for certain intangible assets,

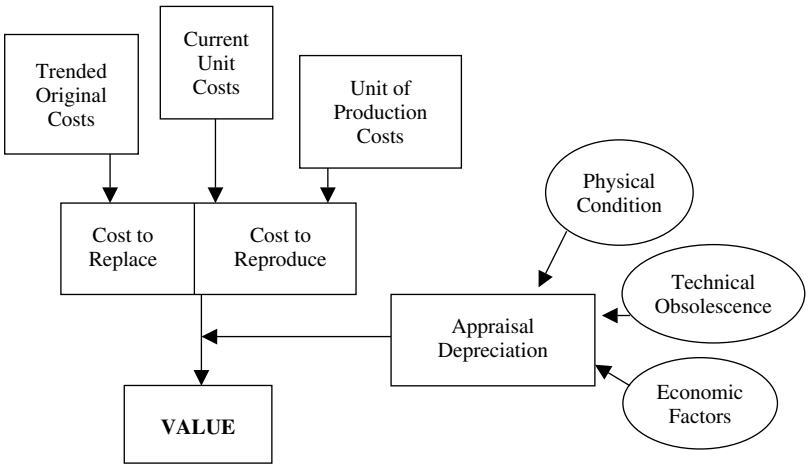


EXHIBIT 8.9 FLOW DIAGRAM OF THE COST APPROACH

such as computer software, an assembled workforce, corporate practices, quality control procedures, engineering drawings, assembly practices, purchasing procedures, packaging designs, and distribution networks. It is often used when other valuation methods are not applicable or to allocate values among assets that may have been valued in total by another means.

(d) COST VERSUS VALUE—SUMMARY. As a general rule, cost does not equal value. Unless economic benefits can be earned from ownership of property, its value must be relatively low, regardless of the amounts needed to develop it. Consider the trademark EDSEL. This automobile name still has recognition among many people in the United States. The cost to create an automobile name of similar strength could easily reach tens of millions of dollars. Yet current ownership of this name is not likely to contribute much in the way of profits for today's car manufacturer. Indeed, the name could be a detriment; association with an old and discontinued product probably would not inspire consumers with confidence. Therefore, the market value of an asset can be significantly degraded by the economics of the business to which it is devoted. The extent to which it is degraded depends on the type of asset. Unique assets may suffer considerably because they have little use outside of a particular business. Other assets that have general use may only suffer in value to the extent of the costs that would be incurred to remove them from the business and transport and install them in a new business and location for use in a more profitable industry. This is referred to as asset versatility. Many fixed assets have a value that is relatively independent of the business or industry in which they are used. Delivery trucks can be used in another business or industry. The economics of a specific industry do not affect fixed asset values as severely as they do the values of some types of intellectual property. The value of trademarks and patents are sometimes very closely aligned with the economic condition of the business or industry in which they are used. Redeployment of a brand name to another industry is not necessarily easy to accomplish. The economic fate of a trademark or patent may be exactly parallel to that of the business in which it is used.

8.2 CAUTIONS IN USING THE COST APPROACH FOR INTELLECTUAL PROPERTY

The cost approach is not as comprehensive as the other two generally accepted valuation approaches. Many of the most important factors that drive value are not directly reflected in the methodology and must be considered apart from the basic cost approach process.

- The cost approach does not directly incorporate information about the amount of economic benefits associated with the property. These benefits are driven by demand for the product or service and the profits that can be generated.
- Information about the trend of the economic benefits is also missing from consideration. Intellectual property providing economic benefits with an increasing growth rate can be far more valuable than that which displays a downward trend. The trend is affected by social attitudes, demographics, and competitive forces, but the cost approach cannot capture these effects on value.
- The duration over which the economic benefits will be enjoyed is yet another element not directly considered that has a significant effect on value. The economic remaining life of the property is a vital component to value conclusions.

- The risk associated with receiving the expected economic benefits is not directly factored into the cost approach model. Where a high degree of risk makes realization of expectations speculative, a lower value corresponds.
- The adjustments necessary to reflect the effects of obsolescence must be separately calculated and are often difficult to quantify.

For example, suppose that two trademarks with the following characteristics are being valued:

> Trademark 1 is associated with a highly profitable product in a growth industry for which there is very little competition. Consumer recognition is strong, and there is a strong potential for the trademark to be extended to new product applications while maintaining an above-average profit margin.
>
> Trademark 2 is associated with a low-profit-margin product in a declining industry that has become crowded with competition. Consumer recognition of the trademark has become blurred with that of competitors and has almost no potential for application to other products.

If both names are associated with national brands and advertising campaigns, the cost of replacement might be the same for each of the trademarks. The research, advertising, and promotion that went into establishing each name might be the same. A trending of historical advertising expenses actually could provide a higher indication for the trademark that is associated with the low-profit product. This emphasizes the necessity for a careful consideration of economic obsolescence.

8.3 USING THE COST APPROACH FOR TRADEMARKS

In spite of these drawbacks, a cost approach valuation can sometimes serve as a useful base in gauging the value of a trademark. Information about the costs incurred to establish well-known marks is sometimes available. These data can serve as a guide for trademark values, which have similar fundamental characteristics. Important characteristics for comparison include:

- Size of the market in which the mark competes
- Market share with which the mark is associated
- Price premium on the trademarked products or services
- Advertising support
- Profitability of the product or service with which the mark is associated
- Market research indications of consumer recognition
- Possible trademark extension

If an acceptable comparison exists and the cost to establish a specific trademark is known, then the amount may be useful in determining an indication of value for the trademark under analysis. Marketing consultants estimate that the national introduction of a newly branded consumer product costs at least $20 million. Information about trademark introductions often is publicized as part of the ad campaign, or sometimes is presented in the annual reports of public companies. The process of name selection alone is very expensive. Consulting firms are now regularly used for product name selection, with fees ranging from $75,000 to $750,000. The process involves these six steps:

1. A legal search to try to ensure that the chosen name is not presently in use by others
2. Brainstorming with clients, associates, industry experts, and psychologists
3. A linguistic search to determine the foreign language meaning of possible names

4. Market research to study the reaction of consumers, stockholders, company executives, and Wall Street analysts
5. Research regarding font selection and size
6. Research to select colors to associate with the product through the name

The process also takes up the time of senior company executives. All of this effort and expenditure takes place before any money is even spent with advertising agencies for campaign development and ad placement.

The linguistic search has taken on more importance than ever before as products are sold globally. An automaker was reportedly considering the name Sojourn for a new car. Peaceful travel immediately comes to mind in the English language. However, there was concern about how the name would be interpreted in other countries. The word "Sojourn" was too similar to words in French and German meaning "halt" and "abrupt stop." These words did not inspire driving confidence, so the name was dropped from consideration. The name search continued, and the costs to establish the new car's identity continued to mount.

Even color research is considered important and requires additional research and interviews with potential consumers. Certain colors, such as yellow, are considered inappropriate for food products.

Surprisingly, experts in the world of name selection indicate that the availability of desirable names is dwindling. Desirable names suggest quality, value, performance, strength, vision, and/or responsibility. Meeting these requirements is an expensive research endeavor.

Company names have received tremendous amounts of attention as well. The shift in business orientation from manufacturing to services has increased. Names that once reflected the mission of a company no longer apply. A prime example is PRIMERICA. Previously named American Can Company, this company no longer had anything to do with the manufacture of cans. Its name change was fostered by a desire to reflect a new image for a completely different company. Subsequently, PRIMERICA became TRAVELERS and then CITIGROUP as the company further evolved and merged. Consider these facts:

- Insiders estimated that the name change from Esso to EXXON cost the company between $100 and $150 million.
- The costs included printing new stationery and business cards and the replacement of signs. For EXXON, this required the replacement of signs at every station carrying this brand of gasoline.
- Medium-sized banks, depending on the number of branches, can spend $2 million on a new name. There have been many name changes in the retail banking industry.

A well-recognized trademark costs a great deal to create and a great deal to replace. An estimate of trademark value can sometimes be obtained by studying the costs incurred to create comparable names that possess similar measures of the characteristics that we previously outlined.

The cost approach may be most appropriate for a trademark early in its life, before it gains market momentum, or for a little-used mark for which a substitute could readily serve.

8.4 USING THE COST APPROACH FOR TECHNOLOGY

Unlike nationally recognized trademarks, general comparisons for technological development costs are not well publicized. Technological property also does not easily lend itself to a basic comparison of fundamental characteristics.

A failure of the cost approach, as previously mentioned, is that direct consideration of the economic benefits and the period over which they might be enjoyed is not accurately captured in the value. This is an important missing element that is best expressed in the following examples.

(i) Example 1. During the late 1950s, the U.S. government spent many millions of dollars on the development of nuclear-powered aircraft. A prototype was built and tested. Unfortunately, the engines were never able to generate enough thrust for liftoff. Application of the cost approach might provide an indication of value well into nine figures. However, considering the potential for application of nuclear aircraft technology and the prospects for economic benefits, a cost approach indication of value would be in error. The current value of an aircraft technology that fails to get the craft airborne is zero.

(ii) Example 2. Another example is represented by technology that was able to perform the desired task quite adequately: extraction of oil from shale rock. At considerable expense, the U.S. government ventured once again into technological development where others feared to tread. This technology worked. It was to be part of our salvation from the grip of OPEC in the early 1970s. But with the steep decline in oil prices, the cost of producing shale oil is far too high; the technology sits on the shelf with no prospects for use in the near future. The cost approach might indicate that the value of the technology is another nine-figure bonanza, but economic conditions tell us that the shale oil technology has very little value. Someday in the future, conditions may require its use. However, the current value of zero reflects the possibility that the use of shale oil technology may be a long way off.

8.5 COST APPROACH—SUMMARY

Where economic conditions are not conducive to deriving profits, it is difficult to ascribe any value to intellectual property, regardless of the indications of its replacement cost. There is also the possibility that an intellectual property can have economic potential far above that which would be indicated by the cost approach. A patented product may have been inexpensive to create but still have significant value because of the huge demand for the product regardless of the selling price.

However, the cost approach can provide an indication of an order of magnitude to use as a starting point or as a check on the values derived from other approaches.

Use of the cost approach as a means to estimate a range of value for intellectual property has much potential for error. The most desirable approach is to employ one or both of the other valuation approaches along with the cost approach as support for the indications of value provided by them.

CHAPTER 9

MARKET APPROACH

The market approach provides an indication of value by observing what others have agreed upon as a fair price in arm's-length, open-market transactions involving property similar to the subject. That is, the virtual transaction is compared with actual transactions judged to be comparable. Like the cost approach, the market approach is based on the principle of substitution that instructs us that a prudent buyer would not pay more for property than it would cost to purchase a comparable substitute. To employ this approach, one looks for transactions that:

- Involve property similar to the subject
- Are part of an active, public market, and for which the price and terms are known
- Are contemporaneous with the virtual transaction
- Are between parties dealing at arm's length

Since one never discovers an actual transaction that perfectly matches the virtual one, a valuer is always faced with decisions concerning the reasonableness of the comparability and whether some adjustment to the elements of the actual transaction are warranted in order to enhance the similarity.

9.1 MARKET TRANSACTIONS OF INTELLECTUAL PROPERTY INDICATE VALUE

The exchange of intellectual property in the marketplace typically is completed as part of the exchange of an entire company or division. Rarely do we see a specific patent or trademark exchanged as stand-alone property.[1] Usually the exchange includes the portion of the enterprise with which the intellectual property is associated. The price paid often includes an amount for working capital, fixed assets, the assembled workforce, and various types of intangible assets and intellectual property. Even when specific intellectual properties are exchanged separately, the price is rarely disclosed.

1. This is even more true for trademarks than for technology. When trademark rights are transferred (assigned), they must be accompanied by "the goodwill of the business." This requirement ensures that the new owner has the capability to produce products or services bearing the mark that are indistinguishable from those of the previous owner, so that consumers will not be deceived or confused. This has been interpreted to mean that the trademark assignment should be accompanied by tangible assets, formulas, customer lists, and whatever other assets are necessary to ensure the new owner's capability. If the mark is separated from its goodwill it can be lost. See 15 U.S.C. § 1060.

Occasionally intellectual property has traded independently, including the following examples:[2]

- Purchase of the patented POLYMERASE CHAIN REACTION TECHNOLOGY from Cetus Corporation by Roche Holdings Ltd. for $300 million plus royalties for five years.
- Purchase of the U.S. rights to the DHL AIRWAYS trademark for 15 years by Lufthansa German Airlines, Japan Air Lines, and Nissho Iwai in 1997. Price reported was $20 million.
- Purchase of seven liquor trademarks by American Brands, Inc. from Seagram Company for $372.5 million. The marks included CALVERT GIN, CALVERT EXTRA AMERICAN WHISKEY, KESSLER AMERICAN BLENDED WHISKEY, LEROUX COCKTAILS, LORD CALVERT CANADIAN WHISKEY, RONRICO RUM, and WOLFSCHMIDT VODKA.
- Sale of the FLORSHEIM trademark for footwear to the Weyco Group Inc. in May 2002, for $9.8 million following bankruptcy.
- Sale of the GLORIA VANDERBILT trademark by Murjani in 1988 for $15 million to Gitano. Reportedly $12 million was for the U.S. rights and $3 million for the Canadian and other foreign rights.
- Sale of the SPEEDO swimwear trademark by Linter Group to Pentland Group of Australia in 1990 for Aus$37.5 million.
- Purchase of the BERGHOFF beer brand for $1.2 million, by the Joseph Huber Brewing Co., of Monroe, Wisconsin, in September 1994. Reports indicated it may have been a distressed sale.
- Sale of the DEXATRIM, SPORTSCREME, and four other over-the-counter drug brands for a reported price of $95 million by Thompson Medical Company to Chattem Inc. in November 1998. The brands' annual sales were reported at $55 million.
- The ROLLS-ROYCE trademark rights were purchased in 1998 by Bayerische Motoren Werke AG (BMW) for $66 million.
- Pillsbury Company in January 1999 was reported to be selling its UNDERWOOD meat spread and B&M baked bean brands, plus four others, to B&G Foods Inc. for $192 million.
- Purchase from an individual by Bank of America of the LOANS.COM domain name for $3 million in February 2000.
- Purchase of the BINGO.COM domain name by Bingo.com Inc in January 1999 for $1.1 million.

Combined sales for the brand names purchased by American Brands totaled $260 million for the fiscal year just prior to the transaction. A simple market multiple can be calculated indicating a price-to-revenue multiple of 1.43 for "middle-brow" liquor brands. Without possessing more detailed product information from Seagram, only simplistic allocations of purchase price can be accomplished. Still, if the total price is divided equally among the seven names, then the value of each brand is approximately $53.2 million. Since the brand name CALVERT is used in three of the names purchased,

2. These examples are from the RoyaltySource.com database of intellectual property transactions.

it might be more appropriate to divide the purchase price by four, yielding a per-brand value of $93.1 million.

Menley & James purchased 32 trademarks including over-the-counter medical remedies such as CONTAC cold remedy, ECOTRIN aspirin, HOLD cough medicine, ARM allergy medicine, and ROSEMILK skin lotion. Combined annual sales of all 32 trademarked products just prior to the purchase were $30 million, indicating a price-to-revenue multiple of 1.73 for the trademarks. On a per-name basis, the value per trademark equals $1.6 million. Menley & James uses contract manufacturing, warehousing, and distribution. All that was purchased was the marks.

There have been a number of trademarks and domain names purchased from bankruptcy estates, including BONWIT TELLER ($1.75 million), NATIONAL AIRLINES ($175,000), GARFINCKEL'S, a Washington, DC, retailer ($22,500), BUSTER BROWN ($6.5 million), and PETS.COM ($375,000). This suggests that trademarks may have value in such a situation, as we discuss in a later chapter, but the value of this data as a guide to open-market transactions is questionable.

9.2 MARKET EVENTS CAN INDICATE VALUE

(a) APRIL 2, 1993—MARLBORO FRIDAY. Indications of intangible asset value are sometimes suggested indirectly, for instance when Philip Morris reduced the selling price of its flagship product. In an attempt to halt market share advances by generic discount cigarettes, Philip Morris announced on April 2, 1993, a 20% price cut of its premier Marlboro brand cigarette. Discount cigarettes had demonstrated substantial growth as poor economic conditions caused many consumers to question the price-to-value equation associated with products that had brand images but commodity-like characteristics. The price differential between generic and branded cigarettes prior to April 2, 1993, was a substantial $1.40 per pack. Generics could be found at some stores for $1.00, while premium branded cigarettes such as Marlboro commanded a retail price of $2.40 per pack. Philip Morris decided that narrowing this price differential could slow the advancing market share of generic cigarettes. Wall Street analysts estimated that the price cut would reduce the pretax tobacco earnings of Philip Morris by $2 billion from the $5.2 billion it earned in the prior fiscal year. The announcement was met by heavy stock trading, which forced the stock price of Philip Morris down by 23% in one day. The closing price on April 2 represented a one-day loss in value of $13 billion, all of which could be considered as a reduction in the value of the Marlboro trademark. Extrapolation of this event could have been used to get an indication of value for the Marlboro brand. If the $13 billion is interpreted as 20% of the value of the brand before the price cut, then the brand had a value of $65 billion before April 2 and $52 billion afterward.

9.3 A LOST PATENT INDICATES VALUE

Another unique opportunity for valuing a patent was presented by VLI Corporation. The activities of the company, for the most part, were based on one patented product. The product was the TODAY brand vaginal contraceptive sponge. Sales reached $17 million in 1986 from a standstill in 1983. The product was stocked in more than 93% of all drugstores nationwide and in 88% of all food stores that carry contraceptives. During September 1987, the company reported that the U.S. Patent and Trademark Office denied the company's petition to reinstate the expired patent on the sponge. The original patent expired in July because the company had failed to pay on time a then newly required

patent-maintenance fee. While the missed payment was called "inadvertent" by the company, the Patent Office did not renew the patent. The company was, at the time, a takeover target of American Home Products Corporation, which offered $7 in July 1987 for each of VLI's 11.9 million shares. This was contingent upon reinstatement of the patent. American Home Products' offer represented a value for the company of $83.3 million. As of October 1987 the shares were trading over the counter at $4 per share. Typically a takeover candidate trades at the price offered by the suitor and often at a slightly higher price. The premium, above-the-offer price represents speculation that another buyer may materialize with a higher offer. In this case, the stock was trading below the $7 offer. The $3 difference can be viewed as the value of the patent protection. When multiplied by the number of shares, the value of the patent equaled $35.7 million. The market concluded that the same company, with the same product and the same distribution system, while serving the same market, was worth substantially less without the patent. Protection against competitive copying was lost. As a result, competitive products could be introduced almost immediately. VLI could experience pricing pressures and a loss in sales volume. In consideration of this possibility, the market dropped the share price of the company. Another way to express the value of the patent would be to calculate the present value of all earnings that will be lost due to the entrance of competition. In this case, the market indirectly made that calculation with the lower stock price reflecting the potentially lost earnings. The $3 difference actually may have undervalued the patent. The market considerations used to price the shares at $4 included the probability that the patent would eventually be reinstated.

This was an unusual event, and one of the first times that a patent expired due to failure by a company to make a patent-maintenance fee payment. The company could still sell the sponge product, but was subject to more direct competition by copycat sponges. The market set the value of the patented TODAY contraceptive sponge at $35.7 million.

A recurrence of this event is even more unlikely today, since the PTO may now accept payment of a fee after the 6-month grace period if, upon a petition by the patentee, the delay is shown to the satisfaction of the Commissioner to have been either "unintentional" or "unavoidable." In 1992 Congress amended the Patent Code to permit patent owners whose patents expired due to nonpayment to have their patents reinstated upon a satisfactory showing that nonpayment was either unintentional or unavoidable. See *Contigram Communications Corp. v. Lehman*, 32 USPQ2d 1346, 1352 (E.D. Va. 1994). ("In passing the 1992 amendments, Congress intended to relax the standard for filing late patent maintenance fees and thereby increase the incidence of continued patent ownership.") If the delay was "unavoidable," payment may be made at any time; if the delay was only "unintentional," payment must be made within 24 months after the 6-month grace period. See 35 U.S.C. §41 (c)(1). "Unavoidable" delay requires a showing that reasonable care was taken to ensure the timely payment of fees, and that the petition was filed promptly; it further requires an enumeration of the steps taken to ensure timely payment. See 37 C.F.R. §1.37(b). In the event that such a petition is granted, a special surcharge is due. See 37 C.F.R. §1.20(i). The statute protects those who, in reliance on the expiration of a patent for nonpayment, make, use, or sell things covered by the patent and then find that the patent has not expired because the late payment was later held to have been unintentional or unavoidable, resulting in a resuscitated patent. See 35 U.S.C. §41(c)(2).

(a) SECURITIZATION. In 1993, Calvin Klein Inc. borrowed $58 million secured by its royalty stream from the licensing of its fragrances. Four years later, David Bowie securitized

a loan of $55 million with future royalties from the sale of his recordings. There have been a number of such transactions since. It is tempting to view these transactions as indications of the market value of the underlying intellectual property assets involved. It is important, however, to examine carefully the property that these securitized amounts represent. True, the securitized amount represents someone's judgment of the present value of an income stream. But does that income stream necessarily represent the total economic benefit attributable to the intellectual property? We must remember that a license divides the economic benefit between licensor and licensee. Presumably the licensee is to pay, in the form of a royalty, only for that portion of the benefit received. A capitalization of only a portion of the income attributable to an asset only captures a portion of its value. If we want to use one of these transactions as an indicator of market value, we must satisfy ourselves that the income stream that supports the securitization represents all of the income that can be reasonably expected from exploiting the intellectual property.

(b) COMPARABILITY. Transactions involving specific items of intellectual property are still rare events. When transactions actually occur, often the terms of the exchange are not disclosed to the public. The most difficult aspect of the market approach as it applies to intellectual property is comparability. Even if pricing information for a specific exchange regarding a specific patent or trademark were available, the price at which the property was exchanged most likely will have no bearing on the value of other patents and trademarks unless positive comparability exists.

In residential real estate, comparability is quite easy. The neighborhood, square footage, number of rooms, and quality of construction all can be compared to the indications of value established by past sales of other homes. Adjustments can be made for differences such as pools, fireplaces, and finished basements. After adjustments, the market transactions can lead to a value for the house being studied. Unfortunately, valuation is not as easy for intellectual properties such as patents and trademarks. Many factors come into play. Some of the most important factors that should be considered when seeking intellectual property comparability include:

- Industry
- Market share
- Profits
- New technologies
- Barriers to entry
- Growth prospects
- Legal protection
- Remaining economic life

The value of a business enterprise, including all of the tangible and intangible assets, is greatly influenced by the industry in which the property is used. Industry cycles and economics can limit the value of businesses and the intellectual property that they possess. Market transactions that are to serve as a basis for an indication of value are most useful if the exchanged property is employed within the same industry, and subject to the same prospects, demographic factors, government regulation, and investment risks. If a trademark used in the cosmetics industry were sold, the price at which the transaction occurred might be a good indication of the value of other cosmetic trademarks. This assumes, however, that the influence of the other factors listed is the same. A trademark that was exchanged in the steel industry would not be considered useful for valuing a cosmetics trademark.

Profitability is fundamental to the existence of monetary value. Intellectual property that contributes to strong and continuing profits is very valuable. Market transactions involving trademarks in the same industry might not be a reasonable comparable unless profitability measures are the same. An excellent example is sports products. The primary players in the sport shoe market produce products of almost equal quality. Each competitor has products with designs and features that are intended to enhance athletic performance and prevent injury. Yet some branded products have achieved substantial profits above the average achieved by major competitors. Part of this should be attributed to the recognizability of the trademark by consumers and the positive attributes that they associate with the name. If a sport shoe trademark were to be exchanged, an indication of value for another trademark in the same industry might not be provided. The profits associated with the trademark also would need to be at similar levels for a reasonable comparison. While industry transactions are a fundamental factor for judging comparability, comparable profitability is also very important.

Market share often can be associated with profitability. Control of a large share of a big market provides a company with enhanced profits from many economies of scale. Patented products and trademarks can contribute to maintenance of a significant market share, and this factor must be reflected in the value of intellectual property. Intellectual property transactions may not be comparable if the market share comparisons are not positive.

Emerging technologies can have a significant impact on the value of intellectual property. The potential competition that emerging technology represents can affect the economic remaining life of intellectual property. When looking at intellectual property transactions as market indications of value, care must be taken to ensure that the effect of emerging technology on those transactions is comparable with its effect on the property being valued. The existence of research that is expected to make the subject property obsolete must be reflected in the value decision. Even within the same industry, intellectual properties may not be influenced to the same degree by emerging technology. The computer software industry evolves at light speed. Many software programs have an economic life of only a few years. In 1985, Fifth Generation Systems introduced the first hard disk backup program. This allowed a hard disk to be backed up to floppy disks in under 10 minutes. This was a fantastic product for programmers. Previously, hours were spent each time a protective backup was made. The product was a big seller, but in less than 2 years, 16 competing products entered the market. Many of the competitors included advanced features. The value of the original software of Fifth Generation must reflect the effects on future profits from these other programs, as well as the inroads that are expected from new products that complete backup by continuous processing using an expansion board. In looking for market transactions of comparable property, consideration must be given to the effect that derives from new products and technology. If the market transactions center on intellectual property that is free of the impact of technology gains, their use in valuing otherwise similar property is inappropriate.

Barriers to entry can enhance the value of intellectual property. Barriers include distribution networks, substantial capital investments, and well-entrenched competitors. FDA approval in the drug industry is an example of a barrier to entry. The value of currently accepted proprietary drug products is supported, in a sense, by the hurdles that competitors must jump in order to enter the market. The time delay allows the current products to enjoy less competition, higher pricing options, and—most important—an opportunity to dominate the market. Market dominance can be achieved in many ways

through advertising, establishment of customer loyalty, or the development of highly efficient production facilities. Consequently, intellectual property within a market that also presents high entry barriers is possibly more valuable than similar property that operates in a more open industry.

Growth prospects are directly related to value. This relationship exists because a growing income stream is more valuable than a flat or declining income stream. The intellectual property that the income stream flows from is valued according to the growth prospects of the income. Generally, higher growth can be associated with higher value, assuming that investment risks are the same. Comparable market transactions are not useful as value indicators if the properties being compared have decidedly different prospects for future income growth.

Intellectual property values are derived from the legal protection that excludes others from making use of the property. When there is a question about the strength of this protection, the value of intellectual property is weakened. This is especially true for patents. A basic patented technology covering the activities for an entire industry is far more valuable than a patent covering a small aspect of an industry. If a patented technology can be "designed around," the underlying value of the patent is weak. Dramatic assurance of strong legal protection is associated with patents that have withstood the examination of infringement proceedings. Once validity is reaffirmed and acknowledged, usually in the form of a substantial damages award for the plaintiff, the patented technology is highly valuable. Evidence of the reaffirmed value usually can be detected in the number of industry participants lining up to take licenses at royalties that leave little room for negotiation.

Remaining life also must be considered in the valuation of intellectual property and intangible assets. Just like the old house that will require complete refurbishment in a short time, intangible assets having dissimilar years of remaining utility are not good comparisons. Two patents with many similar characteristics of industry application, growth potential, profits, and market share still may not be reasonable comparisons if one has only a few years until expiration.

When there are market transactions of specific intellectual property that has similar characteristics to the property under study, direct application of the market approach is possible. When intellectual property has been exchanged as part of a package of assets (usually as part of a business enterprise), then an allocation of the purchase price among the assets is required, in order to identify the amount that is specifically attributable to the intellectual property.

9.4 ANALYZING THE BUSINESS ENTERPRISE TO INDICATE VALUE

The market approach can indicate the value of intellectual property and intangible assets by determining the value of the entire business enterprise within which the property resides. Once this value is established, allocation of the value among all of the other asset categories leaves a residual amount that often can be ascribed to intellectual property, such as strong trademarks, copyrights, distribution networks, or proprietary technology. The valuation of intellectual property within the framework of a business enterprise is an important and recurring theme in our analysis. Value for intellectual property is dependent on successful commercialization that is embedded in the value of the business enterprise in which it resides.

In Chapter 4 we described the basic elements that constitute a business enterprise as shown on Exhibit 9.1.

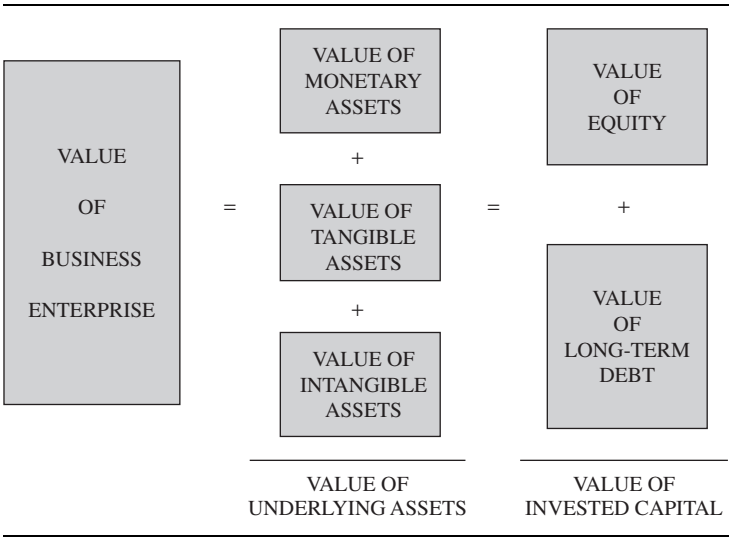


EXHIBIT 9.1 THE BUSINESS ENTERPRISE EQUATION

The business enterprise is defined as invested capital, which equals the value of shareholders' equity and long-term debt. This also represents the value associated with the purchase of raw materials, construction of facilities, acquisition of machinery, establishment of operating procedures, development of distribution networks, creation of products, design of packaging, training of employees, creation of trademarks, and start-up of operations. The market value of the business enterprise equals the value of the assets that constitute the business: net working capital, tangible assets, intangible assets, and intellectual property. A further breakdown of asset category definitions follows:

Net Working Capital = Current Assets – Current Liabilities

Tangible Assets = Land + Building + Machinery + Trucks + Office Equipment

Intangible Assets = Computer Software + Trained Workforce + Contracts + Distribution Networks

Intellectual Property = Patents + Trademarks + Copyrights + Process Secrets

Based on this framework, the value of a specific asset can be determined if the overall value of the business enterprise is known. Allocation of the overall business enterprise value to specific categories continues until the residual amount of unallocated value can be ascribed to the asset for which the valuation is desired.

Exhibit 9.2 is an example of a balance sheet that we can use to illustrate how the business enterprise market approach can be developed for patented technology. In this example, assume that the company is a single-product company and that the sales and earnings of the company are healthy and growing. The balance sheet provides information that shows the investment that the company has made in working capital and tangible assets. It shows that monetary assets, or net working capital, are approximately $4.3 million. This is simply the current assets less current liabilities.

The total amount that has been spent on the fixed assets of the business is $29.2 million. This represents the original amounts that were paid for the fixed assets at the time each was purchased. After allowing for depreciation, the net book value for the fixed assets, as determined according to Generally Accepted Accounting Principles, is $11.7 million. After subtracting liabilities, the book value of shareholders' equity is shown as $10.5 million.

Assets		*Liabilities & Shareholders' Equity*	
Current Assets	($000s)	*Current Liabilities*	($000s)
Cash	50	Accounts payable	2,500
Accounts receivable	3,500	Current portion of LTD	1,000
Inventories	5,000	Accrued expenses	500
Prepaid expenses	25	Income taxes due	250
Total current assets	8,575	Total current liabilities	4,250
Property and Equipment		*Long-Term Debt*	
Land	200	Mortgages payable	1,500
Buildings	5,000	Other long-term debt	4,000
Production machinery	15,000	Total long-term debt	5,500
Office equipment	7,500		
Vehicles	1,500	*Shareholders' Equity*	
		Common stock	100
Gross plant, property and equipment	29,200	Additional paid-in capital	1,900
Accumulated depreciation	17,520	Retained earnings	8,505
		Shareholders' Equity	10,505
Net plant, property and equipment	11,680		
Total assets	20,255	*Total liabilities & equity*	20, 255

EXHIBIT 9.2 ONE PRODUCT COMPANY, INC.—BALANCE SHEET

(a) BUSINESS ENTERPRISE VALUE. Recalling the equation for a business enterprise value as the fair market value of invested capital, we can begin the process that will lead to an indication of value for intangible assets or intellectual property. It is vital to recall that the value presented on the financial statements of a company conforms to Generally Accepted Accounting Principles. Such conformance, at considerable expense to the company by way of annual audit fees, curiously also means that financial statements do not reflect the market value of the tangible or intangible assets.

The book value of net working capital is usually a reasonable indication of its market value, assuming that realistic provisions have been made for bad debt and obsolete inventories. The financial statements cannot, however, directly provide an indication of the enterprise value. Since the financial statements do not represent the true market value of the business, the stock market serves as a bridge between accounting values and market values. If One Product Company, Inc. is publicly traded, then the price at which the shares are trading can be used to determine the market value of equity. When the value of long-term debt is added to the equity value, the value of the business enterprise is revealed. The value of long-term debt may not necessarily be the amount presented on the balance sheet. Changing market conditions and interest rate fluctuations could make the value of the debt obligations more or less than the balance sheet presents, and the amount added to the market value of equity should address this possibility. An investment analysis that considers interest rate changes, inflation, credit risk, and other variables may be required to determine the market value of long-term debt.

(b) BUSINESS ENTERPRISE VALUE FROM THE INVESTMENT MARKETPLACE. If the shares of the company are not traded, then we must look to the market for a surrogate that can be used to identify the proper "bridge" between financial statements and market value. Typically, price-to-earnings ratios are used as well as other market multiples of:

- Gross cash flow
- Net cash flow
- Pretax earnings
- Earnings before depreciation, interest, and taxes
- Revenues
- Book value of shareholders' equity

The valuation of businesses is itself a complex issue. It is important to understand the basic principles, but a complete understanding requires extensive study. Selecting market surrogates that are comparable to One Product Company, Inc. allows us to capture many valuation factors, such as industry risk and profit measures, within the market multiple selected. In addition, prices at which public companies have been acquired or the price at which divisions of other companies have been sold may provide guidance for valuing One Product Company, Inc. The proper multiple reflects the level and growth rate that the market expects the company to be able to achieve from the synchronized employment of all corporate assets. The use of market multiples as a means of valuing the subject company relies, in part, on the Efficient Market Hypothesis. We are relying on the wisdom and efficiency of the broad stock market to properly value the business enterprise.

> The market is assumed to be efficient because it consists of a large number of rational, profit-seeking, risk-averting investors. They compete freely with each other in estimating the future value of individual stocks. Since any new change affecting a given stock is quickly known throughout the entire investment community, it is therefore rapidly reflected in the price of a given stock to which it relates. . . . Thus the market is said to be efficient because it quickly incorporates any new change or event affecting the value of the security. . . . at any given time, the price of a stock represents its [the market's] best valuation since all factors affecting it would have been taken into consideration.[3]

In a broad sense, this hypothesis is supported by research showing that the performance of most institutional portfolio managers seldom exceeds the returns achieved on broad indices such as the S&P 500.

The reason for this stock market discussion is that when the market approach is used to value the business enterprise, its market value must be determined. One of the tenets of market value is that both of the transacting parties have reasonable knowledge of all relevant facts. Market surrogates for valuing a company that contains important intellectual property should possess elements of the efficient market. We are seeking a market multiple that inherently reflects all of the risks of One Product Company, Inc., including industry cycles and competitive pressures as determined by knowledgeable investors. The evidence that the market is in some cases inefficient requires not only that the market surrogates selected be affected by the same business risks but also that the market multiples reflect all of the relevant information that is available in an efficient market. To

3. The Efficient Market Hypothesis is broadly defined in Cohen, Zinbarg, and Zeikel, *Investment Analysis and Portfolio Management*, fourth edition (Homewood, IL: Richard D. Irwin, Inc., 1982).

accomplish this requirement, emphasis can be placed on selecting comparable companies that have certain of the following characteristics:

- Significant holdings of the stock by institutional investors
- The availability of several research reports about the company from prominent security firms
- Active trading volume in the stock

Any one of these characteristics should provide some assurance that the market-determined price reflects the value opinions of many profit-seeking, risk-avoiding investors and that all of the relevant and available information about the company and its intellectual property is reflected in the stock price from which market multiples are derived. Unless One Product Company, Inc. is taken public, so that the market can directly value the business enterprise, the use of efficiently priced surrogates must suffice. Suppose that we have identified efficiently priced market surrogates, and assume that the value of the invested capital of One Product Company, Inc., has been determined at $81,775,000. Allocation of this amount to the assets that constitute the company provides an indication of the value of the intellectual property that may be present.

(c) BUSINESS ENTERPRISE VALUE—ASSET ALLOCATION. Exhibit 9.3 presents the allocation of the overall business enterprise value among the assets that constitute the business. Starting from the fair market value for the business enterprise of $81,775,000, the value of all identified assets is subtracted. The residual provides an indication of value for all of the intangible assets, including the patent.

(d) MONETARY ASSETS. In this example, the balance sheet amount of net working capital was considered to represent its fair market value. Accounts receivable are expected to turn over quickly into cash, and inventories were accounted for using a basis that reflects the latest cost to create product. The current liabilities also are considered to represent very near term expenses that will be paid in current dollars. Therefore, $4,325,000 of the business enterprise value is identified as the working capital.

(e) TANGIBLE ASSETS. The fair market value of tangible assets is typically determined using the generally accepted cost, market, and income approach valuation techniques being discussed.

(f) LAND, BUILDINGS. Land originally cost the company $200,000 and is presented on the balance sheet at that amount. Since the original purchase date, the price in this example at which comparable industrial land in the same geographical area sells is about

Business enterprise value	$81,775,000
Net working capital	$4,325,000
All fixed assets	$29,200,000
Indicated value of intangible assets and intellectual property	$48,250,000

EXHIBIT 9.3 ONE PRODUCT COMPANY, INC.—ALLOCATION OF THE BUSINESS ENTERPRISE VALUE

the same amount per acre. A real estate expert typically would be consulted to assist with the valuation of the land. The fair market value of the land is shown in Exhibit 9.2 as $200,000. Similarly, the industrial building can be valued. A real estate expert would review the prices at which recent transactions involving comparable buildings of similar design and utility have been exchanged within the same geographical area. The process requires comparison of many factors, including construction type, access to major highways, adequacy of ceiling height, type of power and heating sources, adequacy of maintenance, and consideration of the amount of wear and tear (physical depreciation) that is present. The costs that would be incurred to construct a new building also come into play as an indication of the value of the existing structure; once again, this is after allowing for the "used" condition of the building. As shown on the allocation schedule, the building is considered to have a fair market value that is equal to the original purchase price of $5,000,000 and is included in the $29,200,000 allocated to fixed assets.

(g) PRODUCTION EQUIPMENT, OFFICE EQUIPMENT, AND VEHICLES. The production equipment, office equipment, and vehicles can all be valued, usually by using the cost or market approaches to value. Depending on the condition and age, each of the assets is valued. Also, consideration must be given to the demand for the specific pieces of equipment. The vehicles may include company cars and delivery trucks. These vehicles can be easily used by many other types of companies, and thus they are in demand. This liquidity allows support for a strong underlying value. If, however, some of the production equipment is very specialized, the market may not provide strong demand for it. The current value of the specialized equipment must reflect this limited demand. After all of these factors have been considered, the allocation schedule provides value conclusions for the tangible assets of One Product Company, Inc. It is important to note that the assigned values represent the value of the tangible assets as part of the going concern. This includes an amount that represents the value of having the equipment in place and fully productive—an amount that is higher than the price of similar equipment from the dealer before installation and start-up testing. In this example, we have used the original cost information as representative of the fair market value for the tangible assets. Exhibit 9.4 shows that 59% of the allocated value is attributed to the intangible assets and intellectual property of the company. Somewhere in that amount is the value of a specific item of intellectual property.

(h) INTANGIBLE ASSETS. The amount that still remains unallocated is considered to represent the value of all intangible assets, including the value of the patented intellectual

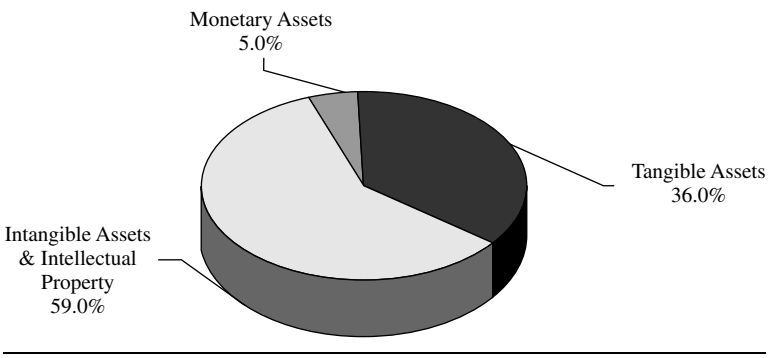


EXHIBIT 9.4 ONE PRODUCT COMPANY, INC.—ALLOCATION OF BUSINESS ENTERPRISE VALUE

property. In order to isolate the value of the patent, all other intangible assets of the company must be identified and valued. Chapter 2 lists the many different types of intangible assets that companies possess. The number and variety of intangible assets possessed by any one company depend to a large extent on the type of business in which the company is engaged. Some companies may possess long-term supply contracts that provide scarce raw materials at a price advantage. Other companies may have many sources of raw materials and no such contracts. Listed are the most typical intangible assets that might be found in a manufacturing company such as One Product Company, Inc.

- Computer software
- Trained workforce
- Corporate practices
- Engineering specifications

(i) TRUE NATURE OF GOODWILL. Goodwill is not specifically identified as a separate intangible asset. In this example, the company does not possess separate elements of goodwill. A company may be successful and continuing but not possess goodwill. Continued patronage may best be associated with other intangible assets, such as trademark recognizability or patented product attributes. Goodwill is not a distinct and independent asset, as the IRS and various courts might assert. Its value rises from the inability or lack of inclination to properly value intangible assets and intellectual property. All of the positive attributes and characteristics cited as evidence of a goodwill asset are really attributes and characteristics of specific intangible assets and intellectual property. All of the qualifying statements used to describe goodwill are more correctly associated with specific company assets:

- The characteristics, and associated value, of loyal customers that make regular and frequent purchases are not due to an amorphous asset called goodwill but are derived specifically from loyalty to a trademark.
- Customer loyalty may arise from superior product utility. Customers may feel secure about the quality of the products they will purchase. However, this comes from patented technology or from the intangible asset of quality control procedures, not vaporous goodwill.
- Returning to a company for its superior service is not the result of goodwill but a reaction by customers to a well-trained workforce.
- Universal availability of a product is not goodwill. It is the sign of an enormous and finely tuned distribution network.

Allocation of the remaining amount of business enterprise value is ideally not complicated by allocating an amount to goodwill. Completion of the One Product Company, Inc. allocation requires determination of the value of the intangible assets previously listed. The valuation of each of these intangible assets is discussed next with reference to the valuation methodology considered most appropriate. After they are all valued, the residual amount is attributed to the patented product because all other assets of significance have been identified and valued.

(j) COMPUTER SOFTWARE. Computer software is the programming that allows the computer hardware to provide powerful management controls. The value of the computer hardware already has been captured as part of the value associated with office equipment, but this value does not always capture the costs associated with the computer

software asset. Typical software for a manufacturing company includes inventory control, payroll, accounts receivable, general ledger, sales analysis, property records, shareholder records, personal data, and other programs, depending on the amount of data processing that is conducted in-house. The value of this software can easily involve millions of dollars. Most often, the software is a collection of packaged programs purchased from software vendors and custom programs developed in-house by company employees. The value of the computer software can best be determined by estimating the amount that would have to be spent, in current dollars, to recreate the existing asset. Part of this cost would include the purchase of a program package from a software vendor. The cost to create the custom programs represents the salary, benefits, and overhead costs to dedicate one or more programmers for the time that would be needed to recreate the custom software. When one considers that much of any company's software has been developed over many years, the cost to recreate can mount. When all of the proper costs associated with recreating the existing software are aggregated, the computer software for this example is considered to have a market value of $750,000.

(k) ENGINEERING SPECIFICATIONS. Engineering specifications include all of the know-how that is associated with the design and assembly of the product. This type of intangible asset includes:

- Raw material specifications
- Product drawings
- Assembly drawings and procedures
- Quality control criteria and procedures
- Tooling designs

This collection of intangible assets allows the product to be assembled efficiently at the lowest possible cost while maintaining a prescribed level of quality. The value of such engineering specifications can be developed much in the same way that the value of the software was developed. The process involves estimates of the amount of employee time it would take to recreate these components of know-how. The costs are the salary and benefits of the engineering, production, purchasing, and quality control executives who are responsible for establishing these vital procedures. As with the software, the amount involved can be substantial. Assuming that the proper analysis has been completed, the value of engineering specifications for One Product Company, Inc. is considered to be $2,550,000.

(l) CORPORATE PRACTICES AND PROCEDURES. Corporate practices and procedures are similar to engineering specifications but are broader. The elements of corporate procedures for a manufacturing company can include:

- Insurance purchasing practices
- Personnel policies
- Purchasing procedures
- Warehousing and distribution methods
- Financial analysis and reporting functions
- Vacation and benefit administration
- Production scheduling methods

In general, the corporate practices and procedures are the "spark plugs" of a company's "engine." They allow the employees and the company assets to synchronize into a going concern. Once again, the value of this intangible asset can be established by considering the time, effort, and associated cost in salary and benefits to have these procedures recreated and placed into the operating business. For this example, corporate practices have been valued at $4,200,000. It is important to note that the intangible assets that have been discussed thus far are not the types of assets that can readily be sold to another party separate from the organization within which they reside. However, this does not mean that they are of any less importance than the land, buildings, and machinery. These know-how and corporate procedure intangible assets are also responsible for the income-generating capacity of the company.

(m) WORKFORCE. Finally, we have the intangible assets of an assembled and trained workforce. Suffice it to say that the intimate knowledge of a workforce that knows their respective jobs and how to operate within the established corporate procedures is a valuable intangible asset indeed. For this example, we have concluded that a detailed application of a cost-approach methodology indicated the value of the workforce to be $4,500,000.

(n) ENTERPRISE ALLOCATION. Exhibit 9.5 presents the business enterprise allocation schedule incorporating the value of all the intangible assets that One Product Company, Inc. possesses. The residual amount is an indication of the value of the patent. As a result of application of the market approach, an indication of value for the patent of One Product Company, Inc. is reasonably stated in the amount of $36,250,000, or 44% of the total business enterprise value. This application of the market approach indirectly provides an indication of the fair market value of intellectual property. Even though specific transactions of intellectual property may not be identifiable, application of the market approach is still possible if the market can provide assistance in valuing the business enterprise in which the intellectual property resides.

9.5 MARKET APPROACH—SUMMARY

The market approach seeks transactions from the marketplace that can be used as surrogates for the subject virtual transaction. It includes an analysis of the comparability of these transactions and adjustments where necessary and possible. The flow of logic of this approach is illustrated in Exhibit 9.6.

Business enterprise value	$81,775,000
Net working capital	$4,325,000
All fixed assets	$29,200,000
Indicated value of intangible assets and intellectual property	$48,250,000
Identified intangible assets	$12,000,000
Intellectual Property—Patented Technology	$36,250,000

EXHIBIT 9.5 ONE PRODUCT COMPANY, INC.—ALLOCATION OF BUSINESS ENTERPRISE VALUE

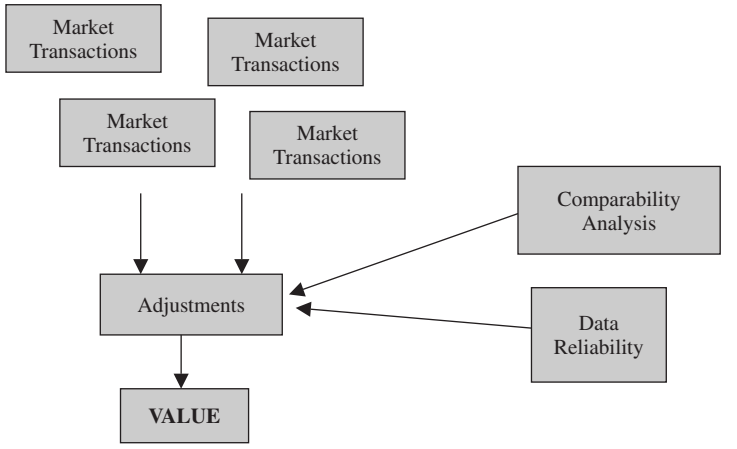


EXHIBIT 9.6 MARKET APPROACH FLOW DIAGRAM

Within this procedure is the underlying assumption that the patented product is being optimized. We are assuming that best efforts are being made to expand application of the patented device and that other uses with economic potential are being studied and/or exploited. This assumption is also required for the market transactions involving comparable property that are used as an indication of value. Application of this methodology is not limited in any way to companies that possess only one item of intellectual property. The approach can be used equally well to value an intellectual property possessed by a multinational company that operates a diversified line of businesses. A good way to focus on a specific item of property is to isolate a business enterprise from within the diversified corporation that derives economic gains from employment of the intellectual property for which a value is desired. Income statements and balance sheets will have to be developed for the isolated enterprise, reflecting the sales, expenses, working capital, fixed assets, intangible assets, and intellectual property that compose the subset of the diversified company. Care must be taken to ensure that all intangible assets of significance are identified. Each one must be valued so that the residual amount of business enterprise value can be confidently allocated to the intellectual property for which an indication of value is desired.

Earlier in this chapter, we discussed how the market valued the patented contraceptive sponge product possessed by VLI Corporation. If the patent associated with One Product Company were proven invalid or lost, we would expect the business enterprise value of the company to drop in value. The market multiple used in the enterprise valuation would have to reflect the impact on profits from unbridled competition. Lower earnings and cash flow would be expected due to higher competition, and an investment in the company would be riskier. The allocation of value to all of the other assets would not be expected to leave any residual amount for allocation to the patented product. It is expected that the company still could generate an income from sale of the unpatented product, but at a lower level because of competitive pricing pressures.

CHAPTER 10

INCOME APPROACH—QUANTIFYING THE ECONOMIC BENEFIT

10.1 MARKET VALUE EQUALS THE PRESENT VALUE OF THE FUTURE ECONOMIC BENEFITS OF OWNERSHIP

From Chapter 7 the reader will recall that the focus of this book is the estimation of market value. Chapters 8 and 9 discussed how to develop indications of market value by the cost and market approaches. This important chapter presents the income approach to estimating market value, which has been defined as "the present value of the future economic benefits of ownership." This definition itself indicates the direction of this discussion. The reader will recall the discussion of investment principles in Chapter 2 and the present value calculations that are the core of that subject. A calculation of the present value of future economic benefits therefore requires us to develop three primary inputs:

- The economic benefit that can reasonably be expected from the exploitation of the property
- The pattern by which that economic benefit will be received
- An assumption as to the risk associated with realizing the estimated amount of economic benefit in the expected pattern.

If we have these three pieces of information, we can calculate present value. If this information comes from an analysis of the real marketplace, that present value equals market value. The arithmetic (calculating present value) is straightforward; the analysis necessary to develop the inputs (amount of benefit, pattern of income, and risk factors) can be extremely complex. The remaining sections of this chapter explore analysis techniques.

10.2 QUANTIFYING THE ECONOMIC BENEFIT

Estimating the economic benefits that can flow from the exploitation of intangible assets and/or intellectual property is one of the most difficult challenges in the application of the income approach.

In the discussions that follow, we often use the term "earnings" to represent the quantification of the economic benefit. It is therefore appropriate to preface the examples with our thoughts about the use of earnings as this measurement.

The mere existence of profit is not enough to justify company investments in intellectual property. Before creating, buying, or licensing intellectual property, a company must determine its contribution to the overall earnings of the enterprise in which it will be used. Earnings derived from operations must be of an amount, on a consistent basis, to

yield a fair rate of return on investment. A large investment in fixed assets may have to be justified. Raw materials inventory, industrial land, delivery trucks, manufacturing buildings, and production equipment cannot be justified if the funds that were used to acquire these assets could generate a higher return from alternate investments. When Treasury bills (T-bills) produce a 3% return, a plant and equipment investment must deliver an investment rate of return that exceeds the safe rate of T-bills by an amount necessary to compensate for the added investment risk.

In our competitive economic environment, profits eventually are driven downward to the lowest level at which a fair return still can be extracted from participation in a mature market. Often above-average profits are not sustainable for long periods. Competitors are quick to recognize and enter high-profit markets. New entrants into a high-profit market force lower selling prices and squeeze profitability. This microeconomic process is efficient in general but can be inconsistent for market participants. Attractive profit levels often attract more competitors than the market will bear. When supply exceeds demand, the corresponding reduction in selling prices can make the entire industry an unprofitable environment in which to continue competing. After the inevitable shake-out, the profitability of the industry tends toward the lowest price at which a fair return can still be earned. Keystone intellectual property, however, may be able to deliver sustained superior profits.

(a) TECHNIQUES FOR QUANTIFYING THE ECONOMIC BENEFIT. In general, there are two techniques for estimating the economic benefit from exploiting intellectual property, the *direct* and *indirect*, and their use is dictated by the information available. When we are able to focus specifically on the benefit produced by the subject property, we are employing the direct technique. Indirect techniques attempt to extract the specific from the general. That is, we compare the value of an enterprise or part of an enterprise *with* and *without* the effect of exploiting the subject property. We are measuring the economic value of some business activity that embodies the subject property and attempting to quantify its contribution by subtraction.

(b) DIRECT TECHNIQUES.

(i) Premium Pricing. When above-average profits are generated on a consistent basis, intellectual properties may be responsible. Sometimes intellectual property contributes by commanding a premium selling price on a consistent basis regardless of competitor actions. Well-recognized trademarks are good examples. Two golf shirts of identical material and construction quality can differ in selling price by over $20. Customers are willing to pay, on a consistent basis, more money for the POLO logo. The same may be said to be true for other consumer goods such as SONY electronic equipment, ROLEX watches, MAYTAG kitchen appliances, and some of the Japanese automobile offerings. As long as the entire amount of premium is not spent on image-creating advertisements, net profits are enhanced.

Premium selling prices are not always driven by prestige trademarks. Patented and unpatented technology-based products also can command premium prices—patented pharmaceuticals, for example. Generally, the production equipment investment that is needed to manufacture patented drugs is similar to the equipment needed to make generic medicines. A study published by the Congressional Budget Office indicated that innovator drugs produced by a single source commanded a retail price (per prescription) of $53.80 versus $17.40 for a generic equivalent.

In Exhibits 10.1 and 10.2, we have illustrated the calculation of the effect of a premium price on sales revenue. Please observe that this is not the same as value. There may well be expenses associated with the exploitation that generates the premium price. That complexity will be discussed in following sections of this chapter. For now, we concentrate on quantifying the economic benefit.

In Exhibit 10.1, we calculated the premium price advantage by forecasting 5 years of sales of the same number of units by Fancy Company (premium priced product) and Plain Company (typically priced product). The premium price advantage is the difference between the two.

In Exhibit 10.2, we simply multiplied the price delta by the number of units to be sold.

As we have noted, success in business attracts competitors. The enhanced earnings that ought to result from premium pricing are such an attraction, and we must consider the possibility that a premium price advantage can dissipate, as shown in Exhibit 10.3.

Exhibit 10.3 illustrates the declining price of the premium product that, in year 5, equals the typical product price, eliminating the advantage. There would be the same result if Fancy Company maintained its price in the face of competition, but suffered declining unit sales.

There are occasions in which we need to "look through" the sale of a product or service to the end customer. Assume a technology that enables an otherwise ordinary rotary lawnmower to trim the edges of your lawn. With such a tool, the buyer does not need to purchase a separate trimmer, and so the price of this lawnmower can be higher than otherwise since the homeowner saves the extra expenditure. Thus, considering the economic effect on the ultimate customer can provide some insight into the quantification of potential premium price.

We also must carefully evaluate what is driving a premium price, in order to ensure that the driver is in fact the property we are appraising. As an example, is the premium price we observe the result of a strong trademark (brand) or a technology feature of the product? The price we are using as the basis for this analysis is related to a product or service in the market; it is not specifically associated with some particular intellectual property. We may be able to employ the subtraction approach to answer the question—assume away the mark or assume away the technology feature, and estimate the result on price. In any case we need to be attentive in our fact finding and analysis so that we can be confident that it is reasonable to attribute the premium price to the subject intellectual property.

(ii) Cost Savings. A cost saving can be just as profitable as an increase in sales revenue, and many technology innovations produce such an economic benefit. Cost-saving intellectual property lends itself to a direct identification of the benefit.

Production cost savings are a fairly common result of the exploitation of intellectual property, which can produce enhanced earnings, for example from:

- Reduction in the amount of raw materials used
- Substitution of lower-cost materials without sacrifice of quality or product performance
- Increases in the amount of production output per unit of labor input
- Improved quality that reduces product recall
- Improved production quality that reduces waste or finished product rejects
- Reduced use of electricity and other utilities

	1	2	3	4	5	TOTAL
FANCY COMPANY, INC.						
SALES OF PREMIUM PRICED PRODUCT						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.49	2.49	2.49	2.49	2.49	
Sales Revenue	$ 373,500	$ 388,440	$ 403,978	$ 420,137	$ 436,942	$2,022,996
PLAIN COMPANY, INC.						
SALES OF GENERIC PRODUCT						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$1,779,262
REVENUE ATTRIBUTABLE TO IP	**$ 45,000**	**$ 46,800**	**$ 48,672**	**$ 50,619**	**$ 52,644**	**$ 243,735**

EXHIBIT 10.1 CALCULATING SALES REVENUE ATTRIBUTABLE TO PREMIUM PRICE

	1	2	3	4	5	TOTAL
FANCY COMPANY, INC.						
SALES OF PREMIUM PRICED PRODUCT						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Premium price component ($2.49–2.19 = $0.30)	0.30	0.30	0.30	0.30	0.30	
REVENUE ATTRIBUTABLE TO IP	**$45,000**	**$46,800**	**$48,672**	**$50,619**	**$52,644**	**$243,735**

EXHIBIT 10.2 ALTERNATIVE CALCULATION OF SALES REVENUE ATTRIBUTABLE TO PREMIUM PRICE

	1	2	3	4	5	TOTAL
FANCY COMPANY, INC.						
SALES OF PREMIUM PRICED PRODUCT						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.49	2.49	2.39	2.29	1.98	
Sales Revenue	$ 373,500	$ 388,440	$ 387,754	$ 386,391	$ 347,448	$1,883,532
PLAIN COMPANY, INC.						
SALES OF GENERIC PRODUCT						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$ 1,779,262
REVENUE ATTRIBUTABLE TO IP	**$ 45,000**	**$ 46,800**	**$ 32,448**	**$ 16,873**	**$ (36,851)**	**$ 104,270**

EXHIBIT 10.3 EFFECT OF PREMIUM PRICE EROSION

- Production methods that control the amount of wear and tear on machinery and thereby reduce the amount of maintenance costs and production down time for repairs
- Elimination of manufacturing steps and the machinery investment previously used in the eliminated process
- Reduction or elimination of effluent requiring environmental treatment

Some types of cost savings can be easily recognized and quantified. For example, a new patented or unpatented technology will reduce the kilowatt hours of electric power consumption by 1,500 per month at current levels of production. This information, together with electric rate schedules for the locations where this technology will be employed, will provide the quantification.

When above-average profits are earned on a consistent basis, some form of intellectual property is often responsible. Exhibit 10.4 illustrates a calculation of economic benefit attributable to production cost saving technology. Production costs are embedded in the cost of goods sold by Cost Saving Company, Inc., and it enjoys a gross profit margin of 31.51%, in contrast to the 24.66% observed for a group of comparable companies in the same industry. This difference enhances the company's gross profit by $122 thousand over the 5-year period shown.

We can "follow the dollars" at any point in the financial statements, and this example is at the gross profit level. We cannot always make a judgment about the presence or absence of intangible assets or intellectual property by observing just the gross profit performance of the subject company. We must make this observation in comparison with other companies that we feel are not similarly blessed.

As an example, we could select two groups of food companies for comparison. The first of these might comprise companies that manufacture and sell their own branded products. The second could be so-called private-label manufacturers that manufacture food products to the specifications of others and sell their products with the brands of their customers. One would expect that the gross profit of the brand companies would be higher than that of the contract manufacturers. This might be due to premium pricing of the products with well-known brands. This also might be due to the economies of scale that the branded manufacturers enjoy because of their market strength and the claim on retail shelf space generated by their strong brands.

We would probably observe from our calculation of the difference in gross margins that the average gross profit margin for the branded companies is significantly higher than that of the private-label companies. We must recognize, however, that companies with well-known brands do not reap their benefits entirely without cost. There is a continuous need to support these brands with advertising and promotional activities. We therefore should adjust the gross margin calculations by subtracting the percentage amounts of "selling, general and administrative" expenses.

On an adjusted basis, we would probably discover that the difference in gross margin between the two groups is smaller than we first calculated. It is important to remember that this is a shortcut method and does not specifically address the differences that may exist in the complementary assets that the two company groups may employ. It also does not specifically identify the assets that give rise to the difference, be they brand or other. This is, however, a very useful method to identify the order of magnitude of intangible assets and intellectual property that is contributing to an earnings advantage.

	1	2	3	4	5	TOTAL
COST SAVING COMPANY, INC.						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$1,779,262
Cost of Goods Sold per Unit	1.50	1.50	1.50	1.50	1.50	
Cost of Goods Sold	225,000	234,000	243,360	253,094	263,218	
Gross Profit	$ 103,500	$ 107,640	$ 111,946	$ 116,423	$ 121,080	$ 560,589
Gross Profit Margin						31.51%
COMPARABLE COMPANY GROUP						
Unit Sales Forecast	750,000	780,000	811,200	843,648	877,394	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$1,642,500	$1,708,200	$1,776,528	$1,847,589	$1,921,493	$8,896,310
Cost of Goods Sold per Unit	1.65	1.65	1.65	1.65	1.65	
Cost of Goods Sold	1,237,500	1,287,000	1,338,480	1,392,019	1,447,700	
Gross Profit	$ 405,000	$ 421,200	$ 438,048	$ 455,570	$ 473,793	$2,193,611
Gross Profit Margin						24.66%
COST SAVING COMPANY, INC.						
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$1,779,262
Cost of Goods Sold ADVANTAGE	6.85%	6.85%	6.85%	6.85%	6.85%	
GROSS PROFIT ATTRIBUTABLE TO IP	$ 22,500	$ 23,400	$ 24,336	$ 25,309	$ 26,322	$ 121,867

EXHIBIT 10.4 ENHANCED GROSS PROFIT ATTRIBUTABLE TO COST SAVINGS

Cost-saving benefits can be elusive when we search for them and can be difficult to attribute. As an example, there are consumer products that, because of strong and sustained demand, simply must be on the shelves of a retailer. Because of this, the manufacturer of these products enjoys lower selling costs than otherwise. Can this cost benefit be attributed to the brand (trademark)? Can it be attributed to a unique formula or patented feature?

Cost-saving benefits can be found elsewhere in the income statement. Assume, as an example, that Cost Saving Company, Inc. has developed a very sophisticated database of customer and prospect information, along with software to analyze it. That package of intangible assets and intellectual property might permit the company to significantly reduce its sales force and selling expenses. This cost saving would be found in "Selling, General & Administrative" expenses and, again, a subtraction approach could be used to quantify it, as shown on Exhibit 10.5.

It should be remembered that premium prices and cost savings are not only associated with growing, highly profitable products and services, and do not need to be in order to have value. Premium prices and cost savings can also stem or dampen a *decline* in business and provide their economic advantage in that way.

Again we must be confident, in relying on a cost-saving measurement of economic benefit, that it is correctly attributable to the intellectual property we are appraising.

(c) INDIRECT TECHNIQUES. The contribution to earnings of intellectual property is at times more subtle. Even when active contributions to earnings are not present, intellectual property can provide a company with above-average profits. A dominant position in a market allows a company to enjoy large sales volume on a consistent basis. Manufacturing and operating synergies can then enhance profits. Patented processes are not necessarily responsible for higher earnings. Very often costs are saved just from operating efficiencies associated with large-scale production. This is possible only because of passive intellectual property, however.

When large and reliable amounts of production volume consistently go through an organization, synergistic advantages are possible, and they generally lead to enhanced profits. Some of the typical synergies associated with large production volumes include:

- Raw materials can be purchased at large-order discounts. Suppliers are likely to offer discounts to customers that place large orders. A cost savings is the result.
- Manufacturing efficiencies can be introduced throughout each step of the process.
- Selling expenses might be more controllable with fewer salespeople covering larger accounts.
- Retail efficiencies can include special arrangements with distributors or discounts in the purchase of shelf space at retailers.
- Regulation and compliance costs can be spread over a larger production base along with other fixed overhead costs.
- Large volumes can allow companies to provide utility companies with guaranteed energy purchases that could be obtained at a bulk-rate discount.

Each synergistic benefit combines with the rest to provide enhanced profits that are made possible by market-dominating intellectual property such a trademarks and distribution networks.

	1	2	3	4	5	TOTAL
COST SAVING COMPANY, INC.						
Unit Sales Forecast	150,000	156,000	162,240	168,730	175,479	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$ 1,779,262
Cost of Goods Sold per Unit	0.00	0.00	0.00	0.00	0.00	
Cost of Goods Sold	–	–	–	–	–	
Gross Profit	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	
Selling, General & Administrative Expense	49,275	51,246	53,296	55,428	57,645	
Operating Profit	$ 279,225	$ 290,394	$ 302,010	$ 314,090	$ 326,654	$ 1,512,372
Operating Profit Margin						85.00%
COMPARABLE COMPANY GROUP						
Unit Sales Forecast	750,000	780,000	811,200	843,648	877,394	
Price per Unit	2.19	2.19	2.19	2.19	2.19	
Sales Revenue	$1,642,500	$1,708,200	$1,776,528	$1,847,589	$1,921,493	$ 8,896,310
Cost of Goods Sold per Unit	0.00	0.00	0.00	0.00	0.00	
Cost of Goods Sold	0	0	0	0	0	
Gross Profit	$1,642,500	$1,708,200	$1,776,528	$1,847,589	$1,921,493	
Selling, General & Administrative Expense	295,650	307,476	319,775	332,566	345,869	
Operating Profit	$ 1,346,850	$1,400,724	$1,456,753	$1,515,023	$ 1,575,624	$ 7,294,974
Operating Profit Margin						82.00%
COST SAVING COMPANY, INC.						
Sales Revenue	$ 328,500	$ 341,640	$ 355,306	$ 369,518	$ 384,299	$ 1,779,262
Operating Profit ADVANTAGE	3.00%	3.00%	3.00%	3.00%	3.00%	
GROSS PROFIT ATTRIBUTABLE TO IP	$ 9,855	$ 10,249	$ 10,659	$ 11,085	$ 11,529	$ 53,377

EXHIBIT 10.5 ENHANCED OPERATING PROFIT ATTRIBUTABLE TO COST SAVINGS

(i) Valuation Using "Relief from Royalty." Valuation using "relief from royalty" is a common methodology based on the concept that if a company owns intellectual property it does not have to "rent" the asset and therefore is "relieved" from paying a royalty. The amount of that phantom payment is used as a surrogate for income attributable to the intellectual property, and a calculation of the after-tax present value can proceed.

The royalty used in this type of calculation is often taken from the "market" or from rules of thumb in the relevant industry, although there is nothing to prevent judgment being exercised if the subject property is sufficiently different from the available data. Often the relief-from-royalty calculation is made by capitalizing the income stream in perpetuity as follows:

$$\frac{\text{Year 1 After-Tax Income}}{\text{Capitalization Rate}} - \frac{\$112{,}050}{.10} = \$11{,}205$$

A relief-from-royalty calculation also could be made using a discounted cash flow model, if the economic benefit of the property will be realized only for a finite period of time.

We have previously cautioned users of this technique that the relief-from-royalty income stream may represent only a portion of the economic benefit attributable to the asset being appraised. That is, one must be attentive to the license terms that give rise to a royalty rate taken from the "market." If those license terms transfer only a portion of the full rights of ownership (i.e., the licensor retains the right to exploit the intellectual property itself or to license to others), then the payment for those limited rights (royalty) may not be an adequate surrogate for the full economic benefits of ownership.

In an example from the world of real estate, assume that a building owner occupies one-half of the structure and rents the other part. A capitalization of the rental income obviously would not be an appropriate indication of value for the entire building. To be sure, the rental income from that tenant might be a very good indication of market rental rates, but it would not be adequate for valuation purposes if the objective is to appraise the entire building.

This limitation of the method recently received judicial notice in a decision of the U.S. 2nd Circuit Court of Appeals in the matter of a U.S. Tax Court decision relating to Nestle Holdings, Inc. Experts for both the taxpayer and the IRS utilized the relief-from-royalty method in the valuation of trademarks. The 2nd Circuit, however, was not persuaded that the resulting values were appropriate, commenting:

> In our view, the relief-from-royalty method necessarily undervalues trademarks. . . . Royalty models are generally employed to estimate an infringer's profit from its misuse of a patent or trademark. . . . However, use of a royalty model in the case of a sale is not appropriate because it is the fair market value of a trademark, not the cost of its use, that is at issue. A relief-from-royalty model fails to capture the value of all of the rights of ownership, such as the power to determine when and where a mark may be used, or moving a mark into or out of product lines. It does not even capture the economic benefit in excess of royalty payments that a licensee generally derives from using a mark. Ownership of a mark is more valuable than a license because ownership carries with it the power and incentive both to put the mark to its most valued use and to increase its value. A licensee cannot put the mark to uses beyond the temporal or other limitations of a license and has no reason to take steps to increase the value of a mark where the increased value will be realized by the owner. The Commissioner's view, therefore, fundamentally misunderstands the nature of trademarks and the reasons why the law provides for exclusive rights of ownership in a mark. Given the shortcomings of the relief-from-royalty methodology, the Tax Court erred when it adopted the Commissioner's trademark valuations. The Tax Court is instructed to examine alternate methods of determining the fair market value of the trademarks in question.[1]

1. U.S. 2nd Circuit Court of Appeals, *Nestle Holdings, Inc. v. Commissioner of Internal Revenue*, Docket Nos. 96-4158, 96-4192, decided July 31, 1998.

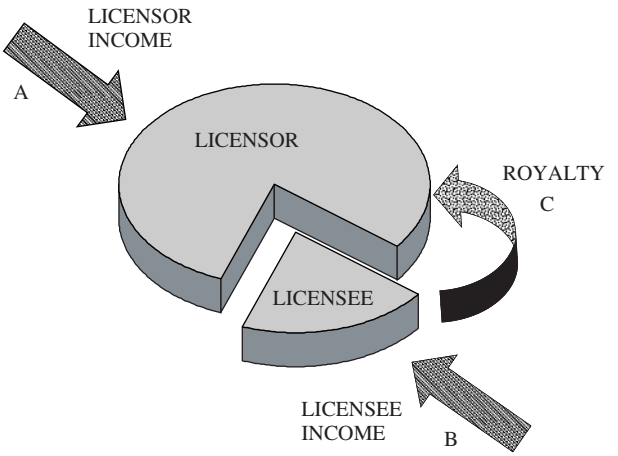


EXHIBIT 10.6 LICENSING INCOME STREAMS

It is helpful, in the understanding of property rights and the role of the royalty, to examine the basic aspects of the licensing process. In a license, the owner of intellectual property rents some of the total bundle of rights to another (the licensee). The licensee pays for those rights by means of a royalty. If we add the *value* of the licensor's rights to those of the licensee, we would capture all of the intellectual property value.

If we use an income approach to value intellectual property and wish to use a market royalty rate as a surrogate for the income attributable to the asset, we must capitalize both the income realized from the licensor's (owner's) exploitation of the mark and the income attributable to the property from the licensee's exploitation. This latter is not necessarily the amount of royalty being paid by the licensee. The essential point is that we need to consider all of the potential income streams that may be associated with licensed intellectual property and understand which streams belong to whom (see Exhibit 10.6).

The value of *all of the rights* in the intellectual property would be obtained by capitalizing the income streams *A* and *B*. What is the income *C* that is the royalty payment? It is a portion of income *B*, and a capitalization of it would be representative of the value of the *license contract* to the licensor. If our task were to value the *licensor's rights* in the intellectual property, we would capitalize income streams *A* and *C*. If we were to value the *licensee's rights* in the intellectual property, we would capitalize income stream *B* less the royalty expense *C*. It is apparent that there is some overlap here, and one must carefully define the asset to be valued and also carefully define the income associated with that asset before proceeding.

For those mathematically inclined, the relationships can be expressed as follows:

$$V_t = Vo + Vl$$

Where: V_t equals the total value of all trademark rights

V_o equals the value of the owner's trademark rights

V_l equals the value of the licensee's trademark rights

$$V_o = \frac{I_o + Ir}{C} \qquad Vl = \frac{Il - Er}{C} \qquad Ir = Er$$

Where: I_o equals owner's income attributable to the trademark

I_r equals owner's royalty income
I_l equals licensee's income attributable to the trademark
E_r equals the licensee's royalty expense
C equals a capitalization rate

If the expressions for V_o and V_l are substituted in the first equation and the result is reduced:

$$V_t = \frac{I_o + I1}{C}$$

From this we can observe the relationship of the owner's and licensee's income streams that we noted above.

The situation could be even more complicated if the trademark owner did not directly exploit it, but instead licensed it to others, with perhaps even master licensees and sublicensees, as in the case of a franchise. There would be many income streams to consider, depending on the specific rights being valued.

Royalty rate information can be very useful to the financial analyst and the appraiser. As with any data from "the marketplace" or about "comparable transactions," one must be sensitive to the terms of the transaction and to the nature of the property rights involved. With this, one is prepared to judge whether such information is an appropriate benchmark.

(ii) Analytical Method. The incremental increase in profits delivered by intellectual property can indicate the earnings contribution associated with intellectual property that is available to capitalize in an income approach. Unfortunately, an analysis that ends after studying only the profit margins can be incorrect. A more proper method must study the total earnings of a business enterprise relative to the investment in monetary, fixed, and other complementary assets. Only then will it be possible to identify the contribution that was delivered by the intellectual property.

Intellectual property assets rarely generate economic benefits alone. Rather, complementary assets, in the form of working capital and tangible assets, typically are combined into a business enterprise along with intangible assets, all of which support intellectual property commercialization. This portfolio of business assets generates an overall economic return. Allocation of the total company returns among the asset categories that compose the portfolio can isolate the amount of return that is attributable to the intellectual property.

Throughout this analysis a broad definition of earnings is used. Debt-free operating net income is used to eliminate the effect of a particular capital structure that may have been chosen by a particular management or by business circumstances. Underlying asset values should not be influenced by the proportions of debt and equity employed to finance a business, any more than the value of your home is dependent on the size of your mortgage. Debt-free net income represents the income from operations of the company. Earnings, as used here, is not used strictly to describe the accounting concept of net income. The use of the term "earnings" throughout this analysis is meant to describe, in broad terms, economic benefits that a company derives from its commercial activities. Earnings contributions from intellectual property should be studied independently of all interest payments that are associated with a company. Debt ratios are a fundamental and important factor to analyze when studying investments, but they should be considered separately from the analysis of intellectual property contributions.

Intellectual property contributions are independent of financial structures and should be studied in that manner.

Debt-free operating net income can be looked on as the total economic benefit that the business enterprise generates from continuing operations, utilizing the assets of which it is composed. Absent from this measure of economic benefits are extraordinary items that are not expected to recur in the future. Unusual bad debt write-offs are an example, as are windfalls from large, one-time-only contracts.

Use of debt-free operating net income as the measure of economic benefits still, however, accounts for all of the variable, fixed, selling, administrative, and overhead expenses that are required to exploit intellectual property. Omission of any of these expenses overstates the level of economic benefit that ultimately may be allocated to the intellectual property.

In a comparison between two items of intellectual property, the property that generates sales, captures market share, and fosters company growth while using less selling and/or support efforts is more valuable than the one that requires extensive advertising, sales personnel, and administrative support. The economic benefits generated by the property are measured most accurately after considering all production, selling, and support efforts associated with the business. Also, the property that generates sales, captures market share, and fosters company growth while using less monetary and tangible assets is also more valuable than the one that requires higher fixed asset investment.

(iii) Analyzing Earnings in the Context of the Enterprise. The overriding analysis method is based on a subtraction concept. This is easy to understand but difficult to execute. In essence we are asking the "but for . . ." question. This subtraction model can be applied internally or externally. When it is applied internally, we are asking, "If the company did not have this trademark, this technology, this patent, how would the value (profitability) of the enterprise change?" When it is used externally, we compare the financial performance of our subject enterprise (possessing the asset in question) with that of another company that does not possess the asset. We have found this to be a productive model to keep in mind as we make our investigation to discover the economic benefit attributable to some particular intellectual property or intangible asset.

As stated earlier, delivering a product or service to customers involves investment and costs. Rent, maintenance, utilities, salaries, raw materials, sales commissions, fees, and advertising are just some of the costs associated with delivering a product. When these costs are kept below the amount that customers pay for the product or service, a profit is earned. The mere existence of profit, however, is not enough to justify and support assignment of value to intangible assets or intellectual property. Earnings derived from operations must be of an amount, on a consistent basis, to yield a fair rate of return over the term of the investment in the intellectual property as well as the complementary assets.

In allocating earnings to intellectual property, a fair return must first be allocated to nonintellectual property assets. The allocation must address two important factors:

1. The relative amount of each asset category involved in the business
2. The appropriate rate of return to associate with each asset category

Business enterprises consist of monetary assets, tangible assets, intangible assets, and intellectual property. Economic benefits are generated from the integrated employment of these complementary assets. Each asset contributes. Based on the relative importance of each asset category and the associated risk, the aggregate net income of the enterprise can be allocated to its components. Exhibit 10.7 reminds the reader of the composition of a typical business enterprise, as it was described in Chapter 4.

Composition of a business enterprise is basically:

- Monetary assets, in the form of net working capital (current assets less current liabilities)
- Tangible assets, as represented by buildings and machinery
- Intangible assets, such as trained workforce, distribution networks, customer bases, favorable contracts
- Intellectual property, such as patents, copyrights, and trademarks

Each of these asset categories contributes to the overall achievement of earnings. Before it is possible to allocate the enterprise earnings, we must first determine an appropriate rate of return to associate with each of the component parts. Starting with the rate of return requirement for the overall enterprise, an assignment of rates of return for each asset category can be estimated.

(iv) Overall Rate of Return Requirements. Corporate investments typically must pass "hurdle" rates in order to be considered as viable opportunities. Since debt and equity funds are used to finance these investments, the return that is provided must be sufficient to satisfy the interest due on the debt and also provide a fair rate of return on the equity funds. The hurdle rate must be the weighted average cost of capital (WACOC) in order to earn a fair rate of return on invested capital.[2] The cost to the company of the invested capital equals the rate of return that the investors expect to receive, less any tax benefits that the company enjoys, such as the deductibility of interest expenses on debt.

Invested capital is defined as the *summation of the market value of equity funds and debt obligations*. The capital structure of the company might be a complex collection of bonds, notes, subordinated debentures, common stock, warrants, and preferred stock. Nonetheless, the total fair market value of the debt obligations and the various equity capital components represents the total invested capital of the business enterprise, or

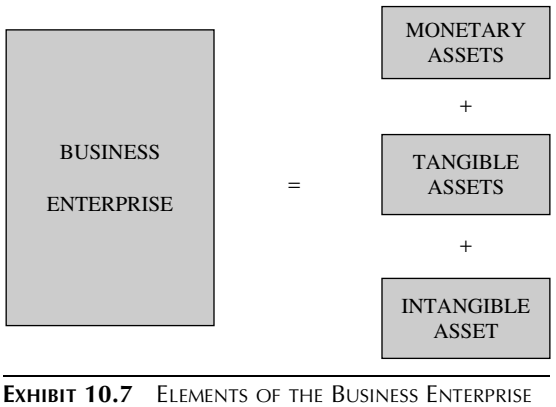


EXHIBIT 10.7 ELEMENTS OF THE BUSINESS ENTERPRISE

2. The weighted average cost of capital is a weighing of the investment rates of return required by equity investors and debtors of the corporation based on the percentage of each in the capital structure of the company. It represents the minimum amount of return that should be generated by a corporate investment. It is often referred to as the hurdle rate. A thorough discussion is provided in the book *Financial Theory and Corporate Policy* by Thomas E. Copeland and J. Fred Weston (Reading, MA: Addison-Wesley Publishing Company, 1997). A specific discussion about the topic as it applies to intellectual property is contained in Appendix A herein.

the funds that were used to obtain the complementary assets of the business including land, buildings, machinery, truck fleets, office equipment, patented technology, and net working capital.

(v) Analytical Method—An Example. The following paragraphs describe a company that manufactures and sells a wide range of healthcare products, including pharmaceuticals, diagnostic test kits, intravenous solutions, hospital instruments, infant formulas, nutritional products, and chemicals. Many products are sold internationally under well-known brand names.

The company in our example has a total value of invested capital of $75,703 million consisting of $74,403 million of equity and $1,300 million of long-term debt (both equity and debt are valued at market prices). The company consists of various asset categories whose market value is equal to the value of the invested capital. Exhibit 10.8 allocates the total invested capital among all of the assets employed by this company. The market value of monetary assets has been estimated by subtracting the balance sheet amount of current liabilities from the amount of current assets. We satisfied ourselves that reasonable reserves were being carried for possible dormant inventory or receivables unlikely to be collected. The market value of tangible assets was estimated as the average of gross and net book value from the balance sheet. This is a broad rule of thumb that usually provides a reasonable result when plant property and equipment is composed of a fairly typical mix of tangible assets. The market value of intangible assets, such as the assembled workforce, computer software, customer and distributor relationships, and other elements of a going concern, was estimated, for the purpose of this example, at 10% of the total enterprise value. Intellectual property market value is the residual.

The economic contribution from the company's intellectual property can be estimated by continuing a subtraction procedure. Based on the value of the different assets used in the business, and the relative investment risk associated with each, the intellectual property contributions can be isolated. First, the weighted average cost of capital (WACOC) for the company needs to be calculated as shown in Exhibit 10.9 as 11.9%.[3] From these known elements, we can begin the rate of return allocation process.

(vi) Appropriate Return on Monetary Assets. The monetary assets of the business are its net working capital. This is the total of current assets minus current liabilities. Current assets are composed of accounts receivable, inventories, cash, and short-term security investments. Offsetting this total are the current liabilities of the business, such as accounts payable, accrued salaries, and accrued expenses.

Asset Category	Market Value ($ million)	Percent of Total
Monetary assets	$ 591.0	0.8%
Tangible assets	7,068.0	9.3%
Intangible assets	7,570.0	10.0%
Intellectual property	60,474.0	79.9%
Total	$ 75,703.0	100.0%

EXHIBIT 10.8 ALLOCATION OF ASSET MARKET VALUE

3. This calculation is explained more fully in Appendix A.

Capital Component	Market Value ($ million)	Percent of Total	Pretax Cost of Capital	Posttax Cost of Capital	WACOC
Equity	$ 74,403.0	98.3%	12.0%	12.0%	11.8%
Debt	1,300.0	1.7%	6.5%	3.9%	0.1%
	$ 75,703.0	100.0%			11.9%

EXHIBIT 10.9 WEIGHTED AVERAGE COST OF CAPITAL

Working capital is considered to be the most liquid asset of a business. Receivables usually are collected within 60 days, and inventories sometimes are turned over in 90 days. The cash component is immediately available, and security holdings can be converted to cash with a telephone call to the firm's broker. Further evidence of liquidity is the use of accounts receivable and/or inventories as loan collateral. In addition, accounts receivable can be sold for immediate cash to factoring companies at a discount of the book value.

Given the relative liquidity of working capital, the amount of investment risk is inherently low in comparison to that of the other asset categories. An appropriate rate of return to associate with the working capital component of the business enterprise is typically lower than the overall WACOC. A surrogate rate of return can be used to estimate a proper amount to associate with the working capital: that which is available from investment in short-term securities of low risk levels. The rate available on 90-day certificates of deposit or money market funds can serve as a benchmark. While net working capital may be more at risk than bank deposits, it is still a lower risk than the other assets categories. As an alternative, a corporation could earn a low-risk, short-term rate of return on working capital if it were not invested in the operating business. Consequently, the operations of the business must earn at least that amount on working capital.

(vii) Appropriate Return on Tangible Assets. Tangible or fixed assets of the business include production machinery, warehouse equipment, transportation fleet, office buildings, office equipment, leasehold improvements, and manufacturing plants. While these assets are not as liquid as working capital, they still possess some elements of marketability. Often they can be sold to other companies or used for alternate commercial purposes. This marketability allows a partial return of the investment in fixed assets of the business should the business fail.

Another aspect of relative risk reduction relates to the strategic redeployment of fixed assets. Assets that can be redirected for use elsewhere in a corporation have a degree of versatility that still can allow an economic contribution to be derived from their employment, even if it is not from the originally intended purpose.

While these assets are a higher-risk asset than working capital investments, they possess favorable characteristics that must be considered in the weighted average cost of capital allocation. An indication of the rate of return that is contributed by these assets can be pegged at about the interest rate at which commercial banks make loans, using the fixed assets as collateral. Use of these rates must be adjusted, however, to reflect the equity risk position of the owners, which is slightly riskier than that of lenders.

Some fixed assets that are very specialized in nature must reflect higher levels of risk, which, of course, demands a higher rate of return. Specialized assets are those that are not easily redeployed for other commercial exploitation or liquidated to other businesses for other uses. They may be closely tied to the intellectual property and possess little

chance for redeployment. In this case, a rate of return similar to that required on intellectual property may be more appropriate, but, in general, the tangible assets of a business are less risky than the intellectual property.

An alternative fixed asset investment for a company could be capital leasing of fixed assets to other manufacturers, which would earn a return commensurate with the risk of collateralized lending. When an operating business is chosen as the investment vehicle, then, as a minimum, the collateralized lending rate of return must be earned on the fixed assets that are used.

(viii) Appropriate Return on Intangible Assets and Intellectual Property. Intangible assets and intellectual property often are considered the highest-risk asset components of the overall business enterprise. Trademarks can become unpopular with the prevailing attitude of society, and patents can be made obsolete by the advancing technology of competitors. These assets may have little liquidity and poor versatility for redeployment elsewhere in the business, thus increasing their risk. Customized computer software that is installed and running on a company's computer may have very little liquidation value if the company fails. The investment in a trained workforce may be altogether lost.

Therefore, a higher rate of return on these assets is required. Since the overall return on the business is established as the weighted average cost of capital, and since reasonable returns for the monetary and tangible assets can be estimated, an appropriate rate of return to be earned by the specific intangible assets or intellectual property can be derived.

(ix) Allocating Return among Assets. For the company in our example, the overall required return (WACOC) was 11.9%. Based on the relative risk discussion presented earlier, Exhibit 10.10 assigns different levels of required return to the different asset categories.

The WACOC requirement can be allocated among the assets that are employed within the business enterprise. The allocation is conducted with respect to the amount of investment risk that each component represents to the business enterprise. Just as the WACOC is allocated among the debt and equity components of the invested capital, it is also possible to allocate a portion of the WACOC to the asset components with consideration given to the relative risk associated with each category of assets.

As a result of these investment rate of return requirements, the intellectual property of the company in our example accounts for 85.8% of the company's total debt-free operating net income, or over $2.7 billion of the total $3.2 billion. Without its intellectual property, the company could be expected to have earned only about $450 million. Excess returns were earned from the employment of intellectual property. As a percent of sales, the excess return of $2.7 billion represents 18.3% of current sales of $15 billion.

By establishing the total market value of the enterprise and the WACOC as benchmarks, we have derived both the market value and income attributable to the company's intellectual property. This technique could be carried farther to allocate the derived intellectual property income and value among several assets that compose it. It is true that this is somewhat of a trial-and-error process, and that more than one answer can result. We have found, however, that having the enterprise value and WACOC benchmarks and testing for reasonableness as to the other asset rates of return keep these conclusions within a fairly tight boundary. The theoretical support for this methodology is discussed in Appendix B.

(x) Alternative Analytical Approach. The analytical approach is another method for deriving a reasonable royalty; it originated in the field of infringement litigation. It can lead to an appropriate conclusion about the economic contributions of intellectual property, but it also has deficiencies.

Asset Category	Market Value ($ million)	Percent of Total	Required Rate of Return	Weighted Rate of Return	Weighted Rate as %	Allocation of Pretax Profits	Percent of Sales
Monetary assets	$ 591.0	0.8%	4.0%	0.0%	0.3%	$ 8.4	0.1%
Tangible assets	7,068.0	9.3%	6.5%	0.6%	5.1%	163.0	1.1%
Intangible assets	7,570.0	10.0%	10.5%	1.0%	8.8%	282.0	1.9%
Intellectual property	60,474.0	79.9%	12.8%	10.2%	85.8%	2,746.6	18.3%
Total	$ 75,703.0	100.0%		11.9%	100.0%	$ 3,200.0	21.3%

EXHIBIT 10.10 ALLOCATION OF REQUIRED RATE OF RETURN AMONG ASSET CATEGORIES

The analytical approach identifies the economic contribution of intellectual property as the difference between profits expected from infringing sales and a normal industry profit level. The analytical approach has been used to define royalty rates for infringement damages and can be used to identify the economic contribution of intellectual property for other purposes as well. The analytical approach can be summarized by the following equation:

Expected Profit Margin – Normal Profit Margin = Royalty Rate

In *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895, 899 (Fed. Cir. 1986), a royalty for damages was calculated based on an analysis of the business plan of the infringer, prepared just prior to the onset of the infringing activity. The court discovered the profit expectations of the infringer from internal memorandums written by top executives of the company. Internal memorandums showed that company management expected to earn gross profit margins of almost 53% from the proposed infringing sales. Operating profit margins were then calculated by subtracting overhead costs to yield an expected profit margin of between 37% and 42%. To find the portion of this profit level that should be provided as a royalty to the plaintiff, the court considered the standard, "normal" profits earned in the industry at the time of infringement. These profit levels were determined to be between 6.6% and 12.5%. These normal industry profits were considered to represent profit margins that would be acceptable to firms operating in the industry. The remaining 30% of profits were found to provide a reasonable indication of the economic contribution of the intellectual property from which to calculate infringement damages. On appeal, the Federal Circuit affirmed.

A positive characteristic of the analytical approach is the search for a benchmark level of earnings that infringers should be allowed to keep before any excess profits are allocated to the intellectual property owner. This indirectly represents earning a return on the complementary assets of a business enterprise.

Normal Industry Profits

The problem with the analytical approach centers on answering the question: What's normal? Even if this question can be answered satisfactorily, the next question becomes: Is application of the normal industry profit appropriate for application to the specific case?

Normal is hard to quantify. Many companies in the same industry, offering the same types of products to the same types of customers, show wide swings in profit margins. Such wide variances make defining a normalized industry profit margin difficult.

Agreement on what constitutes normal profit margins for an individual company can also be difficult. Different subsidiaries, divisions, and even different product lines within the same company can display wide swings in profitability. Many large companies have a portfolio of businesses. Some of the product offerings are mature products with large market shares that contribute only moderate profit margins because of selling price competition. Other product offerings are emerging products that have great potential for profits and market share but won't deliver earnings contributions until a later date. Still other products of the same diversified company might contribute huge profits because of a technological advantage, but only from exploitation of a small market niche.

Clearly, the overall profitability of the company is not appropriate for use as a normal industry profit margin for any one of the individual product lines. Each product line shows profit margins that are very different from the profitability of the overall company. Even use of the individual profit margins can be inappropriate. In the case of the

emerging product, the low profit margin may be the result of continued research and aggressive marketing. These early-stage expenses drain current profitability but will be recouped from higher profits in the future, it is hoped. Consequently, the normal industry profits for the emerging product will not be defined until much later.

It has been argued that the overall profitability of the company represents the normal amount that should be used in the analytical approach. Such a practice would unfairly penalize a company that practices diversification. Careful analysis is required to use the analytical approach properly.

The analytical approach can be very useful. It attempts to allocate the profits earned from intellectual property exploitation between a normal industry profit margin and an enhanced product margin attributed to intellectual property. It indirectly tries to allow for earnings contribution from complementary assets. The analytical approach is especially useful if a normalized standard industry profit can be derived properly; it is difficult but not impossible. The analytical approach can provide an order-of-magnitude indication of a reasonable attribution of intellectual property economic contribution. The analytical approach, however, can be improved.

Comprehensive Analytical Approach

Missing from the analytical approach is consideration of the specific amount of complementary assets required for exploitation of the subject intellectual property. A unique intellectual property might require significantly more investment in manufacturing assets than is typical for an industry. Thus, the industry standard profit margin might be inappropriate. From another viewpoint, the industry profit requirement for commercializing specific intellectual property requiring massive fixed asset investment might be higher than the profits typically required in a specific industry. This could occur easily if new intellectual property is introduced into an industry not accustomed to capital-intensive activities. This section shows how to use the analytical approach to better advantage.

The main problem with the analytical approach is that, in using it, one loses sight of the balance sheet. Profits are important but they are not independent of investment in complementary business assets. Otherwise everyone with an idea would be in business. The profit and loss statement is derived from the management of the investment in the assets reported on the balance sheet. Exploitation of intellectual property requires the integration of different types of resources and assets. Intellectual property alone rarely provides significant earnings. The equation of commercialization requires monetary, tangible, and intangible assets, as previously discussed. A more comprehensive version of the analytical approach should be utilized, enhanced to the extent that the profits to be allocated between the intellectual property and the normalized industry profit reflect the dynamic relationship between profits and the amounts invested in the complementary assets.

We can illustrate this by contrasting two companies, one manufacturing and selling a commodity product and another doing business with an enhanced product. The company that produces the commodity product is, by definition, in a competitive environment. The product price is impacted by heavy competition, and profit margins are thin. In such an environment, an efficient market eventually will stabilize the pricing of the commodity product to a level that allows participants in the market to earn a fair rate of return on the assets invested in the business, but no more. A fair return would be earned on the monetary, tangible, and intangible assets, but we would not expect profits in excess of that.

The enhanced product company, however, possesses elements of product differentiation that allow it to charge a premium price or perhaps enjoy lower costs due to the employment of innovative technology. The premium price might be due to a trademark

that consumers associate with quality. Alternatively, the premium might be derived from special utility offered by a product that is covered by patented technology. The price premium might even be derived from a combination of trademark and technological advantages. The producer of the enhanced product would earn a profit that represents a fair return on its monetary, tangible, and intangible assets, and a return in excess of that from its intellectual property.

The investment returns earned by a commodity product manufacturer on all the complementary assets used to manufacture and sell the commodity product can be equated to the normal or standard industry profits. When this amount is subtracted from the total returns earned from commercializing the enhanced product, the difference represents the amount contributed by the intellectual property.

The analytical approach can work well when the normal industry profit is derived from analysis of commodity products. The analysis requires that the benchmark commodity profit margin be derived from products competing in the same industry as the infringing product for which a reasonable royalty is being sought, or in a similar industry. The benchmark profits also should reflect investment requirements in complementary assets similar to those required to exploit the enhanced product that is based on the intellectual property. The following equation can provide a reasonable indication of intellectual property economic contribution if the above conditions are met:

Enhanced Product Profit Margin – Commodity Product Profit Margin = Royalty Rate

It is important to reiterate that the commodity product benchmark profit margin must be derived from an analysis of a product that:

- Lacks intellectual property and can therefore be described as a commodity product
- Participates in the same, or similar, industry in which the intellectual property product competes, or in a similar industry
- Requires a similar relative amount of investment in complementary assets

(xi) Failure of the Analytical Approach. The analytical approach can fail in instances where the benchmark profit margin contains elements of profitability attributed to forms of intellectual property other than that which the analysis is intended to isolate. To the extent, as an example, that the commodity company in the former example owns and employs intellectual property or other unique and effective other intangibles, the difference in earnings that we depend on to measure the specific asset we seek represents something else.

The analytical approach can fail to consider the relationship between relative profit margins and the required investment in complementary assets. Great care also is required when defining a benchmark normalized industry profit margin. An enhanced version of the analytical approach as described in the previous section provides a useful indication of the economic contributions of intellectual property.

(d) DISAGGREGATION. All of the preceding methods must focus on specific economic contributions of intellectual property that might be buried in consolidated financial statements. One of the basic techniques that can be utilized to identify and quantify a specific income stream attributable to intellectual property is the process of disaggregation. At the very least, it can serve as a tool to quantify a range within which one can further analyze. In other words, the total business enterprise must be dissected in order to analyze the relevant assets.

(i) Brand Example. Very few businesses of any size are truly one-product enterprises with a single brand. It is therefore necessary to segregate business segments and product lines in order to identify the subject brand. This is the process of disaggregation, and it is illustrated in Exhibit 10.11. The exhibit uses a brand valuation as an example, but the principles are equally applicable to any intangible asset. Exhibit 10.11 illustrates the process of determining the business enterprise values of the five lines of business within the subject corporation.

The exhibit also illustrates the process of identifying the assets of the home products business segment and then segregating it by product line (i.e., furniture). In this analysis, one continues until one has isolated a business with a single brand, or perhaps a family of brands that are closely related.

Within the product line, asset types are then identified, as shown in Exhibit 10.11. Since the example deals with a business entity within a larger business, we would expect to find the essential asset elements: monetary, tangible, and intangible. The task is to identify and value those intangibles, excluding those associated with the brand. Whenever possible, disaggregation should be attempted so that economic contributions can be associated with specific intangible assets.

(e) SEARCHING FOR THE INCOME CONTRIBUTION. This section discusses the qualitative investigation that can lead to identifying earnings for attribution to intellectual property.

The search begins with a review of financial statements. The more detailed the statements, the better, although a "top-line" review can be made with typically available balance sheets and income statements. This overall review must be made to satisfy oneself that at least some intangible assets and intellectual property exist within the enterprise viewed as a whole. A rough calculation should be made first to ascertain whether "excess" earnings are present. For this purpose, "excess" earnings are defined as a residual of free cash flow after providing for appropriate returns on monetary and tangible

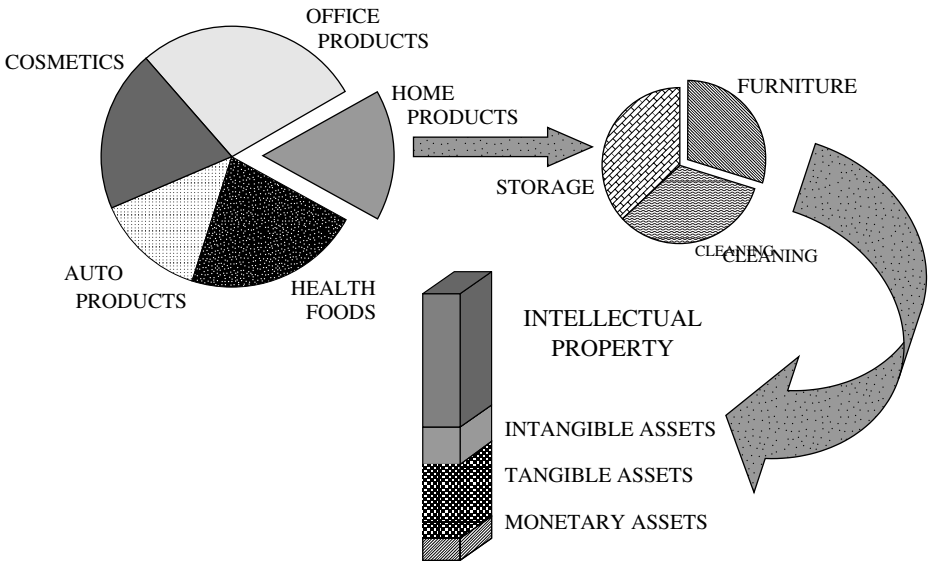


EXHIBIT 10.11 DISAGGREGATING THE BUSINESS ENTERPRISE

assets of the business. The book value of monetary and tangible assets can be used for this purpose, although ultimately one should estimate their fair market value for the purposes of this calculation, if that is practical. If this initial analysis discloses that there are excess earnings, then the search for intangibles can begin in earnest. Even if there do not appear to be excess earnings on a total enterprise basis, one cannot automatically assume the nonexistence of intangible assets and intellectual property. The lack of excess earnings may be due to a temporary or extraordinary situation or to poor performance of one segment or product of the business. This would be revealed by an analysis of business segment or product line income statements, if they are available, or some detective work with management if they are not.

Once one is satisfied as to the existence of intangible assets or intellectual property somewhere within the enterprise, the next step is to identify their location and character. Again, we note the "follow the dollars" concept, a focus that can help us identify the *sources* of the enterprise sales revenue and the *destination* of its expenses. The process usually begins with an analysis of sales revenue, which is one line item on the income statement that most managers know a good deal about. It is relatively easy to obtain detailed information about sales revenue by business segments, product lines, individual products, and even individual items. Cost of sales (the cost of materials and labor expended to produce the product) also is often segregated in the same way as sales revenue. Therefore, it is not uncommon to be able to see gross profit by segment or product line. Other expenses, such as selling, general, and administrative (SG&A) expenses, are rarely segregated in this way. This is also true of financial expenses such as interest, although we can get along without this segregation if we make the analysis on a debt-free basis. Below the level of gross profit, it is necessary to allocate expenses to segments or products on some reasonable basis. Allocations based on sales revenue are common, although one must be attentive to differences among products caused by their state of development.

A "new" product line may account for more than its share (based on sales) of SG&A expense. A mature or declining product may account for less. With respect to balance sheet items, more allocations are usually necessary. Sometimes plant locations are devoted to the manufacture of a single product or group of products, and so tangible assets (with perhaps some allocation of headquarters or R&D assets) can be identified with segments or products. Net working capital nearly always must be allocated. The most reasonable method usually is based on a turnover ratio (of sales) from an analysis of other companies producing similar products. The ultimate objective is to develop, as nearly as possible, a balance sheet and income statement for each relevant product or product line, as we discussed in the previous section. This objective rarely is attained completely, but it is the objective nevertheless. To the extent of that success, one can make the excess earnings calculation on a product-by-product basis, which greatly facilitates the search for and quantification of intangible assets and intellectual property. One must be prepared for some frustration, however, and utilize what is available within the bounds of practicality.

(i) Searching Upstream. Thus far we have identified the business segments and products that are likely to be associated with intangible assets and intellectual property of significant value. The next task is to identify the intangible assets and intellectual properties and value them. Having done the best we can with the accounting information available, we can move on to an "upstream" search. This is characterized as "upstream" because (to use a manufacturing example) it goes against the typical product flow (from raw material to consumer).

The search typically begins with the sales and marketing function, interviewing responsible management or perhaps even distributors or retailers; examining sales materials, advertising programs, and market research studies; identifying the competition; estimating market size and share; and obtaining or preparing sales projections. The objective is to determine what is driving sales. Is it a trademark, the features of the product, an excellent service program, the distribution network? This leads to further analysis. If, for example, some desirable feature of the product sells it, is that feature protected by patent or proprietary technology such as a formula?

We then look to the expenses that make up cost of sales, keeping in mind that we already have identified the product as one that is producing superior profits. Are these expenses less than the competition's because of a special manufacturing process that reduces labor costs, uses less costly raw material, or requires reduced power? Again, the follow-up question is whether these reductions are protected by patents, proprietary technology, and so on. In this way, we attempt to examine, in some orderly way, the entire productive functions of the enterprise in our search. Our objective is to identify the assets that are driving profitability and quantify the economic benefit each is providing. Exhibit 10.12 illustrates this search and indicates those functions in which the primary intangible assets and intellectual property are expected to be found. Each nexus is identified, and in the paragraphs that follow, we provide a more complete discussion of the assets that might be identified and the elements of their value.

Trademarks

It is within the sales and marketing organization that one is most likely to become aware of a valuable trademark. The most straightforward evidence of this is at the retail sales level when a product commands a price higher than those of other similar, less-well-known

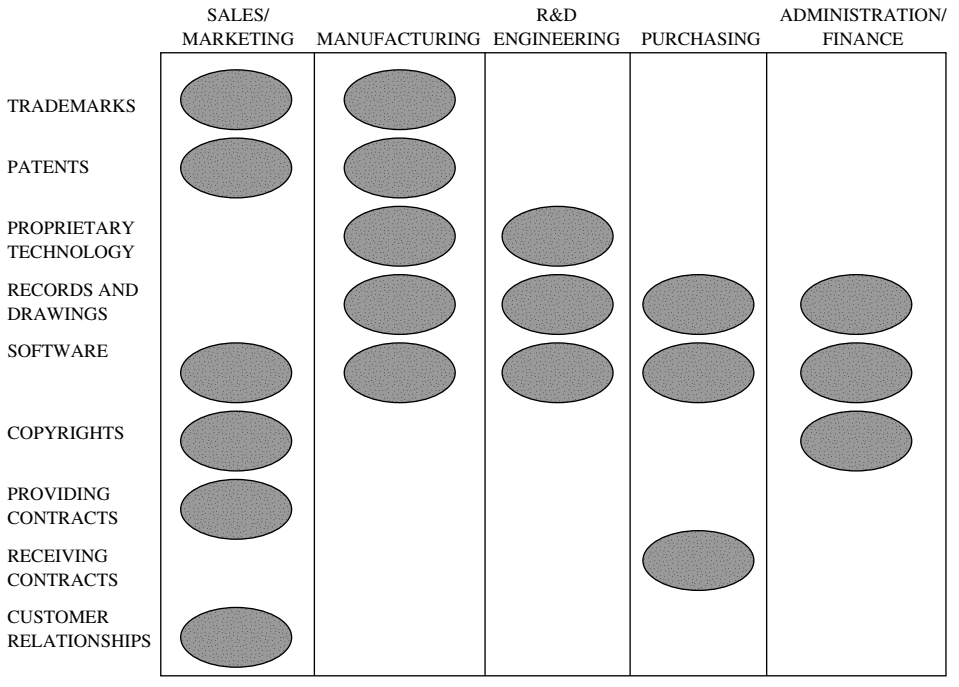


Exhibit 10.12 Sources of Information on Types of Intellectual Property

products, and there is consistent evidence that consumers are willing to pay the higher price. This price premium represents an income stream attributable to the trademark. Premium pricing also can appear at the wholesale level, offering evidence that the product manufacturer is able to extract a higher than otherwise price from retailers due to increased sales as a result of the value of the trademark in the marketplace. The retailer, because of market constraints, might be unable to pass this increased price along to consumers. Sales expense also may be lower for the owner of a strong trademark. Because of the trademark, a retailer must give shelf space to the product—consumers demand it. Therefore, the trademark owner is not required to be as aggressive with selling efforts, price concessions, promotions, and so on.

In this analysis, the valuer should think in broader terms than just the trademark per se. Trade dress and packaging also can be very important.

It is also possible that the benefits of a strong and valuable trademark can be felt further upstream in the processing and manufacturing functions. The trademark owner may enjoy reduced processing and/or manufacturing expenses due to the economies of scale resulting from large operations that are, in turn, made possible by the large market share of a prominent brand. This comparison usually must be made vis-à-vis the operations of other competitive companies that do not enjoy the dominant market position.

Patents

The effect of a patent obviously can be felt in the marketplace, and that may be the arena in which to quantify that effect. The purest example is a drug patent that can capture, for a time, a monopolistic market position. All of the associated "excess" profits are attributable to such a patent. These benefits sometimes can be transferred to a trademark and continue after patent expiration (discussed later in this chapter). A patented product feature that finds favor in the marketplace also can be the source of economic benefit. Again, premium pricing or incremental sales could be attributed to the quantification of the benefit.

Very often patents contribute to enterprise income by reducing processing or manufacturing costs, and the manufacturing function is where to seek this out. These cost reductions can take several forms:

- Reduction in raw materials required
- Use of lower-cost raw materials
- Improvements in quality
- Reduction of waste
- Reduction of labor costs
- Reduction of energy costs
- Increased manufacturing speeds
- Increase in output without capital costs

Proprietary Technology

Patents and proprietary technology often exist together, and it is a practical impossibility to segregate the economic benefits flowing from each individually. Patents rarely exist without some accompanying proprietary technology, although proprietary technology often exists without associated patents. Most often, proprietary technology brings its economic benefit to the enterprise as a result of reduced costs in the manufacture or design of a product. Something that is common knowledge to everyone on the shop floor

is very unlikely to be proprietary technology of material value. Again, the questions that must be asked include:

- What does this proprietary technology do for the business?
- What would be the economic effect on the business if this proprietary technology did not exist, or were in the hands of a competitor?

The answers to these questions will guide the valuer to the economic benefit.

Records, Drawings

The existence of well-maintained, cataloged drawings and specifications for a product or product line can be an asset of significant value to a business, and some of these assets may be found with the manufacturing function. As an example, we recently consulted with a company that produces large and expensive semi–custom-made manufacturing machinery. The company carefully maintains the drawings and specifications of each machine and each part that it has ever sold. This body of information can provide several economic benefits to this company. First, it provides a body of knowledge that can be referred to in order to streamline the manufacturing process for a new machine that might be ordered. Second, it enables the company to respond rapidly with replacement parts and service information for any of its customers. Third, it enhances the company's competitive position in future modifications or retrofitting of the machines that are in its installed base. The economic benefit to the company is a cost savings or enhanced profitability that will be realized on future sales.

In the engineering and design function, records also can provide an economic benefit, usually in the form of reduced costs. A company may maintain extensive records relating to previous tests of various raw materials used in the manufacturing process, tests of pilot plants or manufacturing processes, wear and fatigue, and the like. Having this body of knowledge often can shorten the time and effort necessary to evaluate a new material, process, or product by eliminating the need to start from scratch in the testing and design process.

Databases of information also can produce economic benefits in the office or administrative areas of a business. Databases of suppliers and subcontractors, customers, and potential customers can be of significant economic benefit to a business, so both purchasing and administration can be a source.

Computer Software

Computer software is now found in many areas of a business. In the manufacturing area, software drives numerically controlled machines or accomplishes product tests. In the engineering area, computer-aided design software is an asset. In research and development, software is specifically created to model products or processes. Of course, there may be extensive use of computer software in accounting and administrative areas as well. Any computer software that has been created by a business or extensively modified for it may have value. The value of off-the-shelf, purchased software usually is not significant, although it can be if extensive modifications or additions have been made. Computer software often is valued by a cost approach. Sometimes income, in the form of cost savings, can be attributable to software and used in an income approach.

Copyrights

Copyrighted material often surfaces in the form of sales and marketing materials such as brochures, specifications, films, videocassettes, and the like. Advertising campaigns and

programs also might be included. In the administration area, copyrighted material might relate to employee training programs, practices, and procedures. It is usually not possible to attribute cost savings to such material; instead, a replacement cost approach is commonly used, giving consideration to the functional obsolescence that may be present due to changing procedures.

Providing Contracts

In this area, one should be attentive to the existence of ongoing contracts for the provision of goods and services by the company. A backlog of work would be an example of this. The benefit of a backlog is that it represents, at a given moment in time, work that is presold and that should have enhanced profitability because the costs involved in selling, processing the order, and so on have already been borne. Contracts to provide service on existing products sold by the company represent an ongoing stream of income for the enterprise. While it may not be specified by contract, the profit flowing from the sale of spare parts to an installed base of machines is key to the valuation of a so-called parts annuity (a regular and sustained sales volume of spare parts).

Receiving Contracts

One must also look for advantageous contracts for the purchase of goods and services. These could be long-term contracts for the purchase of raw materials, manufactured parts, or services. If these contracts provide for obtaining these goods and services at less than market prices, then they represent an economic benefit to the enterprise, and their value is measured by the enhanced profitability flowing from the advantageous cost. This, in a sense, is the premium price concept in reverse. Contracts with distributors can be very important to a business, and it is often necessary to value these using a cost approach, estimating the time and cost necessary to find, evaluate, and contract with a new group of distributors.

Customer Relationships

In Chapter 2 we discussed the nature of customer relationships and some of the characteristics that separate valuable customer relationships from those of no material value. In general, if the business has extensive records containing hard-to-obtain information about their customers, then one would expect this to be an asset of significant value in the business. Simply having the names and addresses of a list of customers can be an asset of some value, depending on the difficulty of obtaining such information. That same list, with the addition of information about each customer's buying habits, discounts received in the past, credit and payment history, and the like, would be even more valuable to a business and would have a dramatic effect on the enterprise if it fell into the hands of a competitor. Customer relationships can be valued using a cost approach, considering the salary costs of locating and cold calling customers, making presentations, and closing the sale the first time, plus the associated expenses of these efforts. An income approach may be appropriate if a reasonably consistent income stream is attributable to a customer.

CHAPTER 11

INCOME APPROACH—TIMING AND PATTERN OF RECEIVING THE ECONOMIC BENEFIT

11.1 MARKET VALUE EQUALS THE PRESENT VALUE OF THE FUTURE ECONOMIC BENEFITS OF OWNERSHIP

We discussed in Chapter 7 a variety of techniques that can be used to estimate the "future economic benefits of ownership." We know, from the discussion of investment principles in Chapter 7, that "present value" is very sensitive to the timing and pattern by which those future economic benefits are to be received. Therefore we must address this element of the present value calculation, and we will do so by first discussing the critical beginning and end points of the future economic benefits (their economic life) and then the various patterns that the economic benefits may assume during that economic life.

11.2 ECONOMIC LIFE DEFINED

Economic life is the period during which the use of an asset is profitable. Economic life ends when (1) it is no longer profitable to use an asset (the future benefits are used up) or (2) when it is more profitable to use another asset. This is quite different from the service life of an asset, which is the period from its installation (i.e., the date it was placed in service) to the date of its retirement (i.e., the date it was removed from service), irrespective of its earning capability along the way. This chapter presents techniques for analyzing and quantifying economic life.

(a) MEASURING ECONOMIC LIFE. There are several means used to measure economic life. In the following paragraphs, we describe some of them.

(i) Legislated Lives. For years, schedules of suggested or required lives for depreciation have been a part of the federal income tax code. These were once realistic estimates of typical economic life and became part of tax legislation in order to reduce controversy between the government and taxpayers. Legislators soon realized, however, that changing these lives (and depreciation methods as well) was a relatively uncontroversial way to alter the effective tax rates of corporations and to attempt to manage the economy. As a result, life tables used for tax depreciation have been under constant change and now bear no relation to the actual economic life of property.

(ii) Legal/Contractual Life. The economic life of tangible assets is commonly not affected by legal or contract terms. These assets belong to the business and remain in place for as long as management decides. However, many intangible assets, as well as intellectual property, do have a recognized legal or contractual life. These include:

Patents
Copyrights
Trademarks (to the extent of renewal terms and acts necessary to retain their rights)
Leases
Supply or distribution contracts
Subscriptions
Mortgages, or other loan agreements
License agreements
Franchise agreements

(iii) Indefinite Economic Life. Most intangible assets and intellectual property have an economic life undefined by law or contractual terms. Therefore, these assets first must be analyzed in order to determine whether legal or contract terms will be controlling with respect to their remaining economic life. In many cases, economic life is shorter than legal life. The effectiveness of a patent may be ended before its 17- or 20-year legal life. An unexpired patent may be made obsolete by advancing technology or because the product in which it was used has lost its place in the market.

Alternatively, the economic life of a magazine subscription or consumer loan contract may be longer than its (legal) contract life if there is a history of renewals. In our experience, most often the legal or contractual life is not controlling with respect to the economic life of intangible assets and intellectual property. The economic life of these assets depends on their response to a host of outside forces that must be measured by their overall influence or by analyzing the individual forces. This is not an entirely subjective process, however, as the following discussion illustrates.

(b) ECONOMIC LIFE, CAPITAL RECOVERY, AND VALUE. Value and economic life have a very close relationship, especially in the context of the income approach we are describing. To fully appreciate this relationship, one must examine the various concepts of asset life.

(i) Capital Recovery. When a manager of a business or an accountant makes the decision that an expenditure is an asset, then a recovery of that expenditure (depreciation expense) must begin and continue as long as that expenditure is an asset (as long as there are future economic benefits).

When an asset is retired prematurely (vis-à-vis the recovery period), a loss occurs that is equal to the unrecovered (undepreciated or unamortized) cost. When the service life turns out to be longer than the capital recovery period, then the business enjoys earnings greater than it otherwise would during the extended period, because depreciation or amortization stops. In either case, there is a mismatch of the revenues generated by the asset and the cost of ownership. For a business with many assets, the impact usually is not significant when the pluses and minuses are offset, but, nevertheless, an important accounting objective has not been met.

A realistic economic life, giving consideration to all the factors that cause property retirement, should be the basis for establishing capital recovery periods. One must be mindful, however, that the period of capital recovery as determined by accounting or tax standards may not adequately represent actual economic life. Therefore, use of this information in the valuation process is fraught with peril.

There has been extensive scrutiny of the process of capital recovery for regulated utility companies (or for the parts of former utility companies that remain rate-regulated). These are very capital-intensive enterprises, and therefore depreciation expense is a significant cost of doing business. This significant cost becomes part of the revenue requirement and therefore is reflected in consumer rates for service. This attention began in 1909 when the Supreme Court decided the *Knoxville v. Knoxville Water Company* case (212 U.S. 1) and discussed annual and accrued depreciation and its importance in regulation. Since then, utility managers and regulators have aimed to reflect depreciation expense accurately and to have the capital recovery period and economic life coincide. The analysis techniques that have come from this effort have been of considerable assistance to valuation analysts.

(ii) Capital Recovery and Market Value. Since value is also measured by future economic benefits, the net book value (cost less accumulated depreciation) should mirror the decline in value. Stated another way, when the value of an asset is zero (there are no future economic benefits of ownership), it should cease to be reflected as an asset on the balance sheet (cost equal to the accumulated depreciation).

Thus, under ideal conditions, the capital recovery period, service life, and economic life should be identical. In actuality, this is a rare occurrence. The primary reason for this is that conditions change, and what appeared at the time of investment to be an asset with a 10-year life could turn out to be worthless after five years or could still be going strong after 20.

(c) ESTIMATING ECONOMIC LIFE. In 1935, what was then the Iowa Engineering Experiment Station of Iowa State University published Bulletin 125, *Statistical Analysis of Industrial Property Retirements*. This bulletin is regarded by many as the seminal work in this field. In the 1967 edition, Professor Harold A. Cowles wrote:

> By observation and classification of the ages at death of hundreds of thousands of people, actuaries have built up mortality tables by which the average life of humans and the expectancy of life at any age can be determined accurately. Similarly, engineers and industrial statisticians have assembled the life histories and ages at retirement of many types of industrial property units from which they are enabled to forecast the probable lives of similar units still remaining in service. The estimate of life expectancy for a single unit or a small group of units may be in considerable error. However, the probability of error is reduced when the service conditions of the property are taken into consideration and evaluated by engineers of expert judgment in these matters, the estimate being revised from time to time as the life history of the property unfolds.[1]

One of the results of that analysis has been to provide a number of techniques that can be utilized in the determination of the economic life of assets. This is also true for estimating the economic life of certain types of intellectual property. All of these techniques have a common basis, however:

> The estimation of expected remaining service lives of industrial property has always been and will continue to be based upon the considered judgment of the engineer or the technically

1. Winfrey Robley, *Statistical Analysis of Industrial Property Retirements* (Ames, IA: Engineering Research Institute, Iowa State University, 1967), p. 1.

competent estimator. Judgment is exercised through a consideration of what is known about the past and the present life characteristics, and how they will be influenced by expected future conditions. It is significant to note that the starting point of the estimation is knowledge of past experience.[2]

(d) STUDIES OF HISTORICAL LIFE. Bulletin 125 describes six methods for determining average life. Five of these begin with the construction of survivor curves from historical retirement data; one calculates average life directly.

(i) Survivor Curve Methods. Survivor curve methods of analyzing retirement data result in the development of a survivor curve that graphically depicts the duration and pattern of life expectancy for a group of property units. The ordinate to the curve indicates the percentage (or number) of the original group surviving. The abscissa indicates the passage of time. Exhibit 11.1 shows a typical survivor curve.

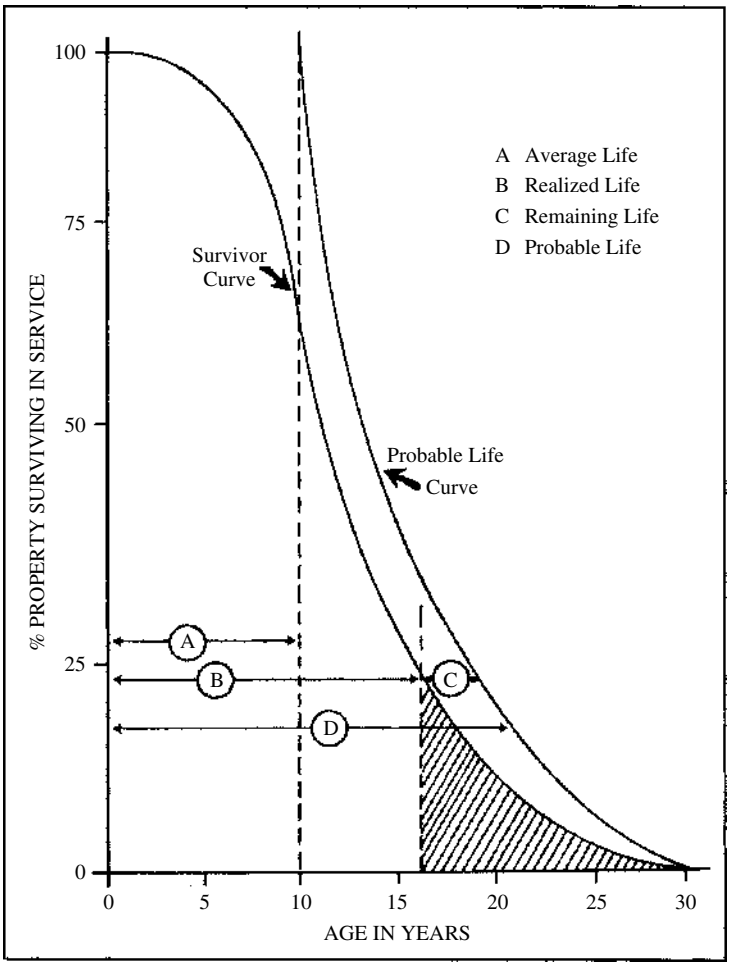


EXHIBIT 11.1 TYPICAL SURVIVOR CURVE

2. Ibid., p. 2.

Such a curve is at times referred to as a mortality curve, but the originators of the concept prefer to call it a survivor curve, to differentiate their work from studies of human life, although the underlying principles are the same. Some additional explanation relative to Exhibit 11.1 might assist the reader in understanding it.

The survivor curve itself is a reverse S shape. In this case, it illustrates that, for a group of units, retirements are few at the beginning of life. As age increases, retirements become more frequent (the curve slopes more steeply). Toward the end of life, retirements are again less frequent. If one were to plot the frequency of retirements, a bell-shaped curve would result.

The total area under the curve represents the amount of service that would be rendered by the entire group of property units during its life.

The average service life is the area under the curve (percent years) divided by 100%. In Exhibit 11.1, this is the distance *A*, or 10 years, for the group at age zero. At any other time point, the horizontal distance between the survivor and remaining life curves is the remaining life (shown as distance *C*).

For a group of property units with an age of 16 years (shown at the distance *B*), the remaining service is represented by the shaded area.

Note that there can be a significant difference between average service life and maximum life. In Exhibit 11.1, at age zero, the average life expectancy is 10 years. However, it will be 30 years until the last unit is retired.

The survivor curve represents both the duration and pattern of service life for a group of property units. It is derived from detailed historical retirement and survival data of the group of units being analyzed. The quantity and quality of such data may vary significantly, however. Therefore, several techniques are available; their use depends on the nature of the information available.

It is important to note that while we study survival patterns as a function of age, age alone is not the cause of retirement. Age is simply the scale by which we measure the effects of retirement forces that can be as divergent as wear and tear, customer dissatisfaction, or changing business requirements.

(ii) Individual-Unit Method. The individual-unit method is used when the data indicate only the number of property units retired during a year, or for several years, together with their age at retirement. The survivor curve derived from these data is based only on the experience of retired property and does not give weight to the property units still in service, which is one of the disadvantages of this technique.

(iii) Original-Group Method. The original-group method follows a group of property units placed in service in a common year, noting those that survive at successive later years. The curve will reach zero only if all of the original group are retired during the time span studied. This is an accurate representation of the life characteristics of the particular group, but it may not be representative of other vintage groups.

(iv) Composite Original-Group Method. More than one group can be combined into a single group and plotted in similar fashion to the original-group method. This composite original-group method combines the experience of several groups as one, and it is best used when successive-year vintage groups are used. As an example, combining the experience of property groups placed in service in 1980, 1981, 1982, and 1983 is preferable to combining vintage years of 1920, 1940, 1960, and 1980. This minimizes the possibility of masking retirement patterns that change over time.

(v) Multiple Original-Group Method. Using the multiple original-group method, one needs to know, for a large number of vintage groups, the number of units placed in service and the number that survived at one subsequent point. Knowing, as an example, that 50 units were placed in service in 1980 and that 10 remain in service in 1997, one can conclude that 20% survived after a period of 17 years. If the same data were known for the 1981 vintage, then the survival rate for a 16-year period would be known. Continuing, one can construct a survivor curve with each vintage providing one point on the curve.

(vi) Annual-Rate Method. In the annual-rate method, retirement and survival observations are made for several years. For each year, one needs to know the number of units retired and their age at retirement as well as the number of units in service and their ages. From this, a retirement rate, as a function of age at retirement, is calculated from which a survivor curve can be derived. This method considers the experience of the units retired as well as the units that survive and provides a clear picture of the retirement experience during the period of years analyzed.

Often several years of retirements are banded together and studied in order to detect shifts in life characteristics over time.

(vii) Type Curves. From the studies at Iowa State that developed and refined the methodologies just described came the development of 18 type curves that best represent the life behavior of many large groups of industrial property. The curves have come to be known as Iowa Curves among practitioners. The original 18 curves were designated $L_0 \ldots L_5$, $S_0 \ldots S_6$, and $R_1 \ldots R_5$ to denote left-modal, symmetrical, and right-modal shapes. Left-modal curves describe a life pattern in which the greatest frequency of retirements occurs prior to the average service life. Right-modal retirement frequency is greatest after longer than average service life, and symmetrical retirement frequency is greatest at average service life. Subsequently, a series of O curves was developed ($O_1 \ldots O_4$), consisting of curves that are similar to exponential curves and that, by experience, are often observed to be representative of intangible asset survival patterns.

(viii) Turnover Method. The turnover method requires that the annual additions and retirements of property be known. The age of the retirements is not known, only the year in which they occurred. When data are available for a long time, and when the property is stable, this method produces acceptable results. It is not a reliable method for new and growing properties or when conditions are changing.

(ix) Simulated Plant-Balance Method. The simulated plant-balance method is a computerized method of analyzing retirement experience that requires only a series of plant balances (quantity of units or dollars invested at a point in time) and the number of units added or retired in the intervals between the balances. The system uses type curves, such as the Iowa Curves, and successively compares the experience they generate with the actual balances, to determine the curve with the best fit. This method is less precise than developing a survivor curve from specific experiences, but it is useful when detailed retirement data are not available.

(x) Forecast or Life-Span Method. The forecast or life-span method is useful for properties that are an aggregation of many individual assets, each of which may have a different life characteristic. Examples would be:

A package comprising a trademark, a license, and know-how for a product line

Building structures

Electric power plants

Process equipment, such as an individual product plant within a refinery or petrochemical facility

When it is desirable to express an opinion about the remaining life of the whole property rather than its component parts, the life-span method can be used. A judgment is made relative to the components' remaining lives, considering their normal lives, their ages, and their relationship to the other components. The components' lives are weighted together to form a conclusion about the remaining life of the whole property. For example, the heating system in an office building has a normal life of 15 years. The building structure has a normal life of 50 years. For a new building, the remaining life could be estimated by weighting together these two investments and their respective remaining lives to conclude a composite remaining life of, say, 48 years. If, however, the building is already 45 years old and has a new heating system, the remaining life of both is 5 years because the life of the structure is controlling.

These are oversimplified examples, but they serve to convey the underlying theory of this method.

(e) CONCLUSION—HISTORICAL LIFE ANALYSIS. Estimating the remaining economic life of tangible or intangible assets is not even close to being an exact science, in spite of the implications of precision contained in the previous discussions. These analysis techniques can deal only with historical data, and they are at their best under the following four conditions:

1. Complete and accurate data are available about past additions and retirements of property.
2. They are applied to the study of groups containing relatively large numbers of similar assets.
3. Historical experience is an appropriate guide for the future.
4. Considerable history is available, such as a complete life cycle.

For these reasons, these methods are used routinely to estimate the economic remaining life for utility property; detailed property records are the norm and the types of property are appropriate.

We must also remember that historical life analyses and the survivor curves that are their product come largely from observing the behavior of mature, stable property. As an example, it is assumed that a telephone pole is 100% useful the day it is set in the ground.[3] The usefulness of the pole is not in doubt; there is no period of development or probation; and it is presumed to be an earning asset at that moment. Therefore the focus of these analyses is on how long it will last and what the pattern of its demise will be (how its usefulness will deteriorate from 100%).

Outside of the utility business, the application of these techniques becomes more difficult. Most businesses have no reason to keep a record of assets retired several years ago, whether they were machines, customers, subscribers, employees, advertisers, or proprietary technology. Survivor-curve analysis can be useful to estimate the income that

3. This is not precisely true—the "in ground" date may not be the same as the "in service" date, but this difference is immaterial to our discussion.

will flow from a population of customers or subscribers as they leave the group in the future. The records with which to perform this analysis may be difficult to obtain. With computerized accounting systems, subscribers who cancel, for example, may be simply dropped from the system. There is often no business reason to maintain such a record. One should not give up easily, however, in the search for suitable records. In our experience, the second, third, and fourth try sometimes uncovers a source of information in an unlikely area. Often only a few years' experience is available because either the data are incomplete or the company or the product is new. The survivor curve is therefore very short and must be extended mathematically or by the use of type curves.

Survivor-curve analysis techniques can be very helpful as a tool to estimate the pattern of economic life from a mature (or "100%") stage to the end of useful life. They cannot help us, however, if we are trying to forecast the income that may flow from the exploitation of an asset that is starting from zero or has "ramp-up" characteristics that will delay its attainment of commercial maturity.

11.3 ECONOMIC LIFE OF INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

In light of the concepts just discussed, it becomes clear that in developing an opinion of the economic life of intangible assets or intellectual property, one is often dependent on subjective techniques. There is rarely a detectable track record on which to base more statistical means of study. There are, however, some exceptions.

(a) GROUPED INTANGIBLE ASSETS. Certain intangible asset classifications are really aggregations of individual assets. These would include groups of similar contracts between a business and outsiders, such as:

- Subscriptions for newspapers, periodicals, recordings, videocassettes, artworks, coins, stamps, or collectibles
- Contracts for maintenance services, bottled water delivery, computer or office supplies, advertising, or public relations services
- Franchises, such as for fast food operations, cosmetics, or cookware sales representation
- Assembled workforce
- Noncontractual customer or supplier relationships

These intangible assets are distinctive in that they exhibit some population turnover as members of that population come and go. At any specific time, a snapshot of that population will capture an asset whose value will dwindle over time as the faces in that picture disappear. That is not to say, for example, that a fast food franchisor will inevitably lose all of its franchisees. Those that drop out will be replaced by new franchisees if the business remains viable and the franchisor makes the investment to obtain replacements. But the newcomers, after the valuation snapshot, are new elements of the intangible asset and are created by the owner from new investments of labor and capital. These elements do not exist as of the valuation moment.

Depending on the records available relative to past retirement behavior, the economic remaining life of these types of intangible assets can often be analyzed by the statistical techniques previously described.

(i) Correlative Data. In some situations one must combine the data from more than one source to form a conclusion. For example, consider the task of valuing the depositors of a bank. One group of depositors is composed of customers holding certificates of deposit. An analysis of their turnover reveals that the holders of short-term CDs nearly always rolled them over at maturity. Upon further investigation, it is evident that nearly all of these customers also had checking accounts into which the interest from the CDs was being deposited. A study of the remaining life of checking account holders had already been made, and these data were available to forecast the probable remaining life of the CD accounts after maturity.

Other examples show that data relative to the failure rate for small business could be utilized in estimating the life of newspaper advertisers in a suburban area, or the population turnover and home mortgage life experience could augment sparse data on the turnover in a newspaper's subscriber base.

(ii) Outside Influences. Forces external to the business exert an ever-increasing influence over managers and the business assets they use. The value and economic life of a loan or mortgage portfolio held by a financial institution can vary substantially with the vagaries of the interest rate. The value of an inventory fluctuates with the trading value of currency. A chemical process or material that is a basic product building block today is restricted in the marketplace tomorrow. Employee turnover may be affected significantly by legislation. Changes in health or safety standards can render a process, product, or service too costly to compete. The impact of product liability litigation is well known.

These are a few of the myriad factors that must be considered in determining the economic remaining life of business property.

(b) INDIVIDUAL INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY. With other classifications of intangible assets and with nearly all intellectual property, the development of economic life depends on either contractual/legal life or an analysis of subjective elements. There is no turnover to measure by statistical means. The contractual/legal constraints on economic life have been discussed, and we therefore direct the following comments to considerations that deserve attention in a subjective analysis of the economic life of intellectual property.

(i) Change Is Everywhere. One would think that the recipe for a food product or the formula for a paint pigment or metal alloy would be long-lived information. In actuality, formulas such as these are constantly changing due to factors such as:

- The availability of raw materials
- Changes in the quality or specifications of raw materials
- Changes in taste and preference (e.g., low-sodium, low-fat, low-sugar foods)
- Efforts to obtain less costly materials
- Environmental concerns (e.g., lead and petroleum distillates in paint)
- Changes in marketing (e.g., longer shelf life required)
- Responses to competition
- Changes in packaging or method of delivery

As a result, a formula for white paint or a recipe for cupcakes may have been modified many times, even though the product line has been in existence for many years. Computer software is a classic example. Almost every business has a computer program

for processing the payroll and has had one for several years. Is it the same software today that it was five years ago? Almost certainly not. Small but continual modifications have been made.

(ii) Higher and Higher Technology. One of the most difficult estimates to make of economic life is in connection with assets related to new technology. An example might be the tangible and intangible assets in an enterprise that began two years ago to develop a product that is, at the time of the appraisal, six months from being introduced to the market.

Millions of dollars may have been spent during the development period, and one must decide how many of those dollars became part of the investment that produced assets having material value. Here, specific history is nonexistent and the future uncertain. In this situation, one must ask questions such as:

- What is the potential market?
- Who are the competitors?
- What are the further development costs?
- What product or service is being replaced?
- Are financial resources present to see the project through?
- What is the level of protection (patents, trade secrets, head start)?
- What is the cost of market entry?

(iii) Generation Gap. One of the tools available is to trace the development of a product or service through its generations to detect whether there is a constant progression or, more typically, an increasingly shorter generation life span.

A good example is computer hardware, which has moved through several generations from vacuum tubes and unit record (punched card) peripherals, to transistors, to chips and floppy disks, to optical discs, to wireless networks. Another example is the well-documented progression in communications equipment from manual switchboards to digital switches. Medical diagnostic equipment has undergone similar generational changes that can be tracked.

This type of analysis provides an overview of how fast technological advances are taking place in the subject industry. It also gives some insight as to whether these advances come in evolutionary fashion or in breakthroughs.

(iv) Product/Service Life. This entire discussion concerns intangible assets and intellectual property that are part of a business enterprise. Therefore, these assets or properties are capable of producing income for that enterprise, and their worth is commensurate with that capability. Their economic life is also commensurate with that capability. Whatever the intangible asset or intellectual property is, it is associated with some product or service. That product or service, converted into money in the marketplace, is the source of the economic benefits by which the value and economic life of underlying assets can be measured. It is therefore necessary to link the particular assets under study with a product or service, either existing or contemplated. If no such linkage exists, the asset can have no value and no economic life.

(c) ECONOMIC LIFE FACTORS. In general, the process of estimating economic life is one of identifying all of the factors that bear on economic life in a given situation and then of making a judgment as to which of them indicates the shortest life.

(i) Patents. The path from patent to product can be tenuous. A patent that protects a process for the efficient production of a chemical compound is an example. That compound may find its way into virtually millions of end-use products. If these products represent a broad spectrum of markets, the patent, based on this consideration alone, should be quite valuable, and its economic life should be long (perhaps equal to its legal life) because the diversity of products acts as a shield against a downturn in specific product sales. If the patent protects the chemical compound itself, it may be even more valuable, again because of the potentially broad applications.

Looking through to the economic life of the end product can provide an indication of the high end of the range of economic life for a patent or series of patents that supports it. Stated another way, the economic life of intellectual property cannot exceed the period during which it or the products it supports find favor in the market.

From this upper range, one should then consider the factors not related to the product marketplace that also can have an effect on its economic life. Continuing to use the example of the process patent just mentioned, these would include:

Loss of supply or price escalation in a raw material that could render the process uneconomic

An increase in energy costs that would render the process uneconomic

Legislation relative to environmental concerns about the use of feedstock, handling of process effluent, or the compound itself

The possibility of a competitor designing around the protected process

The development of a superior compound that would replace the existing one in the same markets

Challenges of patent validity brought by competitors motivated by the profitability of the protected process

The most difficult patents for which to estimate economic life are those involving embryonic technology that may be emerging well ahead of any practical use and those related to faddish consumer products such as toys. An educated guess may have to suffice, knowing that the margin for error may be considerable. There are some tools available that are discussed in a later section of this chapter.

(ii) Trade Secrets and Know-How. Most of the patent considerations noted above apply here, except that there is no statutory limit to trade-secret protection. End-product economic life also applies to trade secrets as an upper limit to the range of economic life. There are additional unique considerations. Some of these are listed below:

- The transferability of the trade secrets or know-how. An extreme example might be the skills of a master violin maker. Without an apprentice system that ensures a very long training period, these might have an economic life equal to that of the individual. A consideration here is the extent to which such information has been reduced to writing or other transferable form. The skills of a writer, musician, test pilot, or surgeon can be extremely valuable, but remain largely untransferable, know-how.
- Another consideration is the care with which the confidentiality of the information is protected. To borrow a slogan from World War II, "Loose lips sink ships."
- The versatility of the know-how enhances its economic life. This is always true in that it can be redeployed if there is a change in the market. Grumman Corporation,

for example, extended its know-how in sheet aluminum fabrication of aircraft to the manufacture of vehicle bodies and canoes.

(d) ECONOMIC LIFE OF TECHNOLOGY—FORECASTING. One of the most difficult challenges in the valuation of intellectual property concerns technology that is embryonic or in a developmental stage. Since valuation must focus on *future* economic benefits, we are compelled to address the issues of forecasting the income and expenditures that are required to calculate present value.

Much of what has been written about analyzing the future of technology has been in the field of management:

> First, all industries manage technology, even if their management plan is to have no plan. Second, managing technology (or anything else) is inextricably linked with time. Industries seek to manage the technology they control, use or produce to contribute to corporate goals today. They try to manage the development and implementation of technology to increase the realization of those goals tomorrow. To manage, they draw on the lessons of yesterday buttressed by management models developed from experience. In short, technology management draws on historical and future perspectives.[4]

Forecasts can be made broadly or in considerable detail. We must remember, however, that all forecasts involve a degree of uncertainty. When forecasts are broadly based, there is a greater likelihood that the forecast events will occur. When forecasts are made in extreme detail, it is less likely that the detailed outcomes will, in fact, occur. As an example, one might forecast the total output, in bushels, of corn in the United States next year. We could also make estimates of corn production by individual states, and even by individual fields. We could be wrong in every case relative to our estimates of corn production by individual field or state (which is likely), and still be reasonably close with our estimate of total U.S. production.

A forecast of U.S. corn production is made easier by the fact that the production of corn here is a mature industry, giving it some stability. The exploitation of intellectual property, be it technology or trademarks or copyrights, is a much less stable situation.

Porter[5] notes the development stages of technology:

Stage 1 – Scientific Findings: Determination of Opportunity or Need

Stage 2 – Demonstration of Laboratory Feasibility

Stage 3 – Operating Full-Scale Prototype or Field Trial

Stage 4 – Commercial Introduction or Operational Use

Stage 5 – Widespread Adoption

Stage 6 – Proliferation and Diffusion to Other Uses

Stage 7 – Effect on Societal Behavior and/or Significant Involvement in the Economy

While we might wish, in our valuation efforts, that we only had to deal with forecasts of technology growth involving intellectual properties that had at least reached Stage 4, in fact forecasts from the point of earlier stages are very common and represent the most

4. Alan L. Porter et al, *Forecasting and Management of Technology* (Hoboken, NJ: John Wiley & Sons, Inc., 1991), p. 47.

5. Ibid., Exhibit 4.3, p. 59. Also cited in J. P. Martino, *Technological Forecasting for Decision-Making*, second edition (New York: North-Holland 1983).

difficult situation. In the following sections, we discuss some of the methodologies utilized in making these forecasts.

Porter[6] notes the information requirements in the technology forecasting process:

- Projections of rates at which new technologies will replace older ones
- Assistance in managing technical research and development
- Evaluation of the present value of the technology being developed
- Identification and evaluation of new products or processes that may present opportunities and/or threats
- Analysis of new technologies that may change strategies and/or operations
- Probable responses of regulatory agencies and society to a new product, process, or operation

Before any forecasting can be done, however, there is a myriad of questions that must be asked in order to get firmly in our mind the character of the subject technology and what the primary factors are that will control its future development and exploitation. We suggest a few of these:

- Is this a stand-alone technology, or does it require the development of other elements in order to be exploited?
- What are the challenges to the commercialization of this technology?
- What are the "feedstocks" necessary for the development of this technology (i.e., intellectual, financial, material)?
- How will the exploitation of this technology result in economic benefit?
- Will this technology be exploited as an improvement to an existing product/service?
- Is this an innovative technology that will spawn brand-new products/services?
- Is this a cost-reducing technology?
- Is this a performance-improving technology?
- How versatile is the technology (i.e., breadth of industries, products, fields of use)?
- What marketplace is likely to control the exploitation and growth of this technology?
- What are the barriers to development of this technology?
- What alternative technologies will be competitive?
- Have all sources of information about this technology been investigated (e.g., literature searches, etc.)?

(i) Forecasting Methodologies. As we will discuss in a later section, the end product we seek is a forecast of the debt-free net cash flow that can be reasonably expected to result from the exploitation of the intellectual property in future years. That is the income stream that can be capitalized to indicate the present value of future economic benefit, or market value. In order to arrive at the debt-free net cash flow bottom line, we need to

6. Ibid., p. 73, also cited in J. H. Vanston, *Technology Forecasting: An Aid to Effective Technology Management* (Austin, TX: Technology Futures, Inc.).

start at the sales revenue "top line" and reflect expenses in between. We have found that most of us are better at forecasting expenses (including capital ones) than we are at forecasting sales revenue. This is probably because we are more likely to understand the components of expense (human effort, capital expenditures, financing costs) than we are to understand the workings of that great unknown, the "market," from which sales revenue will ultimately come.

We are therefore going to focus on the forecasting of the knottier side of the equation—sales revenue. Therefore, the methods and techniques we discuss below should be interpreted as applying to the derivation of sales revenue. We also focus on forecasting sales revenue for early-stage technology, an area that is particularly troublesome in intellectual property valuation.

(ii) Direct Estimates. This might also be called the "educated guess" methodology. In this situation, we consider all of the facts that we can discover that ought to affect the intellectual property in its economic future, and reflect that consideration either in the form of specific estimates for future periods or some overall growth pattern. This approach could also be called an expert consensus methodology, where there is only one expert. A more sophisticated version of this approach would be to aggregate the results of educated guesses by other experts in the relevant field.

While this technique could result in discrete estimates for each year, it is common to express opinions about sales forecasts in terms of a growth rate, or more mathematically, a compound annual growth rate (CAGR). This calculation requires a beginning value that is multiplied by (1 + rate), as is each year's amount that follows. This is illustrated in table and graph form in Exhibit 11.2.

The annual growth rate can be changed during the series if the expected future conditions warrant it (e.g., annual growth rate low for the first 3 years, higher for the next 8 years, and then low again for subsequent years). This is not too common in our experience, but it is done.

(iii) Extrapolation of Historical Data. A very commonly used forecasting method is to extrapolate patterns of historical growth. The more information about historical growth that is available, the better the forecast is likely to be. As an example, financial analysts

CAGR example @15%

Year	Forecast Amount
1	100
2	115
3	132
4	152
5	175
6	201
7	231
8	266
9	306
10	352

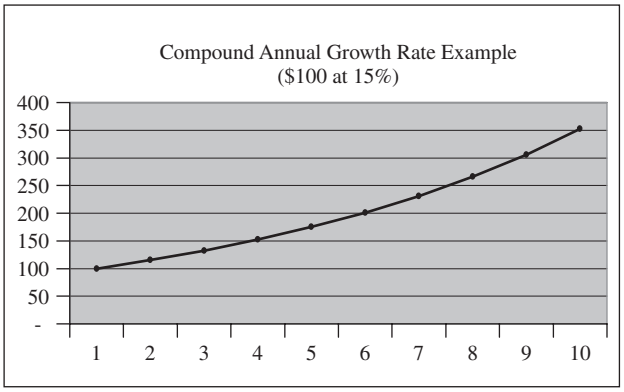


EXHIBIT 11.2 EXAMPLE COMPOUND ANNUAL GROWTH RATE CALCULATION

attempting to forecast the growth of indices reflecting the movement of the U.S. stock market have available many years of historical growth patterns to observe. As this is written, we are in a presidential election year, and many analysts have attempted to forecast the movement of the stock market with that in mind. Because there are far fewer election years than there are "historical years," the process is made much more difficult and the results are admittedly much less precise.

This hindrance often arises in the valuation of intellectual property, in that actual historical data are difficult to come by and may lack comparability to the forecasting problem. In many cases, in fact, there are no historical data to utilize as a guideline because the subject intellectual property has no history and is unlike anything that has come before.

When historical data is available, however, extrapolating from them can be a strong forecasting tool. There are many methods available for this analysis and extrapolation. One of the least complex is some form of regression analysis in which a line, mathematically judged to be the "best fit," is drawn through the actual data and extended. An example of this is shown in Exhibit 11.3.

In this very simple example, the line drawn through the actual data has been mathematically judged to be the best representation of them. Its extension beyond the actual data points represents a forecast of the future for this data set. If we consider this data set to be comparable to our subject, then we can utilize the *slope* of the line to forecast from our subject's starting point. There are a number of sources from which readers can expand their knowledge of techniques to analyze and extrapolate from historical data.[7]

REGRESSION EXAMPLE

Year	Actual Sales
1	2
2	4
3	3
4	6
5	5
6	8
7	12
8	13
9	15
10	18
11	
12	
13	
14	
15	
16	

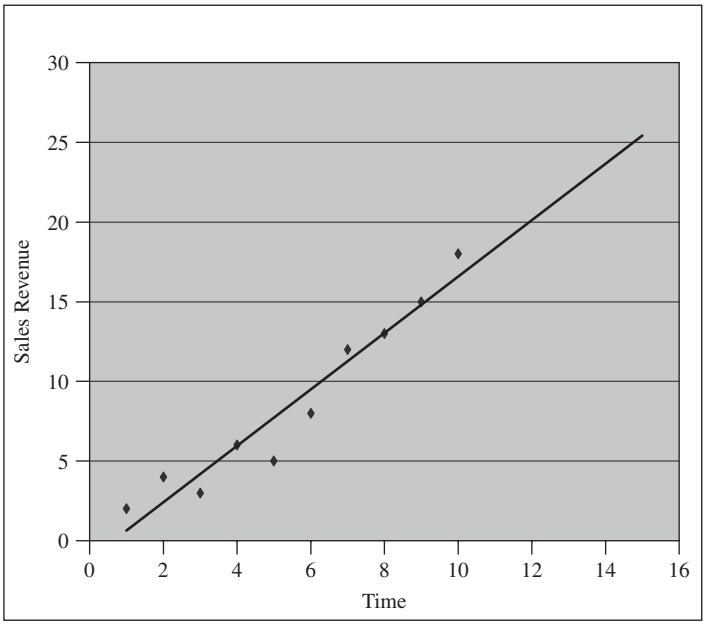


EXHIBIT 11.3 EXAMPLE OF EXTRAPOLATION FROM HISTORICAL DATA USING LINEAR REGRESSION

7. Among these is Spyros G. Makridakis, *Forecasting Methods and Applications*, third edition (Hoboken, NJ: John Wiley & Sons, Inc., 1998).

(iv) Surrogate Data. The use of surrogate growth patterns takes some elements from the extrapolation discussion above and the model discussion below. The attempt here is to discover actual growth data from some property that is judged to be reasonably comparable to our subject. If, as an example, our task were to make a forecast of the number of GPS units that will be sold as optional equipment on cars and trucks sold in the United States, we might look to the historical sales of other similarly priced vehicle options such as air conditioning, tape decks, CD players, and the like. A more likely surrogate situation might arise in the pharmaceutical field among drugs with similar diffusion patterns. To be usable, the surrogate growth data need to be matched against some mathematical expression (such as a CAGR or index number calculation) that can be applied to the estimated starting point of the subject intellectual property sales.

In Exhibit 11.4 we show the growth patterns for several telecommunications services. These were researched in order to observe whether, in fact, the S-curve pattern fit actual data, which it does in every circumstance but one, and this illustrates the need to examine surrogate data. One can observe the gyrations of the data relative to the installation of fiber-optic cable. There was a precipitous drop after a very steep increase. This was due to the unusual situation in which the technology of end equipment advanced so rapidly that the dramatic increase of capacity it produced made it unnecessary to install more fiber-optic cable, the purpose of which had been to increase the capacity of the telecommunications infrastructure.

(v) Model Growth Patterns. Models can take a variety of forms, but they all attempt to emulate conditions from the real world and actual data. Since our focus is the forecasting of sales revenue for embryonic technology, we are led to the so-called S-shape, or sigmoidal, family of curves. These curves, a sample of which is shown as Exhibit 11.5, graphically represent the typical stages in the life of a product.

Product life cycle theory assumes that the diffusion of a product into the economy follows a pattern containing four stages: (1) introduction, (2) growth, (3) maturity, and (4) decline. For technology, this pattern is also exhibited by what has been called the industry technology cycle of invention, innovation, and standardization.

The time period over which this pattern is completed varies significantly by industry and product. Its span can be as short as months or as long as a decade. During the introductory stage, sales volume is usually low, and the product or service is highly priced. Consumers are not well informed as to the benefits associated with a new product, and a process of education is required. Once proven, the product or service gains acceptance, and more sales volume is generated. Manufacturing techniques can be improved as economies of scale from larger production volumes are achieved. These cost reductions can allow a lower selling price that helps to further expand the market. If the product is patented, above-average profits can be protected from the encroachment of competitors. Without patent protection, pricing pressure during the growth stage may deteriorate the above-average profit margins that are enjoyed during the introductory stages. At maturity, the overall market for the product or service is well established, and further penetration by the industry producers is slow. Pricing pressures become significant if patent protection is lacking or expired. Decline can begin as advances in technology introduce new product and service offerings that erode the demand for the established product. Pricing pressure and reduced demand for the product can cause the product or service to assume the characteristics of a commodity.

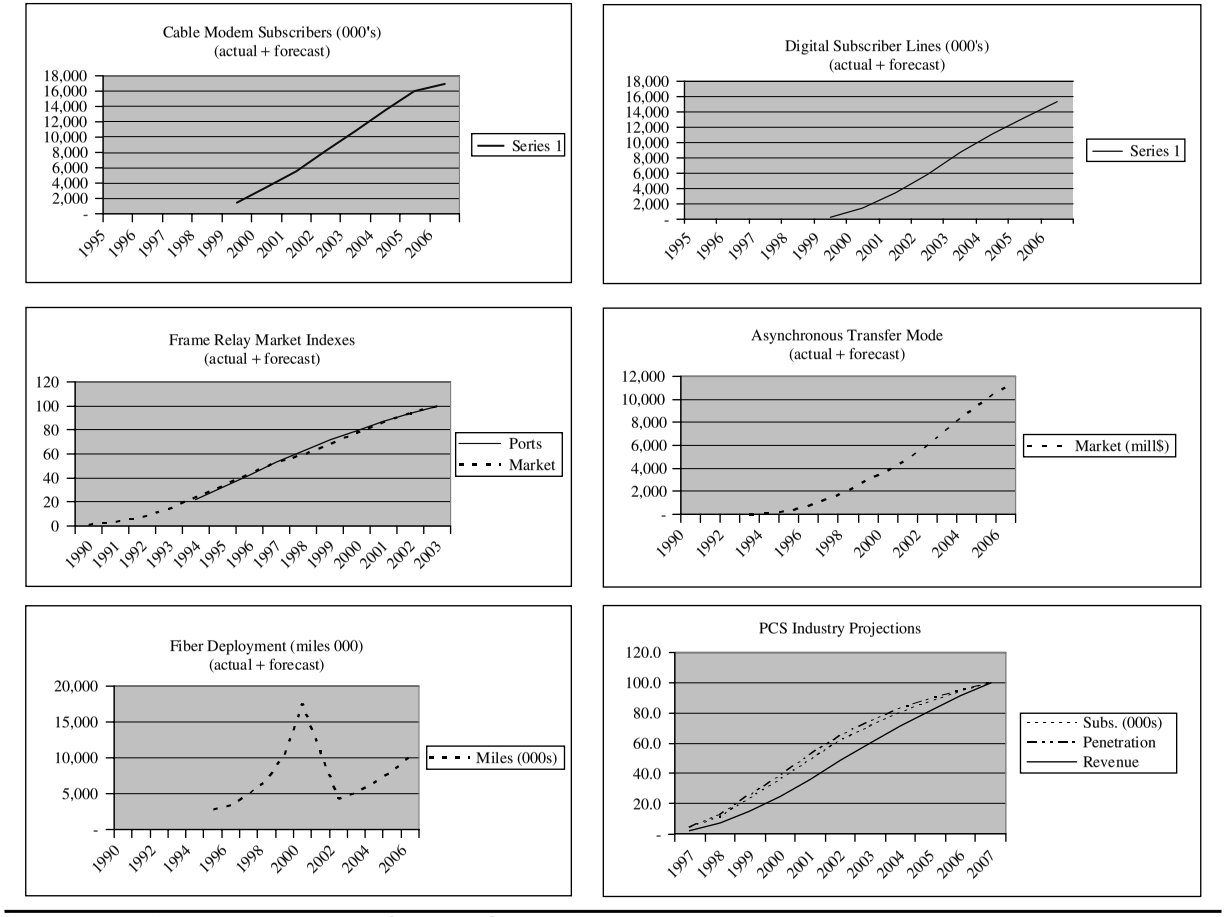


EXHIBIT 11.4 TELECOMMUNICATIONS SERVICES GROWTH PATTERNS

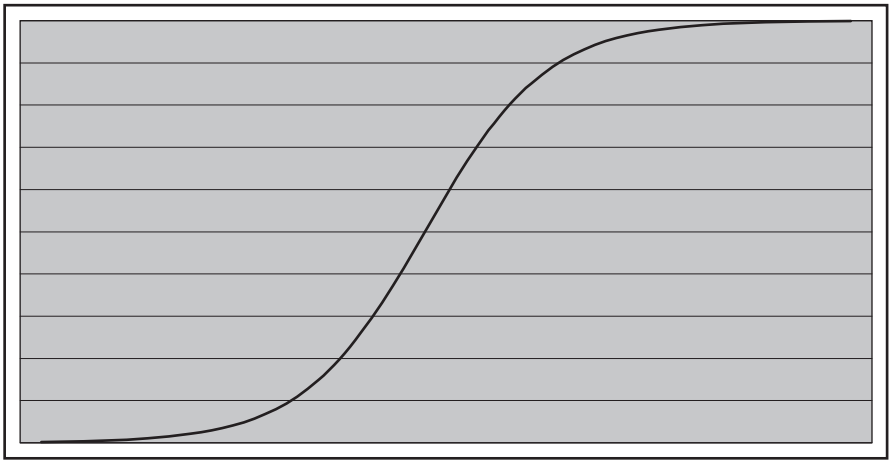


EXHIBIT 11.5 TYPICAL SIGMOIDAL GROWTH CURVE

The compact disc and compact disc players are an excellent example. When first introduced, a basic CD player was priced at over $1,000. It had very few operating features other than the ability to play a compact disc. Discs were each priced at almost $20. Demand for these products was at first limited to adventurous music lovers with high levels of discretionary income. As the superior fidelity of these products became well known, demand for the products increased, and the manufacturing economies of scale allowed pricing reductions for market expansion. Many manufacturers entered the market and added features such as scanning, remote control, and preprogramming of selections. Today, a compact disc player with earphones and antivibration features can be purchased by a jogger for under $100, and some compact discs are less than $10.

The compact disc market is well defined and well into the maturity stage of the product life cycle. At the same time, the effect on the vinyl long-playing (LP) record has been extraordinary. Almost every record store in the country has eliminated the shelf space previously allotted to LPs. Sales of turntables are declining rapidly. Prices of LP records are severely reduced, and selections are becoming limited. In less than five years, the purchase of LP records may require the same diligence as that now required to find parts for a 1962 NASH Rambler. The value of technology follows the pattern of life cycle theory. While compact disc and compact disc player manufacturing technology can be argued to be very valuable, the value of LP record and turntable technology is on a fast decline. When valuing intellectual property, attention to product life cycle theory and the stage at which we find the subject property is most important. An important question to ask is whether intellectual property is providing access to a fast-growing, highly profitable industry or whether it is leaving you in a crowded commodity-oriented environment that is in decline.

From this understanding of the classic S-curve shape of technology development, we learn that there are permutations of this curve type that have been developed from actual observations. These can be a basis on which to make forecasts, if we combine their use with the knowledge we accumulated in the fact-finding stage. The following sections discuss these types of S-curves and their characteristics.

(vi) Gompertz Model. The Gompertz Model is often referred to as a mortality model because its creator, Benjamin Gompertz, an English demographer, developed the curve after studying the mortality rate of a human population. In his analysis, he observed that

the mortality rate of a population grew exponentially as the age of the population increased. The Gompertz Model is defined by the equation shown in Exhibit 11.6.

The lateral position of the Gompertz curve can be adjusted by changing the value *a* (location coefficient), and the shape can be adjusted by varying *s* (market shape factor). For low values of *s*, the curve rises gradually. As the value of *s* is increased, the curves rise more abruptly to the maximum penetration.

The Gompertz Model is often used to forecast market penetration of technologies that are replacing an older technology without a significant clear-cut advantage. These situations are primarily driven by the demise of an existing technology, hence the association with mortality. Very often, however, the adoption of new technologies is driven by some advantageous feature that causes products built around the new technology to replace products dependent upon an old technology—not the deterioration of the old products, but rather the enhanced desirability of the new. This leads us to another S-curve model.

(vii) Fisher-Pry Model. The Fisher-Pry Model, originally reported by John Fisher and Robert Pry in 1971, is based on what they called a "substitution model of technological change." Its authors felt that this curve was representative of the pattern when one technology replaced another due to clear-cut economic advantages of the new, such as when open-hearth steelmaking replaced the Bessemer process. The formula and examples for the Fisher-Pry Model are shown in Exhibit 11.7.

Again, there are two primary inputs to this equation. The first (t_{50}) is the year in which 50% market penetration is reached, and the second (s) is a market shape factor. Intuitively, changing the year in which 50% penetration occurs will shift the curve horizontally. The effect of the market shape factor is to produce a much steeper curve for high values and a much more gentle curve for low values.

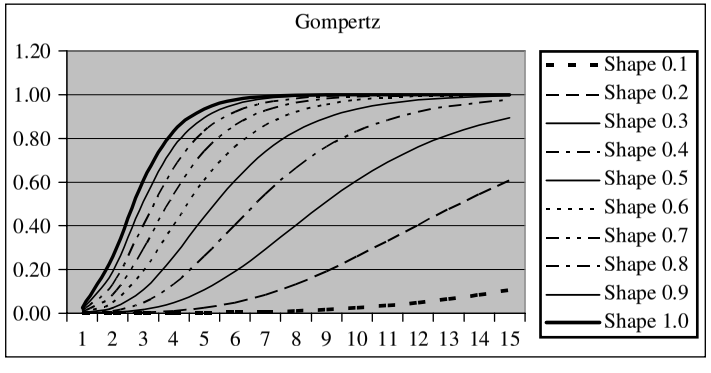
Most feel that the Fisher-Pry Model is appropriate to represent the growth of a technically advanced product in which the product is diffused into the marketplace, starting out as an unproven technology and growing as early buyers report success and as the mechanisms to support the product are enhanced.

(viii) Pearl-Reed Model. A third S-curve model is similar mathematically to the Fisher-Pry Model, but produces a somewhat different curve that is similar to the Gompertz curves in that the curves developed using various location coefficient and market shape factor inputs do not cross one another, but all start out at a common point. Those with a high market shape factor rise rapidly, and those with a high location coefficient shift more to the right. Examples of the Pearl-Reed curves are shown in Exhibit 11.8.

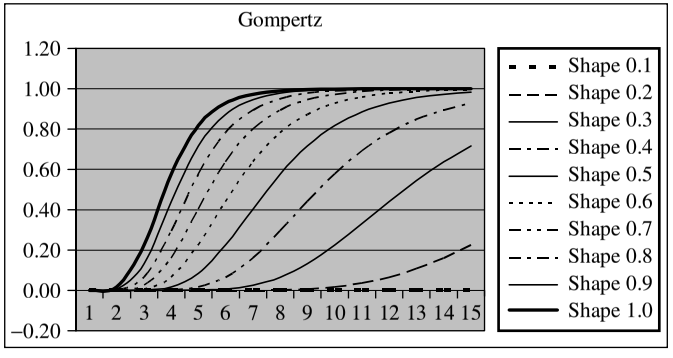
(ix) Bass Model. The Bass Model is based on diffusion theory, which reflects how information is dispersed within a society. Humans rely on media as well as interpersonal communication to learn about new products and services that are available. People vary considerably in the extent to which they rely on one or the other of these information sources. A diffusion model attempts to exemplify the cumulative percentage of a potential market that has been absorbed by the initial purchase of a new product. As with other S-curve models, we expect that new product sales begin to grow at a slow rate, then at a very rapid rate, following which the rate of growth tapers off and perhaps even declines with time. The Bass Model, as with other S-curve models, is a "single-purchase" model, used to forecast the sales of products that are typically bought just once or infrequently, such as consumer durable goods. It is not intended to forecast the sales of repeat purchases (such as a new toothpaste product) that can drive a very rapid growth of sales volume if the initial purchase is successful in the eyes of the buyer.

$$\frac{\text{Revenue for year } t}{\text{Revenue at maturity}} = 1/[\exp(a \exp(-st))]$$

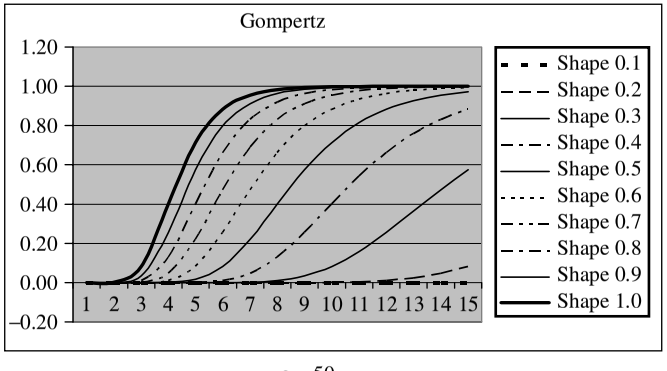
Where: a is the location coefficient, and
s is the market shape factor



a = 10



a = 30

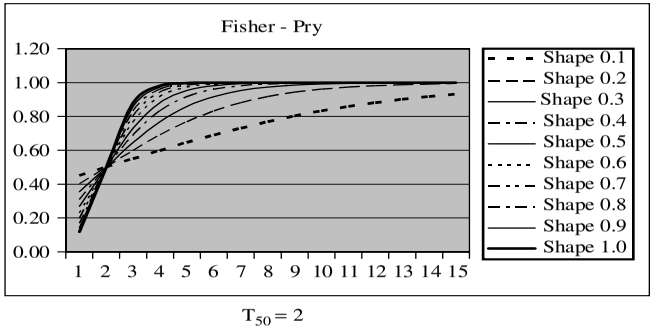


a = 50

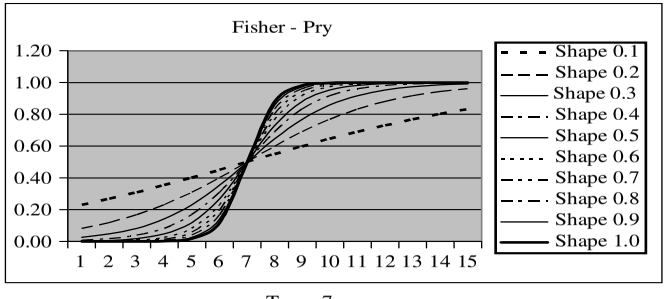
EXHIBIT 11.6 GOMPERTZ MODEL

$$\frac{\text{Revenue for year } t}{\text{Revenue at maturity}} = 0.5[1 + \tanh s\,(t - t_{50})]$$

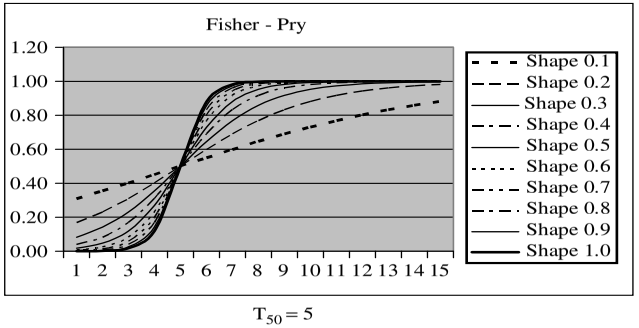
Where: t_{50} is the year of 50 percent penetration, and
s is the market shape factor



$T_{50} = 2$



$T_{50} = 7$

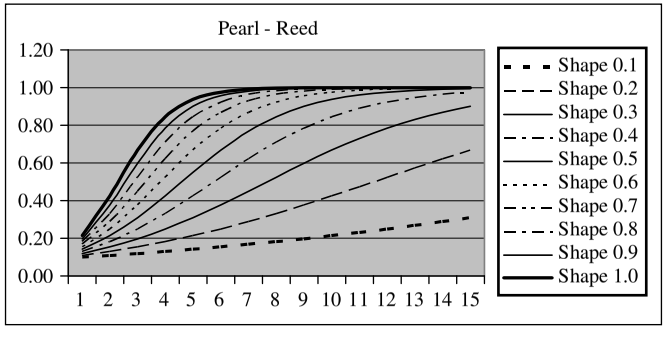


$T_{50} = 5$

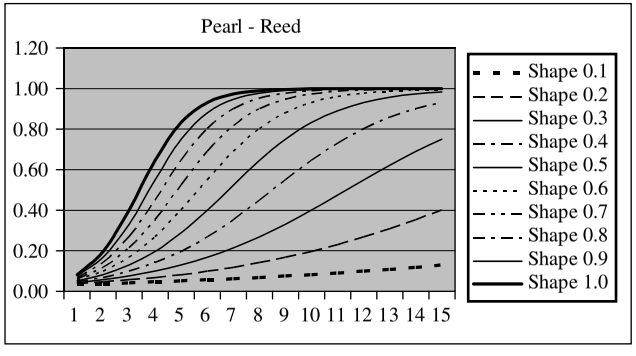
EXHIBIT 11.7 FISHER-PRY MODEL

$$\frac{\text{Revenue for year } t}{\text{Revenue at maturity}} = 1/[1 + a \exp(-st)]$$

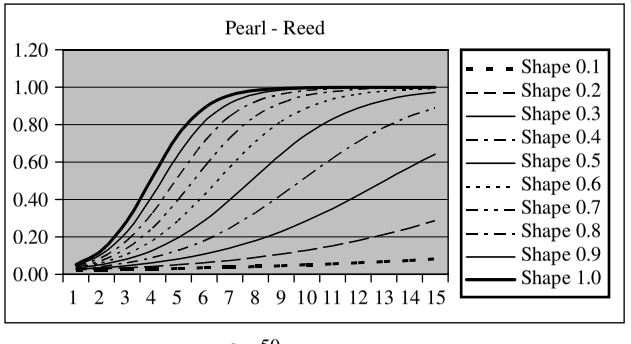
Where: a is the location coefficient, and
s is the market shape factor



a = 10



a = 30



a = 50

EXHIBIT 11.8 PEARL-REED MODEL

The Bass Model combines the innovation model and imitation model of Fisher-Pry. It was designed to be a forecasting model to be used prior to the introduction of a new product and has, in fact, been widely used by major corporations for that purpose. The mathematics and examples of the model are shown in Exhibit 11.9.

The values for the p and q coefficients are not intuitively obvious, but due to the widespread use of this curve, a literature search will reveal a large amount of empirical data that have been gathered relating the coefficients associated with various types of products. The p is the coefficient of innovation, or the likelihood that an individual will start using a product because of media communication. The q is the coefficient of imitation, reflecting the likelihood of an individual starting to use a product because of interpersonal communication. The reader is referred to a more complete discussion of the Bass Model, contained in Appendix F, which was researched and written by Drs. Richard A. Michelfelder and Maureen Morrin, of Rutgers University.

(x) S-Curves in General. These curves are most useful in the case of embryonic technology. If the technology is in the early stage of commercialization, where there are some sales data, those data can be matched against curve points and the "best-fit" curve selected. That curve can then be used to forecast the ensuing growth.

Probably more often, there will be no early sales data available and the reader will be starting with a blank slate. One then must, on the basis of an analysis of all available information, choose a curve type and shape that is thought to best exemplify what is expected to come. The use of S-curves is a viable, and in most cases preferable, alternative to forecasting on the basis of a CAGR or straight-line extrapolation because of the evidence that the S-curve shape most often fits the growth pattern of embryonic technology.

$$Q_t = (((p + q*(A/M))*(M - A)))$$

Where: Q_t = number of adopters or unit sales at time t
p = coefficient of innovation
q = coefficient of imitation
M = market size, or ultimate number of adopters or unit sales
A = cumulative number of adopters or unit sales to date

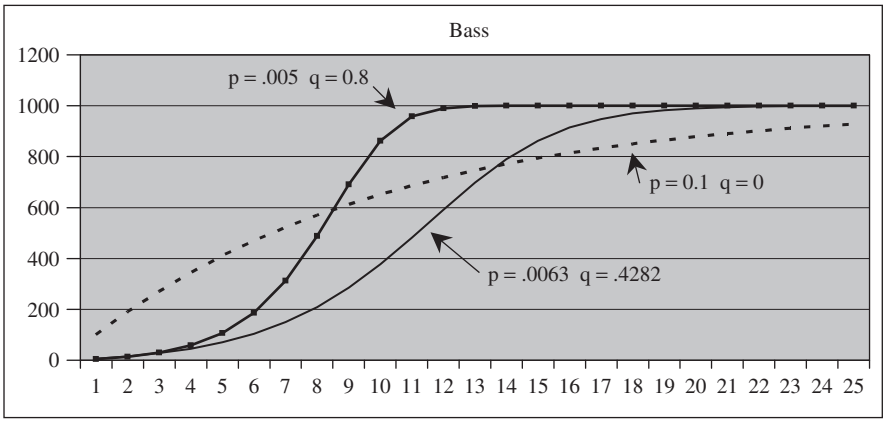


EXHIBIT 11.9 BASS MODEL

(xi) Trademarks. Conventional wisdom would have us accept the notion that trademark rights have no discernible economic life, since they exist as long as they are used and maintained. The authors have grappled with this idea, primarily because it is difficult to agree with the concept that any business assets have a perpetual life (least of all goodwill, which is another subject!).

Conventional wisdom is questionable because it is clear that even the best-recognized trademarks must be maintained continually by advertising and by being associated with a product or products that continue to find favor with the buying public. This requires continued investment of labor and capital.

Trademarks can die with a product if they are so closely identified with it that they cannot be redeployed. They certainly can be misused by unwise extension to inappropriate or poor-quality products and their value thereby degraded. It is clear to us, therefore, that they are not, by their nature, eternal.

No one disputes the fact that a piece of machinery wears out, becomes obsolete, and eventually is scrapped. During its life, an investment of labor and capital is made to repair and maintain it in order to slow the aging process. As a practical matter, however, it can never be maintained in 100% condition.

A trademark (or customer base) *can* be maintained in 100% condition or even improved. That is, all the forces of depreciation can be held at bay by astute management and the investment of capital. Should this fact, however, cause us to believe that a trademark is eternal? We think not.

We offer for further consideration the idea that a trademark is, at any specific moment, the product of investments of the past. If all future investments were to cease, it is clear that the mark would eventually die. Even without this extreme assumption, future investments can replace those made in the past, and therefore the value of a trademark built by investments of the past will diminish. Its place will then be taken by the value resulting from new investment. So, it seems clear that trademarks (or to use the broader term "brands") are subject to forms of obsolescence.

(xii) Functional Obsolescence—Trademarks. This refers to the degree to which an asset can perform its intended functions vis-à-vis another newer, perhaps technologically superior asset. Trademarks do not suffer from functional obsolescence due to advancing technology, but perhaps from form or style. The passage of time can produce this type of functional obsolescence in a trademark. Trademark owners are continually updating their look, using different typefaces and restyled logos. The essence of the mark stays the same—it is only "freshened" to reflect changing styles. As a business adds brands to a family, or repositions brands or product lines, trademarks may be restyled to create, retain, or strengthen a common look.

The images of Betty Crocker and Prudential's "rock" have undergone periodic updates and style changes. Betty Crocker, the famous spokeswoman of General Mills, Inc., was born in 1921 and, after 15 years, appeared in a portrait that was a "combining [of] the features of several women in the company's Home Service Department."[8] She has had several makeovers since then to update her appearance and dress. On her 75th birthday, she was "morphed" by computer into a composite of the features of 75 women selected from among the many who submitted their pictures.

8. Rebecca Quick, "Betty Crocker Plans to Mix Ethnic Looks for Her New Face," *Wall Street Journal* (September 11, 1995), front page.

Secondary Turnover

In general, we have observed that slogans or words or symbols that are used subordinately to a primary trademark tend to have shorter, finite lives. This is because many of them are developed in order to respond to a relatively temporary situation. This is often the case with slogans that are subordinate to their umbrella trademark.

(xiii) Economic Obsolescence—Trademarks. Economic obsolescence reflects the effect of factors outside of the asset itself. It is a concept based upon the assumption that property devoted to business use achieves full fair market value only when it is capable of contributing to the earnings of that business and when those earnings are capable of providing a reasonable rate of return on all the property devoted to the enterprise. Thus, the fair market value of assets in a business is dependent to some degree on factors that arise entirely outside of the particular circumstances of the individual asset. The fair market value of an asset can be significantly degraded by the economics of the business to which it is devoted. The extent to which it is degraded depends on the type of asset it is.

Event Obsolescence

We use this term to describe potential trademark value reductions caused by business transactions or events that are outside the course of normal trademark life activities. The product-tampering episode involving TYLENOL could have been a life-threatening event for that trademark, had not Johnson & Johnson management reacted in timely and effective fashion. The bankruptcies of MACY'S and WESTERN UNION might have severely "dented" or even ended the economic lives of those venerable trademarks. In the 1930s, tennis player René' LaCoste began a line of cotton sportswear bearing his name and an alligator trademark. General Mills acquired the licensing rights in the 1970s and made considerable money exploiting it, but stretched the brand perhaps beyond its limits. Knock-offs proliferated and the brand was damaged. The brand rights were sold to Crystal Brands Group where the downhill trend continued, and then they were sold to Devanlay S.A., a French company that had had a long association with the brand. After taking it off the market for a while, Devanlay reintroduced it in 1994, and it has been successfully rejuvenated. Mergers and acquisitions have had both good and bad results relative to trademarks.

Technological Obsolescence

We are familiar with this concept because it increasingly affects our lives. We read that the chip manufacturers have several generations of integrated circuits under development simultaneously, in order to shorten their time to market. The computer we are working on therefore grows obsolete by the minute. What of the trademarks that go with these technologically decaying products? It all depends on what we mean by "go with." As with genericity, the trademark owner faces a two-edged sword. After striving to have a trademark inextricably linked with a particular product or service so that its purchase occurs without thought, the owner can only watch helplessly as the trademark goes to oblivion with the technologically obsolete product. Of course, some trademarks are associated with products or services that can gracefully slide from technology to technology and they do the same. Some trademarks are positioned so that they can even move across rather wide technology gaps, and these are the ones that seem to live on and on. The IBM trademark has successfully bridged the technology gap from punched card processing to notebook (its THINKPAD) computers. Will the THINKPAD trademark be able to endure

as long? Its product focus is narrower: perhaps notebook computers will evolve into hand-held devices into which we speak, and that trademark will no longer be appropriate and will not be able to bridge this gap. Time will tell. Trademark versatility is important to longevity.

Product Obsolescence

A product may simply go out of use or diminish in importance to the extent that a trademark associated with it disappears as well. In the late 1940s and 1950s, an automatic transmission in an automobile was uncommon, and associated with "top of the line" models and marques. The transmissions themselves were given trademarks, such as General Motors' HYDRA-MATIC and POWERGLIDE units. The virtues of these transmissions were touted in advertisements, and a chrome-plated medallion adorned the fender or trunk of every car so equipped. Now, automatic transmissions are standard equipment (and they are probably all made by two or three manufacturers for all the cars), and many younger readers probably do not even recognize the term "automatic transmission." It is no longer a value-added feature, and so a trademark is not beneficial.

Consumer products such as foods, beverages, and personal care products are suffering attrition as never before. Bar coding and computer analysis of sales and inventory turnover subjects every store brand to the spotlight. Stores themselves are no longer expanding to accommodate the proliferation of brands. With space at a premium, only the strongest survive.

Culture Obsolescence

Several years ago there was controversy over the sale of CRAZY HORSE malt liquor in several states. A leader of the Oglala Sioux, Crazy Horse was opposed to drinking alcohol, and his descendants led the fight against the use of this trademark on beer. This is one of many such controversies over the use of Native American images and names as trademarks. The WASHINGTON REDSKINS professional football organization was involved in such a controversy, eventually resolved in court. This is an example of our increasing sensitivity to points of view as well as religious, ethnic, and gender-related issues. Trademarks must be catchy, trendy, bright, arresting, attractive, and versatile, yet politically neutral. This is not always easy.

Environmental and health issues may affect the longevity of trademarks. Labeling a can of paint as produced by the Acme Lead Company or a tin of tunafish as canned by Mercury Fish Co. would not be a good idea, no matter how safe the contents. We don't wear watches with "radium dials" anymore, either, even though the necessary fluorescence may not have been produced by radium anyway.

Today, a trademark *must* have internationality. That is, it must be at home in all the world's languages, because the market is without national boundaries. It must also be in tune with the world's cultures and customs, or at least not be in conflict with them. When a trademark has some characteristic that is counter to our changing cultural mores, or becomes caught in a controversy, its life may be in danger. If the owner cannot modify it to ameliorate its undesirable characteristics, or if the product or service with which it is inextricably identified simply "has to go," then it may have to be abandoned.

(e) TRADEMARK AND TECHNOLOGY SYMBIOSIS. In a previous paragraph we described the situation in which a trademark/technology symbiosis can lead to the demise of a mark tied to a dying technology. A trademark and technology (patented or not) that are combined in a product or service can also live together with mutual benefit. A strong

trademark can bring longevity to the relationship, even when the proprietary aspects of the technology have expired. The classic example is a pharmaceutical product. When the patent for such a product expires, it can be made and sold by anyone. If, however, the product has strong brand equity under a well-known trademark, the expected decline in the sales of the original developer may be significantly less than would otherwise be the case. The trademark introduces an "inertia" in the customer base and may slow their migration to a new, less-expensive generic substitute. This "trademark effect" could be illustrated graphically as shown in Exhibit 11.10.

(i) Copyrights. According to statute, copyrights have a very long economic life. In our experience, however, copyrighted works enjoy economic benefits for a much shorter period than their legal life, and most often these benefits are not distributed evenly over that shorter life. There is such a variety of copyrighted works that making statements that will apply across the board is impossible. Economic life is dependent on the type of work and the manner in which it can be exploited.

Our experience with copyrights of reference books, for example, has indicated that sales reach their height about 1 to 2 years after publication and decline thereafter. This is the product life cycle pattern referred to earlier, with a sharper growth period, a short peak, and a gradual decline. A literary work also can remain in relative obscurity for some period, be discovered, and enjoy a rapid rise to popularity. The same can occur with musical works.

The authors were once involved in valuing a large library of copyrighted musical works. In it were standards that were 40 years old and still returning a steady stream of royalties to their owners. Other songs had enjoyed a brief, and sometimes meteoric, popularity and were earning very small royalty income. One song had been part of a motion picture score and had enjoyed some popularity when the motion picture was playing in theaters. It had fallen to a low earnings level when it was selected to be the background music in a radio and television commercial. The product advertised was very successful for over 20 years, and only now are the copyright royalties beginning to dwindle as the theme of advertising is being changed. Currently rock and roll songs and performers of the 1950s are enjoying new popularity, and there has been a resurgence of big band music of the 1940s.

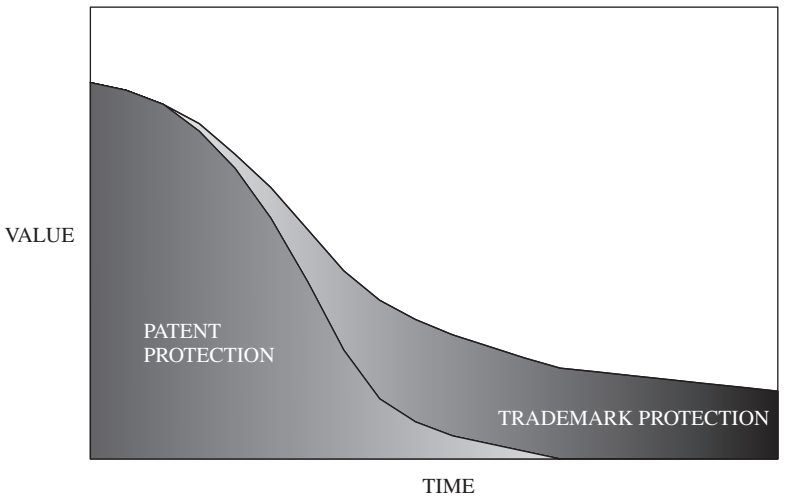


EXHIBIT 11.10 TECHNOLOGY/TRADEMARK ECONOMIC LIFE EXTENSION

These events are impossible to predict, of course, but a number of considerations have merit in estimating the potential economic life of copyrighted works:

- The breadth of exploitation is important. Cartoon characters, for example, have been widely exploited in greeting cards, on toys, as dolls, on clothing, and so on. It is common today for a story and characters in a book to be exploited in a wide variety of media as well as ancillary products. At the time of writing, Harry Potter is a current rage, while Barney the purple dinosaur seems to have faded from prominence.
- As with other intellectual property, versatility is very important; it broadens the opportunities for exploitation.
- "Timelessness" is important. The classic motion pictures of Walt Disney and the books of Theodore Geisel ("Dr. Seuss") are delighting new generations of children.

(ii) Computer Software. In estimating the economic life of software, one can return from the pleasant but indefinite world of *Snow White* to somewhat firmer ground. If the software in question is itself a product, then some of the considerations discussed above are applicable. One must look through to the end purchaser/user and ask a number of questions:

- Is the application somewhat narrow, such as an accounting system for a dental practice, or is it broad, such as a spreadsheet or word-processing system? (Here again, versatility and a diverse market are important.)
- Is the system tied to a particular brand of hardware? This is especially important in the personal computer market.
- Who is the competition? What is their size and expertise?
- Have generations of this type of software been on the market and gone?
- What changes are going on in the business of the end users?
- Is the software dependent on a particular operating system? If so, what is its degree of obsolescence?

For software that is in use within a business and that may have been designed especially for it, some of the above questions apply. In addition, there are other questions:

- Are the end users (operating departments within the company, in this case) satisfied with what the software produces?
- How old is the system? Was it designed for some prior hardware and operating in an emulation mode?
- Is the software efficient to use, in terms of processing speed, effective use of storage, and ease of data input?

These questions really are directed at measuring the degree of functional obsolescence in the software. The more functional obsolescence that is present, the shorter the economic life. Software for specific, ad hoc projects can have a life as short as one year, while core tasks can be addressed by software that lasts 10 or 12 years with very little change.

(iii) Right of Publicity. Can there be any quantifiable economic life associated with the right of publicity? Yes, but it is difficult to measure. First, everyone has the right of publicity, but it has value only in rare cases. Of some assistance in the estimation of economic

life is the fact that there must be some economic substance to the right. That is, the right must be exploitable. What are the factors to consider in estimating economic life?

- The expected life span of the personality. This is not completely limiting, but the economic benefits of exploitation diminish after death.
- The lifestyle of the personality. Some very well-known people have become reclusive, thus diminishing, by their own choice, the potential for exploitation.
- The arena in which the personality achieved fame or notoriety. Careers and recognition periods vary in show business, politics, sports, being involved in a noteworthy event, and even criminality.

CHAPTER 12

INCOME APPROACH—EVALUATING THE RISK OF RECEIVING THE ECONOMIC BENEFIT AND PUTTING IT ALL TOGETHER

12.1 MARKET VALUE EQUALS THE PRESENT VALUE OF THE FUTURE ECONOMIC BENEFITS OF OWNERSHIP

This section is focused on the third ingredient of the income approach: the risk associated with realizing the estimated amount of economic benefit in the expected pattern. Ultimately, whatever we conclude about this risk must be expressed as a percentage. This percentage is either a *capitalization rate* or a *discount rate*. These rates come from the marketplace, because it is in the marketplace that knowledgeable buyers and sellers are making decisions about the price to pay or the price to accept for investments with various characteristics. If we can find out enough about these transactions, we can derive the inherent capitalization or discount rates that the buyers have agreed upon. The marketplace that most often comes to mind is the stock market, but the process can apply to any market that has enough activity to study. If, based on our analysis, the market investments that we locate share similar risk with the property involved in our virtual valuation transaction, then we have an indication about an appropriate capitalization or discount rate.

(a) CAPITALIZATION. The simplest method (arithmetically) for calculating present value is to divide "normalized" income by a capitalization rate:

$$\text{Present Value} = \frac{\text{Normalized Income}}{\text{Capitalization Rate}}$$

Since this method assumes that the income will be received into perpetuity, one attempts to estimate, in the normalization process, what a reasonable income expectation will be for each future period, considering that time span.

A slightly more complex calculation assumes that the normalized income will grow in the future at some constant rate:

$$\text{Present Value} = \frac{\text{Normalized Income}}{(\text{Capitalization Rate} - \text{Growth Rate})}$$

Because these techniques assume either a steady-state income or a steadily growing income stream, they are typically not appropriate for the valuation of intangible assets or intellectual property. As we have repeatedly pointed out in previous chapters, the myriad

of factors affecting the economic exploitation of these assets makes it very unlikely that their income-producing capability will assume such a placid form. The following discussion of the income approach will therefore not refer to direct capitalization methods.

(b) DISCOUNTED FUTURE INCOME. Because cash flows from intangible assets or intellectual property are expected to vary, up or down, by differing amounts, a discounted future income, or discounted cash flow (DCF) method is commonly used to calculate present value:

$$\text{Present Value} = \frac{CF1}{(1+i)} + \frac{CF2}{(1+i)^2} + \frac{CF3}{(1+i)^3} + \cdots$$

Where: CF = Net cash flow during each successive

i = Required rate of return on the property, or *Discount Rate*

If we wish to carry this calculation beyond the discrete periods and anticipate that, at some future time, the cash flow will stabilize or grow at a constant rate, we can add a *reversion* to the calculation:

$$\text{Present Value} = \frac{CF1}{(1+i)} + \frac{CF2}{(1+i)^2} + \frac{CF3}{(1+i)^3} + \cdots + \frac{TV_t}{(1+i)^t}$$

Where: TV_t = terminal value at time $t = \dfrac{CF \text{ at } t+1}{(1-g)}$

g = growth rate

The so-called reversion is simply normalized income capitalized into perpetuity as explained earlier, but brought back to present value because it represents a future value.

(c) DISCOUNT RATE. This valuation component measures the compensation of the investor for the commitment of capital. A capital commitment causes an investor to give up other investment opportunities and assume the risks associated with a particular investment. The discount rate is affected by many factors, including inflation, liquidity, real interest rates, and measures of relative risk.

A detailed discussion about rates of return appears in Appendix A and a more detailed discussion of risk is presented in Chapter 21. A general overview of this topic is presented here.

(d) INFLATION. Inflation can diminish the purchasing power of the future economic benefits that are achieved. The discount rate used must include assumptions about inflation to compensate for this loss of purchasing power. High inflationary expectations require a correspondingly higher rate of return to compensate for the negative effects on the purchasing power of the expected cash flow.

(e) LIQUIDITY. Liquidity is another risk that must be considered. Liquidity represents the relative difficulty with which an investment can be quickly converted into cash. Many financial securities can be traded on active public exchanges for cash at any time. Intellectual property investments, especially those during embryonic development, do not possess this strong characteristic of investment liquidity. Additional return to the investor is warranted and should be reflected in the discount rate when liquidity is lacking.

(f) REAL INTEREST. Real interest represents the component of return on investment associated with sacrificing use of the invested funds. It is the reward for deferring consumption in favor of investment. In its pure form and in a risk-free environment, the real interest rate has been shown to be about 3%. The typically higher rates that are paid by investments reflect compensation for the risk elements that are introduced by inflation, illiquidity, and risk premiums.

(g) RISK PREMIUM. Risk premium is the added amount of return that investors demand for the assumption of risk in excess of real interest in a risk-free investment when there is the possibility of loss and/or an unanticipated variability in earnings. The amount of risk premium varies according to the type of property and the industry. An element of risk already discussed is the likelihood of competitive technologies that could make the owned property obsolete. Computer software products are an example of intellectual property that quickly lose out to improved and more powerful products within very short periods. Compensation for this risk requires a premium.

Another consideration in determining a risk premium concerns the versatility of the intellectual property. Property that can be redeployed easily to other business activities reduces the negative impact if the initial concept should fail. Property that cannot be redeployed elsewhere may become completely valueless with the total loss of original investment. The income approach for valuation is based on the concept that a dollar to be received in the future is worth less than a dollar currently held.

A high discount rate reflects a high risk involved in receiving the future dollars. The current value of risky future dollars is therefore lower as the discount gets higher. If the risk of receiving the future dollars is low, then the dollars are worth more. A high discount rate is associated with risky investments. The higher the discount rate, the lower the present value of the future cash flow. As the discount rate (the required rate of return) decreases, the indicated value of the underlying property increases. In Chapter 4, we discussed the relationship between relative risk and discount rate and illustrated the monetary effect of differing discount rates. The reader should make sure that these principles are understood, because the income approach requires us to make a decision about a discount rate based on an evaluation of subjective risk factors.

A proper perception of risk is needed when considering the development or acquisition of intellectual property. If too high a perception of risk is used, then a low value will result. This may result in a decision to forgo development or pass by an acquisition. A competitor with a clearer perception of risk then may be able to obtain an advantage by developing or acquiring the intellectual property. Too often we see the opposite side of this situation. The amount of investment risk is not judged properly, and a lower required rate of return is used in the discounting process. The resulting value is very high. In the case of an acquisition, the euphoria of capturing the acquisition target is quickly followed by reality. Ultimately investment at a substantial loss follows. In general, analysis of the financial securities marketplace can serve as a starting point. By looking at the rates of return that investors require from various industry investments, each having its own unique risk factors, an appropriate rate can be determined comparatively. For emerging technology, the analysis should concentrate on the return requirements of professional venture capitalists. Thus the present value of the future net cash flow indicates the value of intellectual property when an appropriate discount rate is used to reflect the risk of the investment. The net cash flow that is discounted must reflect the direct economic contribution of the intellectual property.

Selecting a discount rate is making a statement about the risk that is perceived to be associated with the economic benefits. Only the interest payments due from U.S. Treasury securities are assured. Almost all other forms of economic income have risk. Some of the typical risks associated with the realization of economic benefit involve the following questions:

- Will it grow to the level that is expected?
- Will it last as long as expected?
- Will it be more volatile than expected?
- Does it require large increments of investment?
- Will it stop sooner than is anticipated?
- Will it start later than expected?

New technology can provide significant economic benefits. New technology also has many opportunities to be derailed. Customers ultimately may reject the new technology. Competitors may invent something better—sometimes much better. The original mainframe computer business of IBM was severely challenged by the introduction of powerful personal computers. Instead of continuing to sell more mainframes forever, IBM was shocked into altering its strategy. The expectation that mainframe computers would grow forever was ambushed.

For trademarks, significant risks also exist. Customers may tire of the image that is part of the trademark. A new chic trademark may be introduced that eclipses the established name. Saturation of the market is also possible. For a while, Nike was the favored sports shoe. Its advertisements dominated all forms of media. The marketing department at Nike did a good job—too good. Eventually Nike products became ubiquitous. Nothing about owning Nike products remained special. As a result, the growth of earnings that Nike had come to expect stalled.

(i) Will It Grow to the Expected Level? When someone expects that the exploitation of intellectual property will generate $100 million in annual earnings, a significant value can be associated with such property. But if this level of earnings is never achieved, the value of the property is impacted directly. This idea is simple. All other things being equal, investors pay more for a larger stream of earnings. When the amount of earnings that will be enjoyed is in doubt, risk is higher.

(ii) Will It Last as Long as Expected? Suppose the anticipated $100 million of annual earnings is expected to begin in two years and run for 10 more years. The underlying property has a value based on this expectation. If competition or some failure of the intellectual property cuts short the earnings stream, value suffers.

(iii) Will It Be More Volatile Than Expected? Volatility of earnings injects uncertainty, and uncertainty increases risk, so a more volatile earnings stream is riskier than a steady one.

(iv) Does It Require Large Increments of Investment? We must always remember that the earnings that drive value are *net*. That is, they represent sales revenue, reduced by expenses, *reduced by capital investment*. Capital investment is nearly always required in the exploitation of intellectual property—we cannot avoid that—but we tend to be much happier when that investment is required in small amounts, over time. The reason is that we can make these investment decisions in the light of the development progress (or lack

thereof) of the intellectual property. If progress lags or stops, we can cease the capital investment and reduce losses. If we must invest in large "lumps," we lose this advantage and the risk of the exploitation increases.

(v) Will It Stop Sooner Than Anticipated? Suppose the expected $100 million of annual earnings is expected to last for 10 years. The underlying property has a value based on this expectation. The value of the property can significantly change if the earnings last for a shorter period. The value also is impacted where the annual earnings still last for 10 years but at a declining level, possibly ending the 10-year period at half the expectations. When the duration of earnings is in question, risk is higher.

(vi) Will It Start Later Than Expected? The value can change significantly if the enjoyment of the same $100 million of annual earnings is delayed. Suppose the income does not begin until year 4. The time value of money counts dollars received farther out in time at less than those received sooner. When the timing of earnings is in question, risk is higher.

The valuation of intellectual property is impacted by the typical measures of risk previously discussed. In addition, technology and trademarks possess unique elements of risk that should be reflected in the discount rate used to calculate present value.

Appendix A more fully discusses the risk and return dynamics of selecting a discount rate for valuing intellectual property.

12.2 INCOME APPROACH—PUTTING IT ALL TOGETHER

(a) MARKET VALUE EQUALS THE PRESENT VALUE OF THE FUTURE ECONOMIC BENEFITS OF OWNERSHIP. The previous sections of this chapter have discussed how to estimate the economic benefit that might be realized from an exploitation of intellectual property, how to consider the pattern by which that economic benefit might be realized, and how to evaluate the risks of realization. This section looks at the arithmetic necessary to distill those elements into a numeric present value.

(b) BASIC DISCOUNTED CASH FLOW CALCULATION. This is the pervading tool in the income approach. No matter how complex the permutations may get, the underlying objective is to calculate the present value of some future economic benefit, so an understanding of the DCF technique is essential. Some may contend that this is too simplistic an approach, and the reader may, at first blush, tend to agree because the basic arithmetic is very straightforward. As we have written and said, "The arithmetic is simple, it's the inputs that are difficult. . . ." That is why most of the discussion in this chapter concerns the inputs.

To begin this discussion, we present a basic DCF valuation of a business enterprise, illustrated on Exhibit 12.1. Keep in mind that this calculation could be for an entire business, a subsidiary, a division, a product line, or a product. The input numbers would come from a disaggregation, as explained earlier. Exhibit 12.1 indicates that this enterprise has a present value (market value) of $82,975. That is the market value of all of the underlying assets of the business—monetary, tangible, and intangible.

	2005	2006	2007	2008	2009	2010	2011	2012
Sales	$26,500	$29,150	$32,065	$35,272	$38,799	$42,679	$46,946	$51,641
Cost of Sales	10,653	11,718	12,890	14,179	15,597	17,156	18,872	20,759
Gross Profit	15,847	17,432	19,175	21,093	23,202	25,523	28,074	30,882
Selling Expenses	3,975	4,373	4,810	5,291	5,820	6,402	7,042	7,746
General & Administrative Expenses	1,855	2,041	2,245	2,469	2,716	2,987	3,286	3,615
Depreciation	1,100	990	891	802	722	650	585	526
Interest Expenses	-	-	-	-	-	-	-	-
Operating Income	8,917	10,028	11,229	12,531	13,944	15,484	17,161	18,995
Income Taxes	3,567	4,011	4,492	5,012	5,578	6,194	6,864	7,598
Net Income	5,350	6,017	6,737	7,519	8,366	9,290	10,297	11,397
Plus: Depreciation	1,100	990	891	802	722	650	585	526
Less: Working Capital Additions	157	177	194	214	235	259	285	313
Less: Capital Expenditures	98	50	50	-	-	225	400	526
Net Cash Flow	$ 6,195	$ 6,780	$ 7,384	$ 8,107	$ 8,853	$ 9,456	$10,197	$11,084
Present Value of Net Cash Flow	5,802	5,570	5,322	5,125	4,910	4,600	4,351	47,295
TOTAL PRESENT VALUE	$82,975							

Note: Discount rate = 14%
One-half year convention used (i.e., year 1 discounted ½ year, year 2 discounted 1½ years, etc.)
Growth rate in the reversion = 3%

EXHIBIT 12.1 DISCOUNTED CASH FLOW VALUATION OF A BUSINESS ENTERPRISE

This is a fairly simple example, but a bit of thought can reveal the complexities within:

- There is a forecast of sales revenue that included a consideration of units to be sold, price changes, the general economy, and the possible effects of competition, among other things. Is the sales forecast dependent on the successful introduction of products based on new and untried technology?
- There is a forecast of operating expenses that embodies a consideration of future labor and material costs, manufacturing economies, advertising and marketing to support the sales forecast, and the like.
- The capital structure of this business is a factor—will borrowings create interest expense, for example?
- How will the growth of sales affect the need for monetary assets (working capital)?
- What investment in new tangible assets will be required to support the sales that are expected?
- How does the selected discount rate relate to the various forecasts? Have we built an ultraconservative forecast that accounts for most risk, or is it the other way around?

Our intention, in posing these thoughts and questions, is to point out that the inputs to the income approach, which are so critical to its outcome, are interrelated. Changing one underlying assumption may well have an effect on one or several others.

(c) DISCOUNTED CASH FLOW OF A SPECIFIC ECONOMIC BENEFIT. Very often, in the valuation of intellectual property or an intangible asset, we are dealing with a specific net cash flow stream, disaggregated from the corporate earnings stream.

Let us not forget, however, that the sum of the parts must be commensurate with the whole. The specific net cash flow stream must be reasonable in the light of the whole, as must the resultant market value.

Exhibit 12.2 provides an example of a DCF calculation for a specific asset. A reversion is included because we expect that the asset's economic benefit will continue beyond the initial forecast period.

The same caveats apply as noted earlier. The arithmetic is simple, but much must go into developing the data on which to operate.

(d) MULTIPLE SCENARIOS. It is important to consider the value of intellectual property from the viewpoint of current and potential exploitation. Areas in which the property can be used to enhance economic benefits that are not currently being pursued should be considered. Trademarks, as an example, have lately been extended far beyond their initial applications:

PIERRE CARDIN has placed his name on luggage, colognes, and electronic equipment.

BILL BLASS has extended his trademark to chocolates and special editions of Lincoln Continental automobiles.

EDDIE BAUER allows its name to be placed on special editions of a sport vehicle.

CADILLAC has its name on quality leather goods.

THE WALDORF ASTORIA has a line of china and household furnishings based on proprietary hotel designs.

TORO, the lawn mower manufacturer, sells customized in-ground lawn sprinkler systems.

Year	Expected Revenue	Contribution to Earnings	After-Tax Contribution	Present Value of After-Tax Contribution(1)
1	$10,000	$1,200	$ 720	$ 671
2	18,000	2,160	1,296	1,051
3	25,000	3,000	1,800	1,269
4	45,000	5,400	3,240	1,987
5	60,000	7,200	4,320	2,303
6	80,000	9,600	5,760	2,670
7	120,000	14,400	8,640	3,483
8	125,000	15,000	9,000	3,155
9	130,000	15,600	9,360	2,853
10	134,000	16,080	9,648	2,557
				$21,999

Note: (1) Discount rate = 15%, applied using half-year convention

	Reversion (2)		
11	$9,648 x 1.03 =	9,937	
	$9937 / (.15 – .03) =	82,812	$19,088
			$41,087

Note: (2) Assuming 3% annual growth rate

EXHIBIT 12.2 SIMPLE INTELLECTUAL PROPERTY VALUATION BY THE INCOME APPROACH

HONDA sells lawn mowers too.

SONY has its name on a record label.

DR. SEUSS has placed its characters on a line of children's clothing and within a theme park.

TAYLOR MADE has introduced a line of golf balls.

When using the income approach to value intellectual property, the cash flow expectations should address possible extensions and the associated risks. The present value of the economic benefits associated with possible extensions of the intellectual property can be incorporated directly into the present value analysis. The possible extensions could be within the same industry or into completely new areas of the economy. Each area of possible application has its own market potential, contribution margin, and risk level. Consequently, the present value calculation must incorporate the appropriate components for each application. An analysis of intellectual property with extension potential usually derives the value of the property from the economic benefits flowing from three areas: (1) established applications, (2) logical extensions, and (3) speculative extensions.

(i) Established Applications. Applications in which the intellectual property has been proven to be commercially successful are considered established applications. Some of the characteristics that signal success include sustained profits derived from the business with which the property is associated and an established level of market share. If the

environment is competitive, the contribution margin derived from the intellectual property may be constrained from expansion, and further market share increases may be difficult. Usually this is the situation that exists when exploration begins for extension of the property. For example, consider a well-established trademark that is associated with high-quality golf clubs. The brand is well positioned and highly regarded in the high end of the market. Individuals with significant amounts of discretionary income are attracted to the equipment, and the brand has a dominant share of the high-end market. Since the industry is competitive, capturing a larger percentage of the market may be difficult, and increased profits from price increases may be harmful to maintaining the market share; trademark recognition and brand loyalty have their limits. At this point, the opportunity for extension of the trademark may begin.

(ii) Logical Extensions. Ancillary products within the same industry that are not currently associated with the established intellectual property can be considered logical extensions. A trademark can be extended to products or services by using the established name. Recognition and brand loyalty of customers can be used to attract attention to the new application. This can be especially successful when the name is being associated with a product or service that previously did not have strong brand name associations. The example of the golf club trademark could be extended to include golf clothes, golf bags, and possibly other sports equipment, such as tennis racquets or skis. A logical extension usually means that the intellectual property is applied to products or services that are directly related to the established application.

(iii) Speculative Extensions. Speculation is often regarded as an educated gamble when the opportunity for substantial economic benefits is present, with the acceptance of substantial amounts of risk. Direct relationships between established applications and logical extensions are most likely to be easy to visualize. The extension to speculative products or services may not be clear; it may be into an entirely different business or industry.

The extension of the highly regarded golf club brand name beyond sports equipment into speculative ventures might include:

Association of the name with a resort hotel that features golf clinics and personal instruction

Use of the name to establish a network of restaurants that are located at vacation resorts

Use of the name to promote a new brand of scotch whiskey, beer, or soft drink

Film rights represent a form of intellectual property possessing many opportunities for exploitation. The established application for a film right is the presentation of the film in theaters nationwide. The extensions are categorized as follows:

FILM RIGHTS—LOGICAL EXTENSIONS

- Videocassettes
- Sequels
- Broadcast television
- Cable television
- Audiocassettes and compact discs of the soundtrack
- T-shirts, hats, dolls, and other ancillary products

FILM RIGHTS—SPECULATIVE EXTENSIONS

- Theme parks
- Restaurants
- Adventure expeditions

Exhibit 12.3 presents the calculation of value for intellectual property with consideration of extension potential. The total value consists of three components: (1) established application, (2) logical extensions, and (3) speculative extensions.

The first component of value is the present value of economic benefits from established application of the property. The forecast after-tax contribution to earnings is expected to grow at a relatively slow pace. Competitive pressures make increases in market share impossible and also constrain the amount of price increases possible. The contribution margin was derived from an analysis of the enhanced profits that the business enjoys due to either a strong trademark or superior process technology. The established nature of the intellectual property application makes realization of the forecast economic benefits a conservative investment, and the relatively low discount rate reflects this perception of risk. The present value of the forecast economic benefits from the established application is calculated to be $22 million.

The second component of value is the present value of the economic benefits that are expected to be derived from logical extensions of the product. Forecast contributions are not expected to be immediate, and they will not begin until year 2. Rapid growth is expected until a stabilized share of the new market is gained. The discount rate of 20% represents a higher perception of risk than that associated with the established application. Since the logical extension is a new application of the intellectual property, a track record of success is not historically proven. Acceptance by consumers is not guaranteed, and the amount of forecast sales may fall short or not materialize at all. The reaction of competitors in the market in which extension is contemplated should not be underestimated. The present value of the forecast economic benefits from the logical extension of the intellectual property is shown as $8.2 million.

Established Applications		Logical Extensions		Speculative Extensions		
After-Tax Contribution	Present Value of After-Tax Contribution 15%	After-Tax Contribution	Present Value of After-Tax Contribution 20%	After-Tax Contribution	Present Value of After-Tax Contribution 30%	TOTAL PRESENT VALUE
$ 720	$ 671	$ –	$ –	$ –	$ –	$ 671
1,296	1,051	648	493	–	–	1,544
1,800	1,269	900	571	540	280	2,120
3,240	1,987	1,620	856	972	388	3,231
4,320	2,303	2,160	951	1,296	398	3,652
5,760	2,670	2,880	1,057	1,728	408	4,135
8,640	3,483	4,320	1,321	2,592	471	5,275
9,000	3,155	4,500	1,146	2,700	377	4,678
9,360	2,853	4,680	994	2,808	302	4,149
9,648	2,557	4,824	853	2,894	239	3,649
	$21,999		$8,242		$2,863	$33,104

EXHIBIT 12.3 COMBINING THE PRESENT VALUE OF VARIOUS-RISK EXPLOITATIONS

The third and final component of value for the intellectual property is derived from speculative extension. Earnings contributions are not forecast to be significant until year 3. The risk of loss is great when speculative extensions are considered, and the discount rate must reflect this fact.

In the example, a rate of return typically required by venture capitalists considering speculative enterprises is used. While the potential economic benefits are great, so is the potential for complete failure. As a result, the present value of the future economic benefits associated with the speculative extension is shown as $2.9 million. The grand total of the present values derived from the three applications of the intellectual property is $33 million. Each potential application of the intellectual property is associated with specific elements of forecast sales, contribution margins, and risk.

It is useful to consider the possibility of multiple DCF calculations in order to:

- Observe high-range and low-range present values
- Observe the sensitivity of present value to various inputs
- Introduce various scenarios for later combination

(iv) Decision Trees. Decision trees are schematics of future events in which each node represents a decision point with which a probability can be associated. It can be a useful exercise even if it does not directly produce a valuation, because it forces one to logically examine the possibilities *and* the probabilities. Decision trees tend to call attention to those points at which a commercialization effort might be abandoned in the case of downside events, and also to the upside potential of value if everything goes very well.

(e) MONTE CARLO TECHNIQUES. This is the most sophisticated of multiple scenario techniques. Supported by massive computer calculations, we can perform hundreds or even thousands of DCF calculations. Using Exhibit 12.1 as an example, we would, for each line item such as "Sales," provide the system with an estimate of the upper and lower limits possible (highest and lowest levels of sales reasonably imaginable) and an estimate of the distribution of sales within those limits. The Monte Carlo system then calculates present values for every one of thousands of combinations and provides us with the distribution of the results. We can observe the mean, median, average, standard deviation, and distribution in graphic form for each one of the results.

CHAPTER 13

WHEN THEORY MEETS PRACTICE

In Chapters 8 through 12 we presented extensive discussions of the methods available for valuing intangible assets and intellectual property. We discussed the cost, market, and income approaches and the information ingredients required for their application. In this chapter we highlight some of the challenges that arise when these theories are applied in the real world. We examine some of the more difficult problems, point out common valuation errors, and suggest some possible solutions.

13.1 VALUATION CHALLENGES

(a) REFINING THE ALLOCATION OF ECONOMIC CONTRIBUTION. Allocation of total business enterprise return among the asset groups composing a business ensures that many important factors are addressed as part of the valuation. The allocation process presented earlier in this book ensures that the valuation of a specific intellectual property or intangible asset credits complementary assets for their contribution to enterprise profits. The allocation process also accounts for variations of investment risk among the assets composing an enterprise. The process previously discussed allocates economic contributions to monetary and tangible assets, intangible assets, and intellectual property. When the analysis is conducted for a product line, the economic contribution attributed to the intellectual property of the product line can be associated with the defining characteristic of the product line. In some cases, the defining intellectual property is a patented feature or patented manufacturing process. In other cases, a trademark is the defining feature. What happens when the product line is defined by a combination of different intellectual properties?

Sometimes a product line is defined by both a trademark and a patent. In these cases, the economic contribution attributed to the intellectual property asset category must be subdivided. Suppose, for example, the following economic contribution analysis was accomplished for a new product line of One Product Company, Inc., using the weighted average cost of capital allocation process presented in Chapter 4.

Exhibit 13.1 shows that the intellectual property of Advanced Product Line contributes earnings at 7.5% of sales. Suppose the defining characteristics of the product line are a combination of patented features and a well-regarded trademark. How should the 7.5% of sales be divided between the trademark and the patents?

One solution is to subtract a royalty rate considered appropriate for association with the patents or trademarks. Suppose that similar trademarks are licensed for 3% of sales (recalling our previously mentioned caveats about using industry norms and rules of thumb). Then 4.5% of sales would be attributed to the patents of Advanced Product Line. The problem with this method is that the 3% royalty rate likely does not fully reflect the total economic contribution enjoyed by One Product Company from the trademark.

Product Line Asset Category	Weighted Earnings Contribution	Contribution As % of Revenue
Monetary Assets	$ 100	0.750%
Tangible Assets	750	5.625%
Intangible Assets	150	1.125%
Intellectual Property	1,000	7.500%
Total Economic Benefit	$2,000	15.000%

EXHIBIT 13.1 ONE PRODUCT COMPANY, INC.—ADVANCED PRODUCT LINE

Remember, royalty rates represent a splitting of the economic benefits of licensed intellectual property between the licensee and the licensor. The 3% royalty rate is only part of the total economic benefit derived from the trademark, so following this methodology probably overstates the contribution of the patents.

A better way to divide the 7.5% of sales between the trademark and the patents is to find one or more companies similar to the subject business enterprise but lacking either patents or trademarks. Then allocate the total economic benefits for each of the peer group companies among their monetary, tangible, and intangible assets and intellectual property. If the peer group companies possess trademarks but not patents, then the amount of economic benefit allocated to the intellectual property of the peer group companies provides an indication of the trademark contribution. If such an analysis attributes 5% of sales to the trademark intellectual property of the peer group companies, this can serve as a proxy for the trademark economic contribution of Advanced Product Line of One Product Company. The economic contribution from the patents of the product line then would be 2.5% of sales.

This method more fully captures the economic contribution and value of each element of the trademark and patents. It requires that similar companies be identified and that their intellectual property be limited to either patents or trademarks. This method also requires that the limited intellectual property of the peer group be similar to that of the subject company.

(b) CORRELATING VALUE INDICATIONS. Only rarely are indications of market value for an intangible asset nearly the same when they are arrived at by application of cost, market, and income approaches. It is equally rare to have the market values of underlying assets fit nicely into the business enterprise value. Therefore, we are nearly always faced with reconciling indications of market value in order to reach a conclusion, and this is why the results of valuation calculations prior to this effort are called "indications" of value. The principles of the real estate appraisal world again apply:

> In actual practice, the assembly, analysis, and interpretation of data within the approaches seldom lead to this ideal situation [wherein all indicators yield the same result]. Consequently, a critical step in the appraisal process is a reconciliation of all value indications. This step brings together the facts and fits them into cause-and-effect relationships leading to a final conclusion of the defined value.
>
> Consideration of the relative merit of each value indication involves the appraiser in a review of each approach in respect to:
>
> 1. The reliability of data used
> 2. The applicability of the approach to the type of property being appraised
> 3. The applicability of the approach in the light of the definition of value sought

> Assuming the value sought is market value, this process of reconciliation would involve weighing each estimate in the light of its dependability as a reflection of the probable actions of users and investors in the market. The appraiser's final conclusion of value may coincide with one of the approach estimates, or it may reflect a weighting of the relative merits of each leading to a final conclusion at some adjusted figure. Use of an average would imply that all value indications are equally valid. Since this is seldom true, the use of an average fails to reflect a proper application of the appraiser's experience and judgement in reconciliation of the value indications.[1]

(c) VALUATION POINTS TO REMEMBER.

(i) Forecasts. Almost any valuation we can envision involves forecasting to some degree, and many have forecasts as their central underpinning. An appraisal is, after all, a judgment about the nature of a transaction that never took place and perhaps never will take place. Since investment decisions are forward-looking, the requirement for predictions is not surprising. We offer some comments on this subject:

- Forecasts should reflect "reasonably expectable" future events. Speculative exploitations of intellectual property are sometimes necessary to include, but these should be clearly set out.
- When history is no guide, or when there is no history, look for a surrogate situation that can serve as a logical guide. If forecasting the financial expectations for embryonic intellectual property, seek out the known performance of other intellectual property that had an embryonic start. Observing the ramp-up of AOL or Amazon.com can be useful for another Internet start-up, recognizing, of course, that they belong to a small number of successes and that the subject's future success is unknown.
- Predictions are time sensitive, based on economic and market conditions of a moment.
- When valuing property as of a historical date, we may find ourselves making forecasts as of a past date. These should be based on information that would have been available at that time, and some effort is necessary to eliminate 20-20 hindsight.

(ii) Investigation. The investigation phase of a valuation is critical to its success, and some aspects are unique to intellectual property analyses:

- It is very important to foster a cooperative relationship with the client. As we will discuss in a later section, the search for the economic benefit associated with intellectual property is difficult and sometimes far-ranging within a company.
- At times, tough questions must be asked. Intellectual property value expectations can be based on fond hopes, and the appraiser has to separate these from realistic expectations.
- It is essential to have a solid understanding of the rights being appraised. The range of rights encompassed in the ownership of intellectual property is great and the exploitation possibilities numerous. As an example, a U.S. trademark is registered for certain specific classes of products or services. One cannot assume that a trademark is valid for other classes and forecast potential economic benefit from uses for which the rights are not present.

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1. *The Appraisal of Real Estate*, seventh edition (Chicago: American Institute of Real Estate Appraisers, 1979), p. 506.

- The exploitation of intellectual property often requires the employment of complementary assets, and the appraisal investigation needs to include this possibility.
- Outside experts may be required to supplement particular areas of knowledge.

(iii) Cost Approach.

- Do not neglect to consider all of the sources of cost. As an example, the creation of computer software requires not only systems analysts and programmers but also the users of the ultimate software, who must develop its specifications and conduct tests.

(iv) Market Approach.

- Be sensitive to unusual conditions that might be present in transactions that might seem comparable.
- Be sensitive to the timing of transactions that might be thought to be comparable. Market forces change and can do so fairly rapidly. As an example, in recent years there has been unusual market activity in initial public offerings (IPOs). Investors or companies too small to go public have engaged in roll-ups, acquiring small companies in order to achieve the critical mass for an IPO. In some business segments, this activity has produced an overexuberant market. Perhaps in a year or two this market data may not apply.
- The range of potential exploitation possibilities for intellectual property makes it difficult to analyze market transactions—it may well render comparables not comparable.

(v) Income Approach.

- Obviously, from the discussion in the previous chapters, the linchpin of this approach is quantifying the economic benefit that reasonably can be expected from the intellectual property. The forecast income stream should include all reasonable exploitations that make sense from a business standpoint and that are permitted by the rights being appraised.
- In some instances it may be preferable to segregate income streams from different exploitations in order to reflect their particular characteristics and to observe the sensitivity in the overall value.
- Do not forget to include the return requirements of complementary assets required to make the forecast income stream come true.
- When using a royalty as a surrogate for the income attributable to an intellectual property, be aware of the caveats explained in subsequent chapters about using "market" or "industry standard" royalty rates. Also be aware that such royalty rates may represent a payment for only a portion of the total bundle of rights associated with intellectual property ownership and therefore may understate the income attributable to intellectual property.
- Make sure discount and capitalization rates are tax compatible with the income streams to which they are applied—use pretax rates for pretax income, and vice versa.

13.2 COMMON VALUATION ERRORS

Lately considerable attention has been focused on the valuation of brands. In response, new valuation methods have arisen, but not without fundamental flaws. The

following discussion focuses on trademark valuation methods and explores where they go astray, but some of the same traps exist when valuing patents, copyrights, and other intangible assets.

(a) GENERAL OBSERVATIONS. This text previously defined a brand as comprising several discrete assets including a trademark, its intellectual property protection, market position, trade dress, advertising themes, or other unusual features. This definition will be used in the following discussion.

(i) Determine the Property Rights Being Valued. The starting point in any valuation is to carefully define the property being appraised, requiring clear boundaries and an understanding of the rights included in—and excluded from—the valuation. This may seem like a trivial distinction, but it is not. Suppose you were informed that your house is worth $100,000. Does this refer to the house structure alone? The structure and land? What if you own 50 acres of land? Does the value include all the land, or just what would be a typical yard? Was the remaining land valued as a farm or as a potential housing development? Without the answer to these questions, you have no clear definition as to what $100,000 means, and that undefined appraisal opinion would be of no use to you or anyone else.

All too often, the concept of a brand is just as vague. The essence of a brand is a trademark. Trademarks are one type of intellectual property asset that is exploited as part of a business enterprise; that is, a trademark is one of the portfolio of assets that work together to produce a return on an investment in a business. Trademarks are working assets that have to be nurtured if they are to continue to contribute, and they have to pull their weight in concert with the other assets of the business. A product must be designed, tested, certified, produced, marketed, distributed, and supported. Other assets provide these aspects of production, so all are involved in the process. Within some businesses, trademarks are critical to earnings; in other businesses, they are incidental in terms of earnings contribution. Whatever the particular condition, one cannot become so enamored of a company's brands (or patents) that the other assets of the enterprise are ignored.

(ii) Premise of Value. Another very important criterion to establish at the beginning of a valuation is the premise of value. An expert in any field necessarily defines some conditions in more detail than a layman. It is not enough for a racing sailor to know that it is breezy. She needs to know that the wind is from the southeast, at 12 to 18 knots, with gusts to 25 knots. An accountant is not satisfied that a business is making lots of money. This must be defined. Is the reference to net income, pretax net income, cash flow, or what? Appraisers need to have a clear understanding of the valuation objective—is it to estimate market value? Replacement cost? Liquidation value? In the example of the private residence, we used the expression, "your house is worth $100,000." What does that mean? To insure? To sell at auction? To replace? It means nothing, unless it is properly defined.

(iii) Value in the Context of the Enterprise. Chapter 4 was devoted to a discussion of the relationship between a business enterprise and its underlying assets. The essential message is that there *is* a relationship and that, whether one is valuing the business, its underlying assets, or one asset, it is *important*. This concept is often ignored in the valuation of intangible

assets and intellectual property, but, for some reason, it seems to be absent more often in the valuation of trademarks or brands. Perhaps this is because trademarks, unlike patents or trade secrets, are more "artful" and less technical. Whatever the reason, it is a recurring problem. The following paragraphs illustrate this point.

Some years ago a feature article in a national financial magazine attempted to develop and report the market values of some large company brands. One of these was the COCA-COLA brand, which was given a value of $24.4 billion. The article did not specify whether that was for CLASSIC COCA-COLA, DIET COCA-COLA, CAFFEINE-FREE COCA-COLA, or all of them. Presumably, it did not include such other Coca-Cola Company brands as SPRITE, TAB, FANTA, MINUTE MAID, or FRESCA, but that was unclear. This vagueness about the property valued is typical, as was the writers' focus on extremely popular consumer goods companies wherein the nature of the business requires relatively low investment in tangible and monetary assets. Yet product profitability leads the securities markets to price such an enterprise at a high level. The market value of The Coca-Cola Company was (as of September 1, 1992—the time the article was published) $58 billion. The monetary and tangible assets were worth about $6 billion. Therefore, the intangible assets and intellectual property of the enterprise had a market value of approximately $52 billion. The Coca-Cola Company obviously had a wealth of intangible assets and intellectual property. If one wanted to opine on the value of only one of these assets, the $52 billion doorway is wide indeed. But what about the value of the other brands and assets that also constitute this $52 billion? We have no idea whether the article's author even knew about the $58 billion enterprise value or the $52 billion intangible value while concluding $24.4 billion for the COCA-COLA brand. To be credible, a trademark valuation conclusion must withstand testing and be applicable in any business situation and to any type of business, and it must be commensurate with the values of the other enterprise assets.

Another example from the same magazine article cited the value of the BARBIE dolls and accessories brand at $2,217 million. First, consider what the marketplace told us about the value that investors placed on the entire Mattel, Inc. enterprise (owner of the BARBIE brand):

$$\begin{aligned}\text{Business enterprise value} &= \text{Market value of equity} + \text{long-term debt}\\ \text{Mattel BEV} &= (95 \text{ million shares} \times \$21.38) + \text{long-term debt}\\ &= \$2{,}031 \text{ million} + \$185 \text{ million}\\ &= \$2{,}216 \text{ million}\end{aligned}$$

In the opinion of investors in early September 1992, therefore, the market value of the Mattel business enterprise was $2,216 million. Deducting the estimated value of monetary and tangible assets from the value of the business enterprise indicates the following (see Exhibit 13.2).

Mattel, Inc. Business Enterprise Market Value	$2,216
Less:	
Monetary Assets	309
Tangible Assets	284
Allocable to Intangibles	$1,623

EXHIBIT 13.2 MATTEL, INC. ALLOCATION OF MARKET VALUE

Were the authors of this article really telling us that the BARBIE brand is worth more than the whole Mattell business? This abnormal value relationship is a rare possibility, but only in the case where the subject asset (BARBIE brand) is seriously underutilized by its owner and would have a higher value if it were removed from the business. We do not think that was the case. The magazine's conclusion also implied that all of the other Mattel brands and intangible assets were worthless. We do not think that was the case either.

The appraisers in this example neglected to consider that the sum of the parts must be commensurate with the whole. While this event is dated, it represents a classic example of ignoring this principle.

(iv) Scoring and Rating Techniques. Another methodology for trademark valuation uses a scoring technique to position one's subject trademark within a range of price/earnings ratios (P/E), rating the mark in terms of its characteristics such as leadership, stability, market, internationality, trend, support and protection. The subject trademark's score is used to position its P/E at, above, or below the average P/E of its industry. That P/E is multiplied by the earnings assigned to the trademark, and the result is taken as the trademark value. For these results to be at all comforting, the valuer or the user must have confidence that the factors that drive low P/Es are those that identify low scores in the system, and vice versa. If something unrelated to trademark value is driving the P/Es, then comfort disappears. While this method also ignores the value of the enterprise and other assets within it, at least it is based, in part, on the earnings attributable to the subject trademark.

A royalty rate analysis technique that we have observed is based on the use of scoring or rating criteria that are used to quantify the qualitative difference between the trademark being studied and trademarks that have been licensed, and for which the royalty rate is known. This technique gives an aura of academic precision to an otherwise subjective process.

In this method, a search is made for licenses of comparable trademarks (assume the range is from 4 to 8%). The subject mark is then rated on the same sort of criteria noted in the preceding paragraph, and a score between 0 and 100 is aggregated. If the score is, as an example, 82, then the appropriate royalty rate for the subject trademark is concluded to be 7.3% ($8\% - 4\% = 4\% \times .82 = 3.3\% + 4\% = 7.3\%$).

The accuracy of this method is of course dependent on whether the 4% royalty rates were all for trademarks that would score zero on our scale and whether all of the 8% trademarks would have received a score of 100 on our scale. This is the Achilles' heel of this method. For a system such as this to work, we must know whether the high and low royalties from the marketplace are driven by the criteria in the scoring system. Or are they driven by completely unrelated factors? It is essential that we know whether the low and high royalty rates we extract from market transactions comport with the low and high scores in our rating system. Only then can we have any confidence that our technique for placing the subject property inside a range of market rates makes any sense.

The most obvious problem with such scoring systems is that their conclusions are doomed to be within the range of other transactions (e.g., P/E ratios or royalty rates) that we happen to know about. The facts of the case should control the conclusion. The technique should not consign us to a specific and finite range.

(b) SUBTRACTION APPROACHES. Another valuation technique involves subtracting some sort of benchmark value or income from that of the subject company in order to estimate the amount of income or value attributable to a trademark or patent. Some

might term this a permutation of the excess earnings approach. In theory, it is a sound method. In practice, it may be difficult to apply, especially when the benchmark is taken from other companies in the marketplace.

As an example, suppose we are trying to value the trademark of a company and we have valued the company at $10 million. If we value a comparable company that has no trademark at $8 million, then we can conclude that the trademark has a value of $2 million. Or, if our subject company generates debt-free cash flow of $1.2 million annually, and a comparable company, with no trademark generates $1 million, we can capitalize the difference, say at 10%, and conclude a value for the trademark of $2 million ($200,000/.10). On the surface, the theory seems fine. But where do we find a comparable company with no trademark? To make this work, we need a company that has the same mix of monetary, tangible, and intangible assets as our subject and that also lacks the one asset that the subject has—the trademark. Finding such a company for some industries is not always easy. Even generic products may have important intangible assets associated with them (i.e., a long-term contract to supply a retailer with house-branded products, distributor networks, and supplier relationships). If the benchmark is faulty, then the residual income and value are faulty as well. Taking this a step further, suppose our search reveals a comparable company with no trademark whose value and cash flow are the same as or more than our subject's. Does this mean that the trademark of our subject has no value? The earnings of our subject might be less than otherwise (or those of the comparable might be more) for a host of reasons unrelated to the relative contribution of the trademark.

13.3 VALUATION METHOD PREFERENCES

All of the intellectual property and intangible assets discussed in this book lend themselves to the use of different valuation methods. Exhibit 13.3 summarizes for various

	PRIMARY	SECONDARY	WEAK
Patents and Technology	Income	Market	Cost
Trademarks and Brands	Income	Market	Cost
Copyrights	Income	Market	Cost
Assembled Workforce	Cost	Income	Market
Management Information Software	Cost	Market	Income
Product Software	Income	Market	Cost
Distribution Network	Cost	Income	Market
Core Deposits	Income	Market	Cost
Customer Relationships	Cost	Income	Market
Franchise Rights	Income	Market	Cost
Corporate Practices and Procedures	Cost	Income	Market
Elements of a Going Concern	Cost	Income	Market
Goodwill	Market*	Income**	

* Residual based on enterprise marketvalue
** Capitalization of "excess" income

EXHIBIT 13.3 VALUATION METHOD PREFERENCES

assets the order in which the income, cost, and market approaches are preferred. Primary methods are those that are expected to provide the most credible results for a particular asset. Secondary methods are those that might work well but probably have deficiencies. Often they may be useful for testing and supporting indications of value derived from using the primary method. Weak approaches are those that would be expected to yield the least credible indications of value for particular assets unless special circumstances exist. This summary should be looked on as providing general guidance. Circumstances may exist in which the most credible answers may be derived by methods contrary to the method preferences indicated.

(a) PATENTS AND TECHNOLOGY. Patented intellectual property often is valued by capitalizing an isolated stream of economic contributions specifically attributed to the subject patent. Research and development (R&D) expenses typically should be eliminated from the expenses charged to the economic contribution of patented technology. Projected economic benefits from existing patents should not be burdened by current research expenses, because current R&D funding usually is associated with the creation of future patented technology and products. Current R&D efforts are not associated with patents already in existence but are instead associated with patents of the future.

Most likely, the sales and earnings associated with commercializing existing patents do not require significant R&D efforts. The R&D associated with existing patents that are being fully commercialized is completed. An allocation of current research expenses to an existing technology understates the earnings power of the existing technology. An exception occurs when extended commercial exploitation is contemplated that will require additional research to adapt the patented technology for other uses. In such a case the economic benefits associated with the patents should reflect the additional research costs required to complete the adaptation.

A market approach for patents and technology, as in all cases discussed in this chapter, has many aspects to commend it. Unfortunately, the data needed to implement a market approach are rarely available for patents and technology. The primary ingredients needed include:

- Transactions of similar property
- Exchange between unaffiliated entities
- Disclosure of pricing information
- Reasonable knowledge of all relevant facts known to the transacting parties
- Transacting parties uncompelled and willing to complete the transaction

A cost approach for patents and technology provides an indication of value by aggregating all of the costs necessary to recreate the property under study. In the case of patents and technology, these would include salary and benefits for research personnel along with expenses associated with building a prototype, establishing quality control testing procedures, gaining regulatory approvals, and prosecution of patents. The resulting value might be thoroughly determined but, as previously discussed, would fail to consider important factors such as profits from commercialization, investment risk, and earnings growth potential.

(b) TRADEMARKS AND BRANDS. Trademarks often are valued by capitalizing an isolated stream of economic contributions specifically attributed to the subject trademarks.

Continued advertising is important for maintenance of trademarks. When isolating the economic benefits of a trademark, provisions should be made to account for continuing advertising expenses.

Studying premium selling prices can enable one to isolate economic benefits derived from possessing trademarks. The price difference between branded and generic products can lead to a stream of economic benefits to attribute to the trademark. Where premium selling prices do not exist, trademarks still can have enormous value. The existence of a trademark can attract a large and loyal customer base, which almost guarantees large annual volumes of sales. Many economies of scale can be enjoyed from such volume, and an allocation of economic benefits based on the methods demonstrated in Chapter 10 can lead indirectly to the contribution of the trademarks.

A market approach for trademarks has many aspects to commend it. Unfortunately, as in the case of patents and technology, the data needed to implement a market approach are rarely available.

A cost approach for trademarks provides an indication of value by aggregating all of the costs necessary to recreate the property under study. In the case of trademarks, these would include salary and benefits for marketing and advertising personnel, along with expenses associated with selecting trademarks, creating advertising campaigns, designing packaging, buying media time, and legal registration of the trademark. The resulting value might be thoroughly determined but, as previously discussed, would fail to take into account important factors such as profits from commercialization, investment risk, and earnings growth potential.

(c) COPYRIGHTS. An income approach can be appropriate for valuation of copyrights. When the copyrights are owned and exploited by a corporation, the economic contribution derived from the copyrights can be isolated using the methods described in Chapter 10. When an individual owns copyrighted materials and licenses the materials to another party for commercialization, the value of the copyrights to the owner must be viewed differently. The value of the copyrights to an individual owner are represented solely by the present value of future royalty income. Forecasts of expected sales and the resulting royalties of the licensee serve as the basis for the economic benefits to be discounted. A common error is to use these forecast royalties without adjusting for the expenses associated with collecting and accounting for the royalties. Do not forget to subtract an allowance for expenses associated with administration, agent, accounting and legal fees, and expenses. Agent fees alone can range between 10 and 15% of the royalty income.

Special care also is required when selecting the appropriate discount rate. The discount rate must reflect the risk associated with receiving royalty payments. As a result, the investment risks associated with the company that is required to pay the royalties are more appropriate than an individual risk rate. The licenser of a copyrighted work is owed royalties but usually does not enjoy the standing of a secured lender. At the same time, the licenser does not bear the same risk as that of an equity investor. As long as royalty payments can be made from the licensee earnings, even a meager amount of earnings, the requirements of the licenser are satisfied, regardless of the potentially poor performance that equity investors of the licensee endure.

An appropriate discount rate for an individual copyright owner might fall somewhere in between investment rate of return requirements of an unsecured lender and an equity shareholder of the licensing corporation. But even the equity rate of return for the entire company can be too low. The equity risk is composed of a portfolio of copyright exploitation projects. Individual projects that depend on specific copyrights might carry more

risk than that experienced by an equity investor that is diversified by the portfolio of projects being undertaken by a company.

A market approach for copyrights has many aspects to commend it. Unfortunately, as in the case of patents, technology, and trademarks, the data needed to implement a market approach are rarely available.

A cost approach for copyrights provides an indication of value by aggregating all of the costs necessary to recreate the property under study. In the case of copyrights, these would include costs to write, paint, sing, or perform the subject material; as with patents, technology, and trademarks, the resulting value might be thoroughly determined but would fail to consider important factors such as profits from commercialization, investment risk, and earnings growth potential.

(d) ASSEMBLED WORKFORCE. The cost approach is generally favored for valuing assembled workforces. Market transactions involving assembled workforces are rare, and the income approach is of use only where specific economic benefits can be tied directly to specific individuals, such as entertainers or sports figures. Nonetheless, it is generally recognized that a well-trained group of workers, well versed in the products and practices of a company, adds to the value of a company. Application of the cost approach for valuing an assembled workforce aggregates all of the costs that would be required to hire and train a duplicate workforce. The process begins from the premise that all of the positions of a going concern are specifically identified and must be filled. The process aggregates estimated costs for all of the following activities, from hiring a chief executive officer to replacing the part-time lawn-care professional.

In the case of hiring a chief executive officer, the costs would include recruiter fees, travel and lodging for candidates under consideration, lost opportunity costs associated with the time of other executives and board members conducting interviews, and payment of signing bonuses. In the case of the lawn-care professional, the cost to fill this portion of the assembled workforce chart would require a $10 advertisement in the local paper and the cost of someone's time to sift through the responses and make a hiring decision.

The following are the types of costs that should be incorporated into an assembled workforce valuation:

- Recruitment fees for headhunters. This expense might not be associated with all job classifications but is likely to be incurred for middle managers and higher.
- Advertising placement expenses for national and local newspapers, trade journals, and magazines.
- Salary and benefits associated with company personnel who must screen candidate responses and conduct initial interviews. In many companies this might be handled by employees in the human resources department.
- Salary and benefits associated with company personnel who conduct secondary interviews. The people involved with this level of interviewing might include department heads, vice presidents, chief executive officers, and, in some cases, board members.
- Expenses associated with travel and lodging for candidates who must be brought from afar for interviewing.
- Relocation expenses for a certain percentage of successful candidates (based on historic experience).
- Salary and benefits that will be paid to new employees as they learn their new jobs. In some cases it might take many months before a new employee becomes

proficient with the procedures of a new work environment. In the case of the lawn-care professional, the salary and benefits invested during learning curve acquisition should be nil.

- Signing bonuses required as incentives to hire professionals with rare skills, such as biotechnology researchers and certain computer programmers.

Assembled workforce valuations must acknowledge that all the workers in place may not be necessary. Many large corporations are performing substantial workforce reductions. Consequently, when valuing a workforce composed of 100,000 people, the process must address the type of employees and the number who would be hired if the initial workforce were being recreated without existing baggage. When approaching a workforce valuation of a motivational training department consisting of 50 people, the question should be asked, "If this department didn't already exist, would it be created given current economic and competitive forces?" If the question is not asked, a value may be placed on 50 employees who are released a few days after the valuation is presented to the board of directors. Was $250,000 of value eliminated, or was it ever there to begin with?

(e) SOFTWARE. This asset category is subdivided into management information software and product software. Management information software is the systems that control and operate a business. Typically it includes software that processes inventory control, payroll, accounting, pension benefits, accounts payable, accounts receivable, debt payments, fixed asset records, and other operating systems. Company personnel use these systems to control information and make decisions. Product software is a significant component of a company product that it sells to customers for a price. Examples are database programs such as MICROSOFT ACCESS, spreadsheet programs such as LOTUS 1-2-3, and word-processing software such as WORDPERFECT. The preferred valuation method changes depending on which type of software is being valued.

(i) Management Information Software. The cost approach generally is favored for valuing management information software, but market transactions involving this type of software also can be useful to some extent. The income approach is of use only where specific economic benefits can be tied directly to specific product software.

Using the market approach requires identification of commercially available management information software packages with similar characteristics providing the same utility. The retail price of similar software can serve as a foundation for the management information software being valued. This approach is especially useful when the subject software was originally purchased in the marketplace. Judicious use of this information is needed when a going concern value is required: the value of the software in place as part of an operating business. The market price of similar software may not include installation onto company computers. Installation costs can be substantial and must be added to the market price to derive the value of the software on a going-concern basis. Costs also should be added for the amount of effort by in-house personnel required to assist the outside contractor making the installation. Additional costs for in-house personnel should be added to allow for the effort required to debug and customize the installed software. Very few commercially obtained software packages fit perfectly into unique company operating requirements. Management information software can, therefore, be valued by a combination of market and cost approaches. If a similar basic package providing equal utility is not commercially available, then the entire valuation process must be accomplished using the cost approach. This involves estimating the cost

of dedicating various computer programming experts to the task of re-creating the subject software. The efforts must include:

- Project coordination
- Development of an operating system
- Design of specific programs
- Writing specific program codes
- Program testing
- Installation and debugging
- Preparation of operating manuals

(ii) Product Software. The income approach used for valuing patented and trademarked products is ideal for product software for all the same reasons explained in Chapter 10. The process considers the commercial profits and growth prospects of the product in the context of the relative investment risk of the required complementary assets. A market approach for product software has many aspects to commend it. Unfortunately, as with patents, technology, trademarks, and copyrights, the data needed to implement a market approach are rarely available.

A cost approach for product software provides an indication of value by aggregating all of the costs necessary to recreate the property under study. In the case of product software, these would include salary and benefits for programmers, as described for valuing management information software. The resulting value might be thoroughly determined but would fail to consider important factors such as profits from commercialization, investment risk, and earnings growth potential. The aggregate cost to recreate the underlying code of the product software would show a value to obtain one copy of the product software. This indication of value omits the demand that may exist for the software from many buyers. If only one buyer were expected to want the product software, then the aggregate cost approach might provide a credible answer. Product software, however, is best valued by an income approach whereby profits, growth potential, and investment risk can be incorporated into the answer.

(f) DISTRIBUTION NETWORKS. Many companies use sales representatives and distributors to get products to end users. This strategy saves manufacturers the expense of establishing warehouse and sales centers around the world. Manufacturers also are saved from the effort of developing customer relations with all end users. An established distribution network is similar to an established list of stable customers. An income approach can provide an indication of value by calculating the present value of the differential in profitability between selling directly to all end users and going through a distribution network. The advantage must consider the compensation of the distributor but should be balanced against the costs of maintaining an in-house sales staff. It also can be argued that some sales made via a distributor would not be made at all without a distributor. In remote locations direct access with end users may be cost-prohibitive.

The cost approach also might provide a reasonable value indicator for a distribution network by defining the costs to recreate the established distributors. The cost approach should aggregate the following expenses:

- Identification of candidates for distributorships
- Analysis of candidate financial condition

- Analysis of candidate reputations
- Interviews, including salary and benefits of company personnel involved in conducting interviews
- Interview travel costs
- Selection of distributors and costs to train their salespeople about the products that will be added to their offerings

A market approach is unlikely to work. Manufacturers cannot sell their relationships with other companies en masse. Each distributor is not required to go along with such a transference. Market data are unlikely to be available to facilitate use of the market approach.

(g) CORE DEPOSITS. The Office of the Comptroller of the Currency defines core deposits as the deposit base of demand deposits and savings accounts, which generally is based on established relations that the bank can expect to continue for an extensive period of time. Core deposits represent a relatively inexpensive source of funds that the bank can use for making personal, business, and real estate loans at higher interest rates. After subtracting loan administration expenses and the expenses associated with administering the core deposits, the bank earns a profit. The present value of this income represents a value of the core deposits. Another view of the value of the core deposits focuses on their low interest rate cost relative to other sources of funds. The present value of the interest cost savings relative to the cost of other funds provides another indication of the value of an established core deposit. It is important to remember that the core deposits of a bank are not perpetual assets. Over time, the core deposits that exist at any moment will eventually expire. Providers of these funds eventually will withdraw the funds for a variety of reasons: Depositors move away from the bank or use the funds for college bills, new homes, retirement, or death. The value of core deposits is sensitive to establishment of a remaining economic life.

The cost approach for core deposits also might be used. This approach would aggregate all the expenses associated with establishing a similar amount of deposits, including advertising, inducement gifts (toasters), completion of account forms, and the expenses of salaries and bank operations during the period that deposits are attracted to the bank. This method, however, does not reflect the interest rate advantage relative to other sources of funds or the income that ultimately would be earned by having the funds.

The market approach might be useful for valuing core deposits when banks are sold that possess very few other intangible assets. If real estate, leasehold interests, and leasehold improvements are subtracted from an acquisition price, then an indication of value for the acquired core deposits might be considered the remainder. This method requires availability of relevant transaction data.

(h) CUSTOMER RELATIONSHIPS. Customer relationships are valued most often by a cost approach, because of the inherent difficulties of segregating the specific income attributable to them. The cost approach is based on the expenses that would be incurred to establish these relationships. This can vary considerably, from multiple mail solicitations for a subscription to high-level, personal sales calls. Other costs should be included, such as travel and living expenses, design of mailers, and, often forgotten, the cost of unsuccessful efforts. If it requires four mailings to garner one subscriber, the cost per customer is four mailings, not one.

Again, the market approach is a very effective tool, but it is rare that it can be applied in the case of customer relationships. Several years ago there was a proliferation of small

telephone reseller enterprises that, over a period of five years or so, were acquired by larger organizations. The nature of the reseller businesses was such that their only real asset was the customers that they had signed up. Therefore the purchase price of these enterprises was a useful gauge of the market value of their customer relationships. This was an unusual situation, however.

(i) FRANCHISE RIGHTS. Individuals starting businesses often look at franchises as a means for entering a new industry. The franchisor has developed proven methods and provides continuing support to the new business. The franchisor also usually has an established trademark and reputation that should allow a franchisee to achieve rapid growth—at least at a pace faster than that achieved without the established trademark and business procedures. The U.S. Department of Commerce has listed some of the primary benefits a franchisee gets by taking a franchise, including:

- Gains from franchisor know-how
- Continuous guidance
- Proven sales tools
- Proven administrative procedures
- Training
- Cooperative advertising

In addition to the profit potential represented by the benefits just listed, a franchise can help to lessen the probability of bankruptcy. The proven business methods, training, and trademark recognition should help reduce the risk of bankruptcy, which is extremely high for new firms.

The valuation of a franchise where the goal is to determine the value of the legal rights associated with a franchise agreement (and not the value of an entire enterprise founded on a franchise agreement) can be looked on as the difference of present values for nonfranchise and franchise firms. Identical firm after-tax cash flows are discounted to present value with the only difference being the existence of a franchise for one of the firms. The income approach is the primary method for valuing franchises and must reflect:

$$\begin{aligned}\text{Franchise Value} = {} & \text{Present Value of Cash Flows for Franchised Firm after Payment} \\ & \text{of Running Royalties and a Lump Sum Initial Franchise Fee} - \\ & \text{Present Value of Cash Flows for Nonfranchised Firm}\end{aligned}$$

Before a franchise can reflect value, the profits, growth prospects, and lessened bankruptcy risk must be enough, on a present value basis, to overcome the franchise fee and running royalty.

The valuation of franchises is particularly elusive, especially when we are valuing the franchise from the standpoint of the franchisor. Like a lease agreement, a franchise divides the rights of ownership of intellectual property between at least two parties. One cannot be sure, without careful investigation, where the dividing line is located. The franchisor obviously retains some of the rights, and the franchisee is granted some of the rights. In a previous section we introduced the concept that, using a lease of real estate as an example, if a property owner is receiving rental that is providing a substandard return on the value of the property, some additional rights of ownership (besides the right of occupancy for a period of time) are being inadvertently transferred to the lessee. The same can happen with franchise agreements. Thus, the division of the total economic benefit of the franchise between franchisor and franchisee is the critical indicator.

The same situation can arise with a franchise. If the franchise fees are too low vis-à-vis the value of the intellectual property being shared, then the franchisor may have transferred additional rights to the franchisee. One might think that this is unlikely, but we must consider the conditions under which franchise fees are determined.

First, they are disseminated in a document that is similar to a prospectus and is subject to many of the same regulations. Franchise fees are not negotiated between two parties, like a license, but are published and are the same for everyone. The franchisor is also aware that some franchisees will be highly successful and some will not. Setting the fees too high will drive some marginal franchisees out of business, with possible damage to the whole organization. The franchisor also has a strong motivation, when starting out, to attract franchisees rapidly and in large numbers so as to achieve a critical mass that will support a national advertising campaign. The franchise fees, therefore, must be marketable, and they are in competition with those of other franchisors. If the franchise is successful, and the franchisees all become wealthy, the franchisor may well wish that the fees had been higher, but that is of course useless hindsight.

Second, one must be very careful in defining the rights to be valued, so that the appropriate income stream can be attributed. From the standpoint of the franchisor, a portion of the bundle of rights has been given up in exchange for franchise fees (perhaps upfront payments plus a royalty on sales). The franchisor will incur expenses to administer the franchise contracts, provide advertising support, and the like. The franchisee also may pay some amount to the franchisor to support advertising. One cannot assume that the franchise fees represent the total income allocable to the subject intellectual property. One must be attentive to the economic life of a franchise contract as well. It may not be simply the term of the franchise agreement. A considerable body of state law exists concerning the rights of the franchisee, and it is becoming more difficult for a franchisor to terminate a franchise relationship, no matter what the terms of the franchise are.

(j) CORPORATE PRACTICES AND PROCEDURES. Nothing happens unless employees know what to do. Corporate practices and procedures encompass a dull but important aspect of a company because they present the way things are done. This category of intangible asset includes:

- Inventory control procedures
- Purchasing methods
- Quality control standards
- Cash flow controls
- Management organizational hierarchy
- Budget and planning procedures
- Government regulation compliance procedures
- Hiring policies
- Employment termination practices
- Standards for employee benefits
- Insurance-buying methods
- Safety programs
- Security programs
- Public relations policies

Specific allocation of earnings to each component of corporate practices and procedures is very difficult to accomplish. Therefore, an income approach is unusable. Market transactions of these intangible assets are nonexistent. The cost approach is the preferred method for valuing corporate practices and procedures.

Application of the cost approach aggregates all of the costs that would be required to recreate all of the components of the corporate practices and procedures. These would include:

- Salaries and benefits for the time that employees spend creating the various practices and procedures
- Fees for outside consultants, if needed
- Local, state, and federal fees
- Costs associated with the design of procedural forms

By far the largest cost is that associated with committing employee efforts to the creation process.

(k) ELEMENTS OF A GOING CONCERN. Elements of a going concern are valued most often by a cost approach based on the expense that would be incurred to establish bank accounts and legal and financial relationships, obtain certifications and licenses, and the like. The possibility of using an income approach or a market approach is rather remote, unless some unusual conditions are present or an unusual transaction is known that would isolate this group of assets.

(l) GOODWILL. Goodwill value is calculated as the residual between the values of the underlying assets of a business and the value of the business as a whole. It also may be calculated by capitalizing earnings that exist in excess of those required to provide a reasonable return on the value of the other assets of the enterprise. There is no way to calculate goodwill value in isolation from the enterprise or the other underlying assets.

A situation in which there can be an unusual effect on the value of the underlying assets of a business, including goodwill, occurs when a company is acquired. This situation is illustrated most easily in the case of the acquisition of a public company.

As we have previously observed, we can calculate the value of an enterprise by adding together the value of its common equity and the value of its long-term debt:

$$\begin{aligned} \text{Common Stock – 5 million shares @ \$32.50} &= \$162.35 \text{ million} \\ \text{Long-term Debt – @ market value} &= \underline{\$\ 37.5 \text{ million}} \\ &\quad \$200.0 \text{ million} \end{aligned}$$

The share price above is the trading price of the stock prior to any indication of a possible acquisition. We conclude that the fair market value of the business enterprise is $200 million.

Someone wishing to acquire this business can begin simply by buying the common shares at $32.50 per share. In the stock market, this continued buying pressure likely will result in an increase in the price. At some point, in addition, the buyer will have to disclose the amount of his or her holdings and intention to acquire control. This information would tend to drive the price up further. Therefore, following this course would result in an acquisition price higher than $200 million. Another option would be simply to communicate to the existing shareholders an offer to purchase all of their shares. The existing shareholders, who presumably are financially satisfied with their holdings at the price of $32.50, probably are going to look for some inducement to sell. That inducement is typically a higher price.

Yet, a buyer also must respond to other pressures. The buyer would like to complete the transaction rapidly in order to forestall the emergence of other potential buyers. The buyer also typically wishes to obtain at least 80% of the outstanding stock, so that the financial results of the two companies can be consolidated for income tax purposes. The buyer also would much prefer to obtain all of the outstanding shares, so that there would be no minority shareholders after the acquisition whose differing views might be disruptive in the future. The buyer also wants to avoid the expense of a long, drawn-out merger or the expenses associated with failing to gain control and having to dispose of a noncontrolling stock holding. All of these factors provide motivation for the buyer to make a preemptive offer, attractive enough to induce the stockholders to sell, to consummate the transaction rapidly, and to achieve 100% ownership. Taken together, these factors are strong motivators for an offer higher than $32.50 per share. The buyer is not entirely unwilling to do this, because he or she will gain control over the business and its assets, a right not enjoyed by the existing shareholders, none of whom individually controls the enterprise.

If the acquisition is consummated, the value of the enterprise, as indicated by the market, is greater. Had we valued all of the underlying assets just prior to the acquisition, we would be faced with the task of reflecting new values. This is a task that must be approached with care and judgment. The simplest assumption would be that all asset values stayed the same and that additional goodwill was created. This is not necessarily the case, however. We need to view the combined business through the eyes of the buyer. Perhaps we will observe some synergistic benefits that change the relative importance of the existing assets. Perhaps we will observe new assets created as a result of the merger.

CHAPTER 14

SPECIAL VALUATION SITUATIONS

Previous chapters introduced valuation methodologies and provided examples that illustrate them. Most of those examples represent situations that arise in the normal course of business. This chapter discusses the application of those methodologies to some unusual business situations.

14.1 INTANGIBLES IN BANKRUPTCY AND AS COLLATERAL

Bankruptcy often results in property liquidations. Because increasing numbers of business enterprises rely on intangible assets and intellectual property for their earnings base, these types of assets are now involved more frequently and are presenting new and unique problems in the liquidation circumstance. The considerations that must be addressed in these unfortunate business situations are very similar to those attending the collateral aspects of debt financing. A lender whose capital is secured by intangible assets or intellectual property must understand the special characteristics of these assets. Many of their unique properties are also important in the liquidation situation, and so we discuss them together. Here, the special characteristics of intangible assets and intellectual property are illuminated under these conditions, and their peculiarities are examined both in the liquidation situation and as collateral.

(a) VALUE IN USE VERSUS VALUE IN LIQUIDATION. As a preface to this discussion, it is necessary to amplify the information in Chapter 7 under the heading "Market Value—Conditions of Exchange," where the several definitions of market value that are presented are used to differentiate the various motivations of buyer and seller. Market value is first discussed in the context of business assets that are a part of an economically viable enterprise, and as if they are being exchanged between willing buyers and sellers.

When business assets are valued under some form of liquidation premise, it is usually the result of the business losing its economic viability, and it is assumed that the seller is compelled for some reason to consummate a relatively rapid sale. Its assets have become part of a "distressed sale," because they are disposed of in order to pay creditors or to enable the owners to redeploy the proceeds. This is still market value, but under a specific premise.

In liquidation, the assumption is that the assets will be sold to meet whatever use to which they might be put, which might be quite different from their use within the original enterprise. The forced nature of the transaction demands a sale into whatever market exists at the time. Thus we find a multilevel parking garage turned into a "street of shops" or a ship sold for scrap. Even if there is a buyer who could utilize the special nature of an asset (employ it to its "highest and best use"), if he or she is the only such buyer and knows that alternate users represent the only other market, the price will be driven down to the "alternate user" level.

(b) ASSET CHARACTERISTICS. In contrasting these value premises to different types of assets, a number of additional qualitative elements emerge. To assist the reader in understanding these elements as they apply to intangible assets and intellectual property, they appear in graphic form in Exhibit 14.1.

In this illustration, we contrast value in use (referring to the "standard" market value premise) with value in liquidation, which presumes some compulsion on the part of the seller. In Exhibit 14.1, the vertical distance between the heavy lines represents the difference between the values estimated under these premises as they are applied to various forms of property.

(i) Monetary Assets. The left side of the exhibit, where the lines meet, illustrates that there is no difference in value under either premise for cash assets. Cash is completely liquid and extremely versatile. There is an increasing difference, even for other forms of monetary assets, as one moves to the right of the figure. Receivables are "cashlike," but time is required for collection in order to realize the liquidity of cash, so there is some degradation in value in the liquidation situation.

Inventory assets have the same characteristics, but they are more accentuated. An example would be a stock of various types of animal hair for use in manufacturing artists' paintbrushes. Such an inventory might be very valuable within the going business, but if it became necessary to liquidate, the proceeds would be expected to be quite low. Within the inventory category, raw materials would tend to have less of a value difference than finished goods. There may be a ready market for sheet steel, but once it is made into washing machines, its value is much more subject to the vagaries of the marketplace, though even this could be subject to refinement. Steel is manufactured to a myriad of exacting specifications. The sheet steel stock for washing machine manufacture may have special characteristics for strength, malleability, or coating that may well narrow its attractiveness for other uses in a liquidation situation.

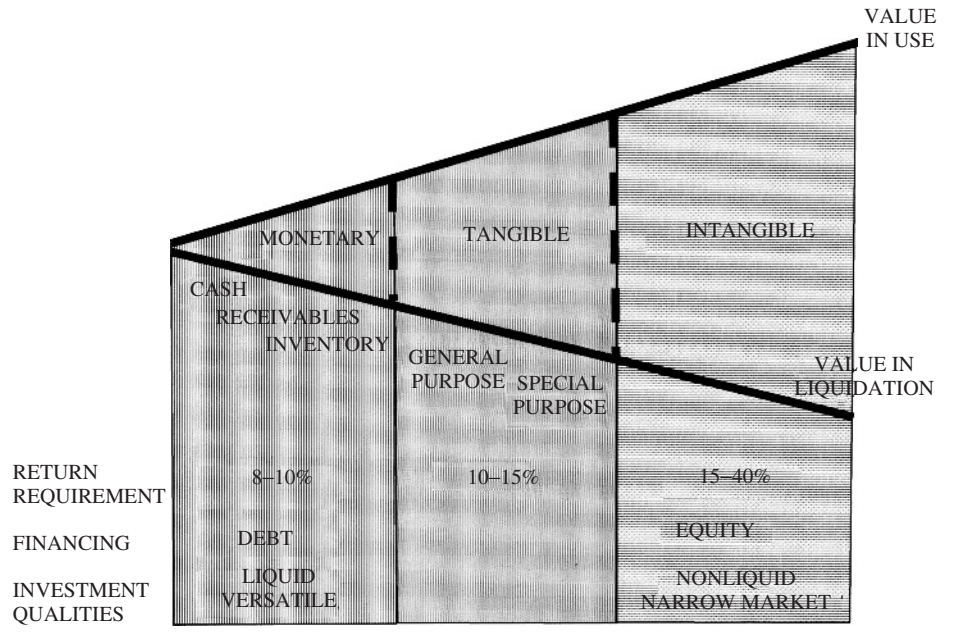

EXHIBIT 14.1 BUSINESS ASSET CHARACTERISTICS

(ii) Tangible Assets. Some tangible assets such as land, buildings, general-purpose machinery, or vehicles can serve many business functions and thus are versatile and relatively liquid. Other tangible assets, designed for a narrow purpose, can have a very low liquidation value in a distressed sale situation. The distressed sale usually results from the disappearance of the narrow market for which the property was designed, which makes the loss in value even more definite and pronounced. High-technology tangible assets often display this marked difference, even though they may not be designed for a special purpose. The reason is the rapidity with which they become functionally obsolete and lose their attractiveness in the market. Computers are an example. Here again, however, general rules are just that, and the observer must be aware of the exceptions. A computer can be technically obsolete and have little or no value in the marketplace but can be providing quite useful service within a business. If the function that it serves does not require the enhanced speed and features of the superior computer, and the enterprise suffers no economic penalty from its use, then there can be a substantial difference between the values as measured by these two premises.

(iii) Intangible Assets. Shown at the right of Exhibit 14.1, intangible assets and intellectual property are likely to display the most dramatic differences in value by these two premises. This is because intangible assets and intellectual property usually are created within the enterprise and are so intertwined with it that they may have little value outside of it. The degree to which this is true depends on the versatility of the asset.

Trademarks represent a good example of intellectual property in this milieu, because (1) trademarks are less versatile than many other business assets, (2) trademarks may be more risky than many other business assets, and (3) because trademarks are created by equity investment. The value of trademarks in liquidation would be expected to be substantially lower that their value in use. These statements, as with all generalizations, do not always hold true. Would the COCA-COLA trademark be more risky than other assets of its business? No. Would it be far less valuable in liquidation? Most likely not (depending on what caused the liquidation). Generally, however, these statements describe the trademark situation.

While it is not common, trademarks have been sold as a result of business insolvency. They have been sold to competitors who wish to increase market share by keeping the brand alive, competitors who wish to increase market share by killing the brand, market entrants who wish to smooth their entry and reduce advertising expenses, and market participants who wish to launch a new line.

Pan American World Airways went into bankruptcy in 1991, and its PAN AM trademark and other assets were sold in 1993 for $1.3 million. The PAN AM trademark is alive again on the aircraft of a low-fare carrier. The trademarks of the Jenkins Valve Company were auctioned in Philadelphia (along with, but separately from, other assets). These marks, associated with a product line that had little market share in the U.S., were bought by Crane Company (a competitor) for a bid of $1,050,000. In 1992, He-Ro Group Ltd. paid $7.9 million ($4.5 million over a 7-year period) for the RUSS TOGS, CRAZY HORSE, VILLAGER, and RED HORSE apparel trademarks and other assets and inventory from the bankruptcy estate. The AFTER SIX apparel trademark sold in early 1993 for approximately $7 million in a bankruptcy auction. A small amount of machinery and inventory was included in the sale.

We believe that the manner in which a business becomes insolvent is a critical consideration in the resulting value of a trademark under the ensuing circumstances.

Insolvency can result from what we have termed internal and external events. Internal events include:

- Financing decisions (such as a leveraged buy-out, a "poison pill," or other take-over deterrents) resulting in an overburden of debt
- The loss of key management
- An uninsured loss of plant property or equipment
- An acquisition that turned out to be a cash drain
- Illegal or unsavory business activities (the ENRON and WORLDCOM trademarks have disappeared from the business landscape, and it is unlikely they can be revived)
- An imprudent expansion or a new product line that failed
- Lack of capital
- Expensive correction of an environmental or safety problem
- Expensive litigation
- Labor strife.

External events that can result in insolvency for an enterprise include:

- Depressed general economic conditions
- Technological obsolescence of major product line(s)
- Overwhelming competition
- Product "disaster" such as contamination, or discovery of a health hazard or side effect
- Changing tastes (as for a consumer or recreation product)
- An advertising program that goes awry
- Customer perception of declining quality or performance

In general, internally caused insolvency will have minimal effect on the liquidation value of trademarks, because it is possible that the customers of that business may be completely unaware of the situation and that the company's products or services can maintain their market acceptance unimpaired. If, on the other hand, the cash flow problems existed over a long time and management applied stringent cost-cutting measures that gradually degraded product quality or service, then there would be some impairment of trademark value in liquidation. In this case, an internal problem (such as imprudent financing) would have become an external one (market rejection of a brand).

It is therefore necessary to examine the nature of the insolvency, gain some knowledge of the events leading up to it, and understand how it has affected the enterprise and its perception by outsiders. Only with this knowledge can one make a reasonable estimate of market value of trademarks in a potential liquidation situation.

Principle of Substitution

A classic measure of asset value is the cost to acquire a substitute asset, or one that can perform the same function. This measure can be useful in the liquidation situation. A trademark does not really have an alternate use in the same sense that a parking garage can be converted to a retail center. It can be used for different, but logically related goods or services, but it will remain a trademark.

Therefore we need to think in terms of a substitute trademark. The PAN AM situation is a good example. If we wanted to start up a new, low-fare airline with a limited number

of destinations, we would consider the necessary advertising and promotion costs of a new entrant in the market. Those costs would inevitably be lower if we could acquire a trademark such as PAN AM. That reduction in cost, as well as perhaps some acceleration in revenue inflows, would be a measure of how much we would be willing to pay for the rights to use the PAN AM trademark.

(c) COLLATERAL- DEBT FINANCING. The characteristics presented in Exhibit 14.1 center around risk. The risk of investing in monetary, tangible, or intangible assets is quite different. Because of this, monetary and tangible assets usually can be financed with debt because their ownership is perceived to be lower on the spectrum of risk. This lower risk results from the smaller difference between their values in use and in liquidation. When collateral is liquid and marketable, the risk of ownership is reduced, and debt financing is more readily available and at a lower cost. An example of this would be a loan secured by cash in the bank—a so-called passbook loan.

Lenders have traditionally based their lending decisions on liquidation value because that is what they are likely to receive if the loan becomes nonperforming. Lenders have therefore looked to lower-risk assets (as they are defined above) as collateral. The business owner, in turn, focuses on these assets because a greater percentage of their cost can be financed with debt capital. A lender might, as an example, be willing to lend 90% of the cost of raw materials purchased for inventory but only 50% or less or the cost of a custom-designed machine. While the economic value of the machine to the business may be greater than the raw material, its value in liquidation is proportionately so much lower that an investor (creditor) is uncomfortable. The lender can reduce the risk by reducing the loan-to-value ratio. In that way, he or she is more assured of recouping the amount of the loan from the liquidation proceeds, if that action becomes necessary.

Lenders use many other techniques to accomplish a desired level of comfort relative to financing various types of assets, such as cross-collateralization, coverage tests, dividend restrictions, and the like. The loan-to-value ratio illustrates this point.

Consider that lenders (those providing debt financing to the business) are not the only investors who recognize differences in the risk of the portfolio of assets that constitute a business. Equity investors (buyers of the company's common stock) and trade creditors also are concerned, and suit their market actions so as to ameliorate risk. Their actions must be less direct, because they, unlike the debtholder, usually have no immediate claim on the assets of the business in a liquidation situation. Therefore, they are less focused on the differences between value in use and liquidation value, but this difference is factored into their investment decision making.

As one moves toward the right in Exhibit 14.1, toward the intangible asset category, there is an increase in perceived investment risk. When liquidity of the underlying assets is low, then capital becomes much more difficult to obtain or is available only at very high cost. Assets must be financed increasingly with equity. For some very high-risk intangible assets, such as a patent or proprietary technology in a start-up biotechnology business, expected returns are very high, approaching venture capital rates.

The selection of an investment rate of return for different types of asset is discussed more fully in previous chapters and in Appendix A.

(i) Liquidation Value Checklist. Exhibit 14.2 describes types of intangible asset or intellectual property and provides certain characteristics (internal and external, as previously defined). Alongside each is an arrow to indicate the liquidation value of that asset under the indicated conditions. An up arrow indicates a liquidation value higher than

might be expected (more like in-use value). A down arrow indicates liquidation value at the low end of the range.

These are general, typical indicators for guidance. A myriad of conditions affect value, and it is impossible to reflect all their permutations in a simple list.

Intangible Asset	*Characteristics*	*Relative Liquidation Value*
Intellectual Property		
Trademarks		
	Narrowly defined and identified with a specific product or service	↓
	Extendible to a wide range of products or services	↑
	Strong association with a market-rejected product or service	↓
	Associated with a market-accepted product or service	↑
	Newly introduced	↓
	Old, well known	↑
Copyright		
	Literary, dramatic, or musical works	
	Current, active	↑
	Dormant	↓
	Advertising program, training materials	↓
	Texts	↑
Computer Software		
	General purpose, versaile	↑
	Specific to company operations	↓
	Market-accepted product	↑
Patent/ Proprietary Technology		
	"Keystone" patent supporting market-accepted product	↑
	Versatile patent/proprietary technology that could support a wide range of products	↑
	"Untransferable" proprietary technology (too much individual know-how and learning involved)	↓
	Supporting a market-rejected product	↓
	Technologically obsolete	↓
	Embedded in machine design or settings (difficult to transfer without tangible assets)	↓
	Would involve high-development cost to make commercially viable or adapt for another use/industry	↓

EXHIBIT 14.2 RELATIVE LIQUIDATION VALUE AND ASSET CATEGORIES

Intangible Asset	*Characteristics*	*Relative Liquidation Value*
Rights		
	Untransferable contract (because of terms)	↓
	Contract for highly specialized goods or services	↓
	Contract ro receive a common, commodity product	↑
	Licenses, certifications	
	Transferable and in demand (such as a liquor license)	↑
	Not transferable	↓
	Mortgage servicing contracts	↑
	Loan portfolio	↑
	Prepaid enrollments/subscriptions	↓
	Employment contract	↓
	Covenant not to compete	↓
	Service contract	↓
Relationships: **– Assembled workforce** **– Customers and clients** **– Distributors**		
	Patient lists	↑
	Prescription records	↑
	Subscriber—cable TV	↓
	Subscribers—magazine	↓
	Newsstand buyers	↓
	Department store charge accounts	↑
	Audit clients	↓
	Law firm clients	↓
	Retail store mailing list	↓
	Bank depositors	↑
	Credit card holders	↑
Grouped Intangibles: **– Goodwill and Elements of a Going Concern**		
	Internally caused insolvency where the effects are not recognized externally	↑
	All other situations	↓

EXHIBIT 14.2 RELATIVE LIQUIDATION VALUE AND ASSET CATEGORIES *(CONTINUED)*

(d) VALUATION METHODS. While most of the examples discussed above relate to trademarks, many of the same points are relevant to technological intellectual properties. The same cost, market and income valuation methods are used in the bankruptcy and collateral situations. We need to be attentive, however, to the special conditions that provide new and different inputs to these techniques.

14.2 AD VALOREM TAXES

What we know as property taxes are based on the value of property, hence the definition as ad valorem taxes. Taxable property typically comprises real (e.g., land and buildings) and personal (e.g., movable machinery and equipment) property. Intangible assets and intellectual property have come into increasing focus as a point of contention between taxpayers and taxing authorities. There are several reasons for this.

Some taxing jurisdictions specifically exclude intangible assets and intellectual property from taxation. The statute may provide a list of intangible assets and intellectual property assets so excluded or may state the fact generically. In either case there can arise a difference of opinion about how these excluded assets are defined and whether specific assets are taxable or not. Many property tax statutes were written before intangible assets and intellectual property became such an important part of our business world. Their description in such statutes tends to be vague and out of keeping with how we recognize this type of property today.

These problems usually do not arise with respect to residential or commercial properties because the local assessor can delineate the tangible assets present and has good tools (in terms of an active market or cost data) with which to value them. Intangible asset problems arise with industrial properties, especially those of unique use, or those that extend over tax jurisdiction boundaries. Examples might include a nuclear power plant, cellular telephone or cable television properties, a pipeline, or a railroad.

In these cases, the usual tools are not applicable, and the assessor may rely on a capitalization of income or market approach that produces, as a starting point, the value of a whole business enterprise. From this "unitary" value, the assessor must first extract the value of the property that is taxable and then from that amount extract the value of the taxable property within the relevant jurisdiction. Allocating the value of taxable property to a given jurisdiction usually is not a contentious issue. Typically some physical measure can be agreed on (e.g., mileage of pipeline or cable or transmission line, or number of customers) and used to develop an allocation factor. The extraction of the value of taxable property from the unit can be a troublesome issue, however.

As an example, if a county assessor must estimate the value of a portion of a multistate pipeline that crosses his or her jurisdiction, one approach might be to appraise the entire pipeline company as a starting point. If that value is the result of a capitalization of income (using the reported earnings of the entire business) or a market approach (e.g., a stock and debt technique), we know that it includes the values of monetary, tangible, and intangible assets. If only tangible assets are subject to property taxation, then the value of monetary and intangible assets must be extracted as a first step. This may not be an easy task. In addition, the value of these assets may be considerable. Therefore, this process can become the focus of controversy, and it has—in various courts across the country.

The process is difficult enough, but the situation is made worse by statutes that are unclear as to whether some or all intangibles are included or excluded from taxation.

14.3 INTANGIBLE ASSETS IN REGULATED INDUSTRIES

The term "regulated industry" may be a misnomer, in that there is probably no industry in the world that is totally unregulated by someone, somewhere. Every business bears expenses for regulatory compliance and these are considered a cost of doing business. We are referring here to industries that are regulated in some fashion that constrains their

enterprise or underlying asset value. We refer to enterprises that are prevented by regulation from earning a market return on the value of their assets. This discussion will center around the telecommunications and energy utility industry in the United States, which has provided an interesting laboratory relative to intangible asset valuation.

(a) REGULATORY BACKGROUND. An early U.S. Supreme Court decision set the tone for many years of utility rate regulation in this country. In that decision, the court said:

> We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount in market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. . . . What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience.[1]

This decision set the course of "fair value" ratemaking, which for many years was the standard utilized in setting rates for all types of utilities across the country. Its principles sound very much like basic appraisal principles as applied to a business enterprise.

By the 1930s, however, these concepts were under fire and, in another Supreme Court case, the court commented:

> We think this is an appropriate occasion to lay the ghost of *Smyth v. Ames* . . . which has haunted utility regulation since 1898. . . . As we read the opinion of the Court, the Commission is now freed from the compulsion of admitting evidence on reproduction costs or of giving any weight to that element of "fair value."[2]

Two years later, in its decision in the *Hope Natural Gas* case, the court commented:

> We held in *Federal Power Comm. v. Natural Gas Pipeline Co.* that the Commission was not bound to the use of any single formula or combination of formulae in determining rates. . . . Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called "fair value" rate base.[3]

Thus the original cost rate base came to be the standard. The fair value concept remained, to some degree at least, in some state regulatory jurisdictions. By the 1970s, however, the setting of rates on the basis of an original cost rate base was nearly universal.

What is the implication of all of this on the valuation of a utility's intangible assets and intellectual property? The reader may recall our discussion of the income approach to valuing a business enterprise from Chapter 4. In Exhibit 4.10, we illustrated the relationship between the value of a business enterprise, its underlying assets, and its earnings.

In the regulated utility scenario, the price for service to be charged to customers is based on an application of the cost-of-service formula. In this formula, the revenue requirement[4] is equal to the annual operating expenses, plus depreciation expense, plus income taxes, plus the product of the rate base times a fair rate of return.[5] The last term

1. *Smyth v. Ames* (No. 49), *Smyth v. Smith* (No. 50), *Smyth v. Higginson* (No. 51), 169 U.S. 466, 546 (1898).
2. *Federal Power Comm'n v. Natural Gas Pipeline Co.*, 315 U.S. 575, 586 (1942).
3. *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 601 (1944).
4. This is the utility's net sales revenue, which is a function of tariff rates applied to customer usage.
5. The rate of return is a combination of the utility's embedded cost of debt and a return on common equity periodically set by a regulatory authority.

in that formula (the product of the rate base times a fair rate of return) is the amount of earnings available to provide a return to both debt and equity holders. If the rate base is in fact the net book value of the utility's tangible assets[6] (original cost basis) and the rate of return accurately reflects the relative business and investment risks of the enterprise, then a capitalization of the earnings resulting from this determination by this rate of return will inevitably yield a value approximating the net book cost of the tangible assets of the enterprise. The result of all this is that, essentially, no significant value can be ascribed to intangible assets or intellectual property within such an enterprise regulated in this fashion. Stated another way, if rates are set so that the earnings of the enterprise are in fact sufficient only to provide a reasonable return on monetary and tangible assets employed, then intangible assets (even though they might be present) cannot be said to contribute much to the enterprise's earnings and therefore can have little value relative to the monetary and tangible assets.

Putting it in terms that we have described previously, the value of such a business enterprise is equal to the value of its monetary and tangible assets alone. This situation was known and fairly well accepted by all parties as long as original cost ratemaking was the norm, and as long as the cost-of-service formula remained intact.

(b) ENTER COMPETITION AND DEREGULATION.

(i) Telecommunications. The telecommunications utilities have been in a process of "creeping deregulation" since the 1968 Carterfone decision opened up the telephone companies' market for customer premises equipment to competition. By the 1970s, telephone customers had the ability to directly connect nontelephone company equipment to the telecommunications network. In 1969, the Federal Communications Commission granted to a company (now known as MCI Corporation) the right to provide private line services between Chicago and St. Louis. By the late 1970s, MCI was providing switched long-distance services, permitting it to compete directly with AT&T. In 1989, a tariff modification filed by AT&T opened the way for a new classification of companies to enter the long-distance communications market. As a result, resellers could purchase long-distance service from AT&T at a bulk rate and resell it to customers that they themselves managed to obtain. Many such resellers were not, and still are not, owners of any network property, but are only in the business of purchasing telecommunications services in bulk and reselling them at a profit.

From 1984 to the present, there has been a continual loosening of the regulatory bonds with respect to the pricing of telecommunications services and the profits that could be made in their sale. The Telecommunications Act of 1996 adopted competition as the basis for nearly all telecommunications markets, such as telephone service, telecommunications equipment manufacturing, cable television, radio and television broadcasting, and the Internet and online computer services. Coupled with this, there has been a substantial and continuing convergence of all forms of communications services. A complete blurring of boundaries has resulted.

(ii) Energy. With respect to regulated electric utilities, deregulation began with the Public Utility Regulatory Policies Act of 1978, which was not really intended to foster competition but nevertheless opened the door for nonutility generation of electric power,

6. Rate base typically includes other assets, such as working capital, but for the purpose of this discussion we can equate rate base with the net book value of tangible assets.

and required franchised utilities to purchase the output of cogenerators[7] and small independent power producers. The Energy Policies Act of 1992 mandated open access to the transmission grid and facilitated the ability of an individual customer to purchase power from a source other than his or her serving electric utility.

Energy deregulation has not always worked the way legislators intended. Once market forces are released in a business in which technology is not providing a continual stream of cost-saving mechanisms, outcomes may be higher than otherwise prices and discontinuities of supply. This has led some to rethink the deregulation solution.

(iii) Diversification. An early response by both telecommunications and electric utility companies to the challenges of competition was a diversification into unregulated lines of business. This immediately provided the regulators with a dilemma, as they were faced with the use of assets that were originally developed within the regulated business in unregulated business segments. In many cases these situations involved intangible assets and intellectual property, which made the problem even more difficult. Some of these dilemmas became the focus of regulatory proceedings.

In these cases, of which there were many, regulatory commissions had to recognize that, in fact, utility enterprises had built intangible assets even though they did not appear on the rate base or on a company's balance sheet. When these assets were to be used in an unregulated business segment, the regulators were faced with the improbable situation of requiring a royalty payment for the use of assets that had little or no value to their owner.

(c) INTANGIBLES FOLLOWING DEREGULATION. To best explain current events, we would take the reader back to Chapter 4, wherein we discuss intangible assets in their role as a part of the portfolio of assets that constitute a business enterprise. We provided as part of that discussion an equation to define the business enterprise.

$$\begin{aligned}\text{Business Enterprise Value} &= \text{Invested capital}\\ &= \text{Long-Term Debt + Shareholders Equity}\\ &= \text{Net Working Capital + Tangible Assets +}\\ &\quad\ \text{Intangible Assets + Intellecual Property}\end{aligned}$$

(d) EMPIRICAL STUDY. We can examine, from a financial point of view, evidence of the changes we have been describing in the utility industry by tracking some elements in this equation over time. In our study, we calculated the business enterprise value of each of a number of utility companies for each year, beginning in 1977 and ending in 1996. This period was selected because it represented the time during which the changes noted were being driven primarily by deregulation. The value of the business enterprise was calculated by adding together the book value of long-term debt and the market value of shareholders' equity. We analyzed the companies in groups, including long-distance companies,[8] telecommunications companies,[9] and electric utilities.[10] The electric utility companies were selected because they represented enterprises that appeared to have

7. These are facilities that generate electric power using a portion of steam that is primarily for a "host" manufacturing operation.

8. MCI Communications, Sprint Corporation.

9. AT&T Corporation, Ameritech Corporation, Bell Atlantic Corporation, Bell South Corporation, SBC Communications Inc., US West Communications Group, GTE Corporation.

10. Houston Industries Inc., PG&E Corp., NIPSCO Industries Inc., Duke Energy Corp., FPL Group Inc., Teco Energy Inc., Pacific Enterprises, Allegheny Power System, MidAmerica Energy Holdings, Dominion Resources, Inc.

responded more aggressively than most to the challenges of deregulation. The names of these companies, as shown in the footnotes, are as they were during this period.

In general, the value of monetary assets in utility operations tended to be negligible and, in some cases, even negative. That is, utility companies generally were able to operate with a low level of working capital, at least under a regulated scenario. The value of the underlying assets of the business enterprise was therefore primarily represented by tangible and intangible assets. In our analysis, we utilized the balance sheet amount of net book value of tangible assets as representative of the value of that underlying asset classification. This agreed with the long-time original cost regulatory scheme described previously. We then subtracted from business enterprise value this value for tangible assets, in order to compute the value of intangible assets and intellectual property. That value was expressed as a percentage of business enterprise value, and our study yielded the results shown in Exhibit 14.3. That exhibit shows the percentage that intangible assets represented of total business enterprise value in each year from 1977 through 1996 for each industry group.

As shown in Exhibit 14.3, value of intangible assets for these three industry groups was shown to be negative until about 1985. Actually, we would not conclude a negative value for intangible assets during this period, but rather no value at all. The negative value results from the fact that a subtraction was being made from total enterprise value in a situation where the tangible asset values exceeded the total. The negative increment is really ascribable to the tangible assets. Stated another way, during this period investors required a higher rate of return on their investment than the utilities were able to earn. Therefore, the prices that investors were willing to pay for the debt and equity of these utility companies was collectively less than the net book value of the utilities' tangible assets.

It is interesting to note that, for the long-distance company group, which was largely unregulated from its inception, the value of intangible assets became positive starting in about 1981 and continued an upward climb thereafter. Intangible assets did not emerge for the telephone company group until about 1985, at which point their value began a sharp rise. Intangible asset values among the group of electric companies have emerged

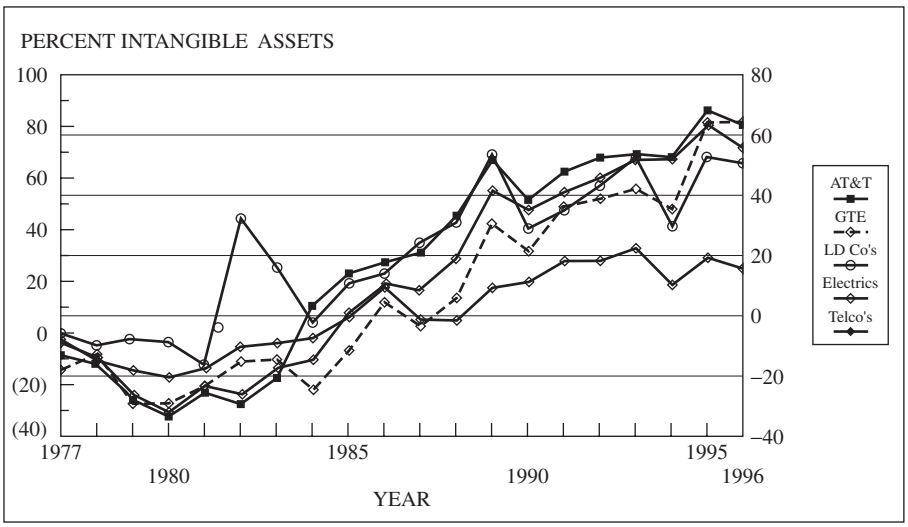

EXHIBIT 14.3 EMERGENCE OF INTANGIBLE ASSET VALUE IN PUBLIC UTILITY ENTERPRISES

much more slowly and are still at a relatively low level as the full effects of deregulation are being sorted out.

Exhibit 14.4 displays the same information, except that it is related to the value of tangible assets. In the early years of the analysis, the net book value of tangible assets exceeded even the business enterprise value. That is, investors were pricing shares of electric utility stock so that the value of total invested capital was lower than that of the net book value of tangible assets.[11] Again, tangible asset value for the long-distance companies and telecommunications companies had fallen, as a percentage of total business enterprise value, as the value of intangible assets rose. This same trend is visible to a much lesser extent with the electric companies. The decline in tangible asset value among electric utilities is reflected not only as a proportion of total business enterprise value but in the absolute sense as well. The customer of an electric utility was able to purchase power elsewhere if the serving utility, by virtue of the nature of its generating plants, was only able to supply "high-cost" power. The demand for the output of a high-cost generating plant therefore would fall, and its owner had the option of liquidating the plant, curtailing its usage, or pricing its output to meet the market. Under any of these alternatives, the value of that plant fell, and the resulting value would likely be below its net book cost. In fact, the value of generating facilities can approach zero, or even become negative.[12] Under the traditional regulatory scheme, the owner of the plant was assured that its output would be purchased and that its economic life would be equal to its service life. Deregulation removed that assurance, and each plant must now stand on its own in the marketplace. Many generating plants have come on the market, many as "merchant plants" with no guaranteed market for their output.

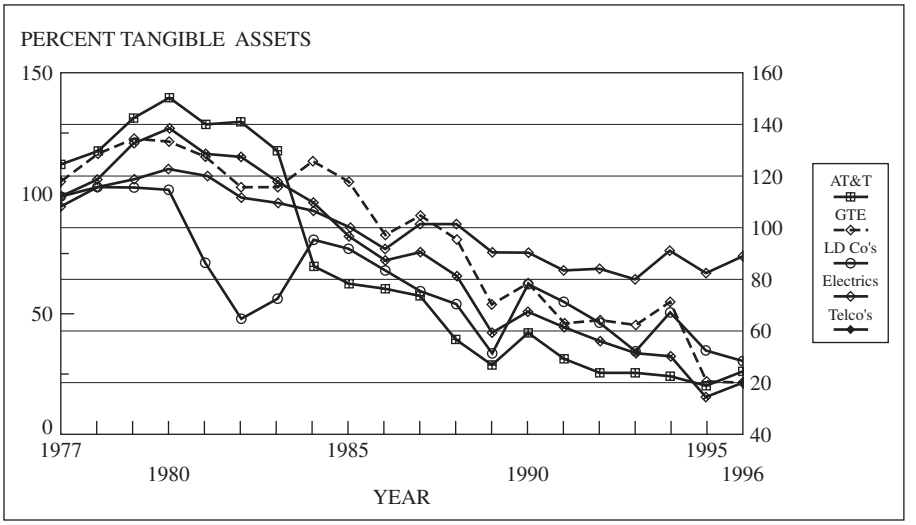

EXHIBIT 14.4 DECLINE OF RELATIVE VALUE OF TANGIBLE ASSETS IN PUBLIC UTILITY ENTERPRISES

11. We recognize that our calculation of business enterprise value lacks precision in that we did not calculate the market value of long-term debt in the equation, but we believe it is adequately precise to illustrate the long-term trend.

12. The value of a high-cost or poorly performing nuclear power plant could well be negative because of the significant cost of decommissioning it.

(e) NATURE OF THE "NEW" INTANGIBLE ASSETS. We can now observe telecommunications and energy company assets through the same lens that we have described in previous chapters.

(i) Contracts. Electric companies will still require supplies of coal, oil, or natural gas for their fossil-fueled generating plants, and radioactive materials for their nuclear ones. Now, however, advantageous contracts will generate economic benefit to shareholders or allow the company to compete more effectively as to the price of its service. There also may be a whole new class of contract that can enhance value for such a company. Hardly any business enterprise always has the exactly correct mix of tangible assets in place to provide goods and services to meet its customers' needs. Telecommunications and energy companies are no different, and each must obtain access to facilities owned by others in order to serve its current customer mix. Telecommunications companies will contract for network services, and energy companies will increasingly seek out advantageous contracts with third parties that can supply low-priced electric power or transmission services. Such contracts are and will be aggressively sought, and their economic benefit will now accrue to the owners of the business.

(ii) Customers. Chapter 2 describes the value characteristics of customer relationships. We describe these value characteristics in terms of customer inertia and the presence of customer information. Where monopoly characteristics exist (even though there may be high inertia and considerable customer information that normally would signal high value), the value of customer relationships would be negligible. This is the situation of a traditionally defined utility operation.

What deregulation has accomplished is to reduce customer inertia. This is evident already in the telecommunications business with respect to long-distance and other similar services, and is likely to begin with respect to local telephone service and electric service as well. Customers are free to migrate from supplier to supplier, seeking the most advantageous rates or service. As a result, customer relationships greatly increase in their value within the business enterprise, and, at the same time, significant expenditures must be made to create and retain these customer relationships. Advertising expenses have soared, and promotional activities, especially in the telecommunications segment, have taken on the aura of other, heavily competitive, consumer products and services.

Electrons have become a commodity, whether they are being utilized to digitally transmit our information or to move a motor or light an incandescent lamp. As multiple sources for this commodity proliferate, our purchasing decisions becomes a matter of price and perception. As a result, customer relationships are becoming an extremely important asset in these industries.

(iii) Research and Development. R&D efforts will come to be part of the business expenses of individual telecommunications and energy companies. No longer will the services of EPRI, GRI, Bell Laboratories, or BellCore be shared among their sponsors. The intellectual property results of these individual research and development expenditures will be guarded by their owners for their own economic benefit. The R&D expenditures that are beginning to be seen on the income statements of telecommunications and energy companies will build intellectual property value within their enterprises.

(iv) Computer Software and Assembled Workforce. Computer software will become more and more customized to the operations of its enterprise as it develops new services

and as its needs for business information change. It will become much more proprietary to the specific business. The assembled workforce of these enterprises also will become more specialized and possess new skills not required under the regulatory climate. As an example, the workforce in a nuclear power plant has become a difficult asset to replace, since many of these technicians come from the military and are subject to extensive governmental certification.

(v) Trademarks. Utility trademarks, whose light has long been hidden under the bushel of regulation, can now emerge. It is interesting to note the intense interest in utility "branding" (such as so-called "Green Power" claimed to have been generated by environmentally friendly means) and the efforts of advertising and marketing consultants to interest utility management in the development of branded products. We have observed, as never before, a proliferation of new utility names and newly named joint ventures and strategic alliances. The old trademarks may not fit well anymore, but the new ones are being promoted and are obviously expected to be banners under which utilities can deliver a wider variety of services to their customers.

(f) SUMMARY. We should now be looking at formerly regulated utility companies in the same fashion that we have long observed the unregulated business sectors. These companies now will be equipped with a full complement of monetary, tangible, and intangible assets and intellectual property. Utilities are becoming international entities, and their use of intangible assets across international borders may bring them face to face with transfer pricing issues. Investors unquestionably look at utility enterprises differently than they did 15 years ago. Utilities, especially capital-intensive businesses such as the electric and gas industry, always have been substantial payers of local property taxes. The new composition of underlying assets that we have described changes many of the issues with regard to ad valorem taxation.

Most of all, the lifting of traditional regulation has dramatically changed the relative value of the underlying assets in these businesses, with the most dramatic change taking place with respect to intangible assets and intellectual property.

CHAPTER 15

EARLY-STAGE TECHNOLOGY VALUATION

When we talk about early-stage technology, we typically mean technology that has not yet been commercialized or proven beyond laboratory experiments. Early-stage technology can also be nothing more than a technical idea, not yet fully expressed or tested. This chapter discusses the valuation of early-stage technology. The same methodologies discussed throughout this book are used, but the uniqueness of early-stage technology requires additional consideration.

15.1 EARLY-STAGE TECHNOLOGY

Different intellectual properties can be referred to as early-stage technology. Included in this broad category are some of the following:

Untested ideas

Benchtop technology

Prototype technology

Untested ideas are merely the musings of great and sometimes not-so-great inventors. They can be represented by as little as a pencil sketch. Seldom is this category of early-stage technology accompanied by any test data or formulations. Very often it is not known whether the untested technology will perform as expected. Also unknown is whether a market exists for the product or process that would employ the technology.

Benchtop technology has evolved past the idea stage and has shown some promise in laboratory testing. Study and experiments have shown that the new technology has promise. Further research is considered prudent and budgets are established by the new technology owners for continued exploration and refinement. Continued research usually results in experimentation regarding different materials, creation of samples, various formulations, collection of data, and expanding testing.

Prototype technology is actually working in the form of a unique, usually hand-constructed, version of the product or process that embodies the technology. At this point the technology is another step closer to commercialization, but full-scale manufacturing viability is yet to be proven. Prototypes are usually scaled-down versions of what the developers hope can become mainstream processes or products. At this stage development and testing focuses on determining the potential for the new technology to be brought to the marketplace. The technology has many attributes associated with it, including comprehensive testing data, samples, identification of best formulations, and a limited amount of implementation experience, but it has yet to prove full-scale manufacturing viability. Pilot plants may have been built to test a process in near-commercial manufacturing conditions.

(a) COMMON CHARACTERISTICS. Common characteristics of the early-stage technologies discussed are that they have not been successfully offered for commercial sale, government regulations (if needed) and industry standards have not yet been passed, and the marketplace has not yet voted on the desirability of the technology. Part of the still-to-come development of the new technology includes customer exposure to the new technology to gauge their reactions, good or bad.

Another common characteristic involves costs. More money—often a lot— must be invested before the ultimate viability of the technology will be known. This characteristic is coupled with time. Much time, often years, may be needed before the ultimate viability of the technology will be known.

As we have demonstrated in this book, time and money are key factors of value. When large amounts of money can be generated by an intellectual property for a long period of time, then the value of the property is high. This is especially true when the money starts rolling in sooner instead of later. Alternately, a long delay in time before the new technology can begin to provide profits has a significant downward impact on its value. When large sums of money must be spent during the long delay, a further lowering of the value is introduced.

15.2 COST APPROACH AND EARLY-STAGE TECHNOLOGY

Just as with commercialized technology, the cost approach has limitations. Again, it does not reflect the earning power of the new technology or the ultimate market share that may be obtained. The cost of development may have been totally wasted or may dramatically understate the value of the product or service.

15.3 MARKET APPROACH AND EARLY-STAGE TECHNOLOGY

The same difficulties of using this approach for commercialized and mature technology apply to using the market approach for early-stage technology. The goal is to find transactions involving similar early-stage technology that can be used as a proxy for the value of the early-stage technology being studied. Rarely, however, can we find third-party exchanges involving similar early-stage technology. For market transactions to be appropriate comparisons, they should satisfy the comparability factors discussed in Chapter 9. The factors are commented on below.

(a) INTERNAL LICENSES ARE OFTEN SELF-SERVING. Multinational corporations often transfer intellectual property to wholly owned subsidiaries. These transactions are referred to as internal transfers. Many of the pricing terms in these types of transactions are structured to shift income and/or value into jurisdictions with lower income tax burdens. Hence the transaction value may not reflect the economic contribution of the intellectual property. Instead it may be more reflective of differential corporate income tax rates between a multinational corporate parent and a foreign subsidiary. Various tax authorities in many countries, including the United States, are clearing the cloud hanging over these transfers. Tax professionals around the world are diligently looking at internal transaction values, and the transaction prices between international related parties are becoming more arm's length.

(b) RELEVANT TIME PERIOD. When analyzing stock purchases, investors don't give much consideration to the price paid for stocks 20 years, 10 years, 5 years, or even a year

ago. Considerations that are fundamental to pricing common stock include earnings growth prospects, expectations for economic growth, competitor analysis, inflation trends, and a myriad of other expectations about the future, all of which affect future cash flows to investors. The future is the focal point. Expected cash flows determine the amount that investors will pay for a stock. The price paid for a stock in the past is an interesting notation but has little to do with a current pricing analysis. The same is true when corporations engage in mergers and acquisitions. The prices at which businesses are exchanged seldom relate to amounts at which prior transactions were consummated.

It's no different for intellectual property. A valuation must be based on future expectations that both the buyer and the seller individually possess and that eventually converge as negotiations reach a conclusion. Intellectual property values must be determined with an eye to the future. The amount paid years ago for intellectual property may not be relevant in light of changing industry conditions.

When considering aged transaction prices as a proxy for value, also consider the fundamental industry, economic, and cultural changes that have occurred since the date of the transaction, and how the past conditions compare with those in the present.

(c) FINANCIAL CONDITION OF BOTH TRANSACTING PARTIES. When one of the parties in a similar license is desperate to complete the transaction, the amount paid for the intellectual property is clouded. A nearly bankrupt licenser may not have enough time to shop for the best offer and could leave a significant amount of money on the negotiating table. On the other hand, a manufacturing company with obsolete technology may find itself going out of business without access to new technology. This may force it to agree to extra-ordinary terms.

A fair and reasonable value is best determined in an environment where both of the negotiating parties are on equal footing. Both parties should have the option to walk away from the deal. When ancillary forces are compelling one of the negotiating parties to capitulate to the demands of the other, a fair and reasonable proxy of value may be not indicated. An important question to consider is: Were both parties on equal footing when the proxy value was negotiated?

(d) RELEVANT INDUSTRY TRANSACTIONS. Some transactions may involve intellectual property that is similar to the subject property, but the property is transferred for use in a different industry. To be useful for valuation purposes, the transaction must have been negotiated for similar property used in a similar industry. Each industry has its own set of unique economic forces. Some, such as consumer electronics, are highly competitive. Others, such as airlines, are oligopolies. Some industries, such as construction, are sensitive to interest rates. Others, such as food, are not. Some industries, such as apparel, are under strong pressure from foreign producers. Others, such as gravel quarries, are only regionally competitive. All of these factors drive the profitability and growth prospects of the industry participants and impact the amount of economic benefits that intellectual property can contribute to a commercial operation, which relates directly to the value that can be considered reasonable.

(e) INTERNATIONAL TRANSACTIONS. In developing nations where intellectual property protection is weak, the amount paid for it would likely be far less than in developed nations where intellectual property rights are protected and respected. This assumes that an intellectual property owner would even consider allowing for the sale of its property in such countries.

Economic factors are different in many countries. The transaction prices that can be supported in various countries differ. Consequently, transactions in different countries might involve different values for the same intellectual property, none of which may be relevant for the case at hand. Foreign transactions must be in countries with comparable economic prosperity to be useful for valuation.

(f) INTELLECTUAL PROPERTY REMAINING LIFE. The monopolistic protection provided by intellectual property is an important aspect of value. For patents, the remaining life of the intellectual property is finite. When proxy transactions are discovered, they are more useful when the remaining life of the proxy property is similar to that of the subject property. In most cases, a patent with only a few years remaining before expiration is not worth the same amount as one that has many more years of life remaining.

(g) COMPLEMENTARY ASSET INVESTMENT REQUIREMENTS. Regardless of remaining economic life, a significant investment in complementary assets will affect the negotiation. Intellectual property that is associated with a product that delivers a 40% operating profit is a wonderful property indeed. A very high value might be warranted. But if this same intellectual property requires a billion-dollar up-front infrastructure investment, the amount paid for the intellectual property will reflect this important consideration.

(h) NONMONETARY COMPENSATION. Compensation for intellectual property can take many different forms. Sometimes cash alone is the basis of compensation—a cash payment is made by the buyer, and no further payments are required. Lump-sum payments with additional running royalties are another example of license compensation, as are running royalties alone. Sometimes the buyer gets a royalty and also an equity interest in the licensee's company. Sometimes the buyer gets only an equity interest. Transactions also can call for the buyer to share technological enhancements, as grant-backs, with the seller. In return, the buyer might demand a lower value because a portion of the seller's compensation will be in the form of access to enhancements of the original property. Instances also exist of cash payments augmented by the exchange of other intellectual property rights. The problem then becomes determining the value of the intellectual property exchanged and representating the value as a cash amount. Proxy transactions must be looked at for like-kind compensation.

(i) ARE THE INDEPENDENT PARTIES REALLY INDEPENDENT? Independent parties that negotiate a transaction for intellectual property similar to the subject property are not always as independent as they seem. Even when the two companies are separate corporations, the price that is being considered as a proxy may be clouded. Strategic alliances are becoming more prevalent. Corporations are realizing that they cannot, independently, become masters of the many different and complex technologies that they need. Many corporations are involved in joint ventures, licenses, distribution agreements, services agreements, and other arrangements that make them into partners, at least on a limited basis. It's common for corporations to have a number of alliances with different corporations. Merck & Co. is involved with different joint ventures, which include separate partnerships with Johnson & Johnson and Du Pont. Corporations that have several different alliances with the same company also are becoming common.

When one independent company has several alliances with another independent company, are they still really negotiating at arm's length? Intellectual property transactions that are to serve as similar transactions for establishing value are most useful when truly independent parties negotiated in their own self interests.

In addition to these standard factors, comparable early-stage technology transactions should involve technology that is at the same stage of development. Such intellectual property should require that the remaining development time and costs be similar to those of the early-stage technology being valued. Such transactions also should possess the same degree of risk associated with the chances for ultimate commercial success.

The obstacles to using the market approach are formidable and make using this approach for early-stage technology rare.

15.4 INCOME APPROACH AND EARLY-STAGE TECHNOLOGY

The income approach is probably the best alternative for valuing early-stage technology, but care is required for a reasonable answer to be obtained. A discounted cash flow model can be used, as previously demonstrated, but additional elements are required. In addition to the standard elements of net cash flow, elements must be incorporated that reflect the following:

- The up-front development costs for research, engineering, and development of manufacturing processes. Even after the technology is perfected for commercialization, additional expenditures may be required for gaining regulatory approvals. Depending on the stage at which the subject early-stage technology exists, these costs can be significant.
- The timing of these expenditures also must be reflected. The first several years of the discounted cash flow analysis may show significant outflows before income is generated. In the pharmaceuticals industry, many years are required for development and testing, and many more years are required to gain Food and Drug Administration approval.
- Provisions for providing adequate return on other intangible assets and intellectual property are required. Commercialization of the technology being valued might require it to be associated with a well-established trademark, distribution network, customer list, and other intangibles. To account for these assets, the net cash flows should reflect a charge for them. The charge should be such that the other assets used are provided with a fair rate of return. In the case of an existing trademark, the cash flows derived from the early-stage technology might be charged with a royalty for being associated with the trademark.

For established technology, the income approach has a foundation of historic financial performance. Past sales, costs, and profits can serve as a starting point for forecasting the future financial performance of established technology. No past exists for early-stage technology. The income approach must be created with little or no historical guidance. Many businesspeople believe that this type of analytical environment can yield a superior analysis. It forces analysts to consider carefully basic elements of the analysis that otherwise might have been taken for granted.

(a) MARKET PENETRATION AND SALES FORECASTS. The introduction of new technology to the marketplace can have several results. The product or service in which the technology is embedded can be a success, a disappointment, or a failure.

(i) Success. Exhibit 15.1 shows a typical growth pattern for the commercial offering of a successful new product or service. Initially market penetration is slow as only a limited number of potential customers adopt the new commercial offering. As the new commercial

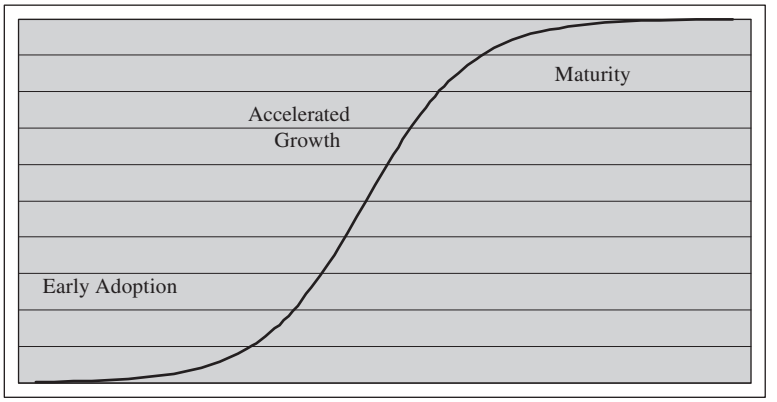

EXHIBIT 15.1 EARLY-STAGE TECHNOLOGY–SUCCESS

effort gains popularity, it is adopted at an accelerated pace. Later the commercial offering reaches maturity, and sales growth slows and eventually declines. Accelerated adoption may occur quickly or slowly. Maturity may be reached quickly or take many years. Reception of television programs via an 15-inch satellite dish, Direct Broadcast Satellite, was accepted by the market faster than any other consumer electronics product in history. Remote telephone service, which currently takes the form of cellular telephones, has existed since the 1960s but has been adopted widely only in recent years.

Just as growth can take different forms, the eventual decline may be slow or abrupt. To value an early-stage technology, all aspects of the sales pattern shown in Exhibit 15.1 must be addressed.

(ii) Disappointment. Investment is not consciously made in technology that will provide disappointing results, but that possibility exists. Initially promising sales might be derailed, perhaps because the total market demand for the product or service was overestimated. After reaching a certain level of market penetration, additional growth might become stalled, as everyone who wants the product has been satisfied. Promising results also might be cut short by a newer and better technology entering the scene soon after the technology being studied is commercially introduced. Other reasons that sales never meet initial expectations might be associated with unanticipated manufacturing limitations, unanticipated raw material limitations, and/or unanticipated government regulations.

As the value of early-stage technology is being considered, so must the possibility that market penetration and sales expectations will be disappointing.

(iii) Failure. Total failure is always a possibility that exists for early-stage technology when it finally reaches the market. The timing and pattern of such failure is not of critical importance because total failure usually is detected early and is unchanging. DuPont introduced a material that perfectly emulated leather. It was a man-made material that was breathable, soft, and attractive. Unlike leather, it was impervious to water and much more durable. It passed from the idea stage, through benchtop research, beyond prototype development, and all the way to commercialization. Total failure occurred as the market rejected the material as a leather substitute. Consciously or subconsciously, the luxury market did not want to wear plastic shoes or carry plastic handbags. When valuing early-stage technology at any point in its early life cycle, the possibility that total failure may occur must be addressed.

The analysis of early-stage technology starts with expectations about market penetration and sales forecasts. In the case of a product, unit sales must be considered, and product pricing estimates must be made. Some of the factors to consider include expectations about:

- Future conditions for the general economy
- Future conditions for the industry in which the product will be produced
- Future economic conditions impacted the expected customer base
- Product and pricing reactions by competitors

(b) MANUFACTURING COSTS AND GROSS PROFITS. Historical experience can be useful for estimating manufacturing costs. When the owner of the early-stage technology has some experience with commercializing similar products or services, such experience provides a foundation for costs associated with the new product or service. One element that may prove challenging involves the experience curve. Optimizing these costs is always the goal, but the time needed to make perfect the manufacturing process can be a source of error. A realistic assessment of past learning curve experiences should be acknowledged and factored into the analysis.

(c) OVERHEAD COSTS. Historical experience with similar products or services is also useful for this element of the analysis. Traditional expenses for various overhead categories can be a useful foundation for this part of the analysis. However, provisions must be included for start-up expenses associated with product introduction. These extraordinary expenses might include:

- Advertising to introduce the new product
- Advertising to educate the market about the new technology
- Education of salespersons regarding the new product
- Customer visits by salespeople for customer education
- Publication of educational materials
- Attendance at trade shows
- Introductory pricing discounts
- Free samples

(d) DEVELOPMENT OF RELATED INTANGIBLE ASSETS. The earnings potential of early-stage technology is also dependent on the business enterprise asset categories discussed in Chapters 2 and 3. Monetary assets, fixed assets, and intangible assets, along with possibly other intellectual property, are all integrated. A proper income approach model should account for the contribution of these assets. When these assets are acknowledged in an income approach model, the remaining earnings can be ascribed solely to the early-stage technology. Capitalization of the remaining earnings represents a value for the subject early-stage technology. An illustrative discounted cash flow analysis shows a simple example of how this is accomplished. For example, a process may require a feedstock or component that is discovered to be in short supply; perhaps a new plant must be built for it.

(e) HIGH DISCOUNT RATES. The conversion of forecast income into a value requires the use of a discount rate discussed previously in this book and in Appendix A. Investments in emerging technology carry high risks with considerable potential for complete

loss of the initial investment. In addition to the risks previously discussed, such as inflation, competition, changing economic climates, and the like, emerging technology carries additional risks, including the possibility that laboratory-scale success may not survive the transition to pilot-plant production or that pilot-plant-scale success may not be economically successful at full-scale levels of commercial production. A high discount rate accounts for the possibility of the disappointment and failure scenarios previously discussed.

These types of intellectual property investments involve substantial risks, and investors expect substantial "paydays" if the commercial viability ever materializes. Seed money for such risky investments is provided more and more by venture capitalists. Sometimes the word "venture" is replaced with "vulture" because of the seemingly extraordinary rate of returns that these investors require. But, considering the high potential in these cases for complete loss of millions of dollars of seed money, the required investment returns aren't really out of line.

The rate of return required by venture capitalists changes with the amount of risk that is perceived at each stage. Presented below is an estimate of the amount of return required at different development stages:

Venture Capital Rates of Return	
Stage of Development	**Required Rate of Return (%)**
Start-Up	50
First Stage	40
Second Stage	30
Third Stage	25

The various levels of venture financing can be expressed as follows:

Start-up is a company with an idea and not much else. This is the riskiest level of embryonic intellectual property investment and requires the largest amount of return. The funds are used for basic research and possibly development of a prototype. At this stage revenues are not even part of management goals.

First-stage companies may have a prototype that has proven its capabilities, but further development is required before commercial scales of production can be achieved. Positive net cash flows may still be several years away.

Second-stage companies may have experienced success in the commercial production of the product or service, but expansion of market penetration requires substantial amounts that a bank may be unwilling to provide. At this point, the ability to make a profit may be already proven but rapid expansion requires more than present operations can provide.

Third-stage financing begins to blur with fast growth companies that can get limited bank loans or additional funds from a public offering. Strong profit levels may be achieved consistently, but more funds are needed for national or global expansion.

The drug industry can provide a specific industry example. Hambrecht and Quist, a venture capital investor, uses the following investment rate of return requirements for discounting cash flows derived from commercialization of biotechnology and pharmaceutical technology. Ashley Stevens of Boston University Community Technology Fund discussed these rates at a Licensing Executives Society conference in Orlando, Florida. The following table shows how the rates are related to the risk of different biotechnology and pharmaceutical projects.

Hambrecht & Quist	
Development Stage	**Required Rate of Return (%)**
Discovery	80.0
Preclinical	60.0
Phase I Clinical Trials	50.0
Phase II Clinical Trials	40.0
Phase III Clinical Trials	25.0
New Drug Application	22.5
Product Launch	17.5-15

After product launch, the remaining categories of business risk begin to fall into categories that are typical of ordinary businesses. Rapid growth products and mature products carry investment risk that can be quantified by performing a weighted average cost of capital analysis, as discussed more fully in Appendix A.

Venture capital companies are not long-term investors. They typically try to get out of the investment in five to seven years with a 3- to 10-fold increase in the original investment. This is usually accomplished by selling their interest in the developed company to a larger corporation or taking the developed company public.

When valuing early-stage technology, it must be recognized that extraordinary financial benefits eventually may be obtained. At the same time, the risks associated with these potential benefits are high. Use of the income approach for valuing early-stage technology should reflect this high risk by using an appropriate discount rate.

(f) PRESENT VALUE PRINCIPLES. In Chapter 7 we discussed present value principles at length, noting the effects of various discount rates and the timing of income receipts on present value. Readers can refresh their memory by reviewing the Income Approach discussion in Chapter 7. The essence, relevant here, however, is that higher discount rates lower value, and having to wait longer for income lowers value. Quite obviously, early-stage technology is not ready to produce income and its risk of failure is considerable. Hence delayed income and higher discount rates—lower value.

Exhibit 7.3 illustrates the impact on value associated with high discount rates. It shows the present value of a stream of $300,000 discounted at a rate of 2, 15, and 25%. The effects of time and discount rate on present value can be observed on Exhibit 7.3.

(g) TIMING DELAYS. As previously mentioned, time has a significant impact on value. This is especially true for early-stage technology, where high discount rates are the norm. Clearly, early-stage technology value depends on the question of when will earnings begin.

(h) EARLY-STAGE DISCOUNTED CASH FLOW MODEL. Exhibit 15.2 provides a discounted cash flow (DCF) analysis of a hypothetical early-stage technology. The various inputs are provided to demonstrate the concepts discussed and do not represent the value of any specific type of technology.

The first principle demonstrated is the delay that is expected before cash flows will begin to be generated from utilization of the new technology. In year 4, when sales are expected to begin, unit pricing is expected to initially be low. Unit price increases in later years. Sometimes unit pricing in the early years is higher than later years. This can be expected when early adopters of the technology are expected to purchase the product regardless of price. Many new consumer electronics products have demonstrated this action. For this example, early pricing is low, and prices are raised later as market acceptance is gained.

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10
Revenue										
Number of units	0	0	0	25,000	350,000	750,000	2,000,000	4,000,000	5,000,000	5,000,000
Price per unit	0	0	0	75	85	100	110	120	125	125
Total Revenue	0	0	0	1,875,000	29,750,000	75,000,000	220,000,000	480,000,000	625,000,000	625,000,000
Manufacturing Costs										
As % of sales	0%	0%	0%	75%	65%	55%	40%	40%	40%	40%
Manufacturing costs	0	0	0	1,406,250	19,337,500	41,250,000	88,000,000	192,000,000	250,000,000	250,000,000
Gross Profit	0	0	0	468,750	10,412,500	33,750,000	132,000,000	288,000,000	375,000,000	375,000,000
Standard Overhead Expenses										
G&A @ 12% of sales	0	0	0	225,000	3,570,000	9,000,000	26,400,000	57,600,000	75,000,000	75,000,000
Sales @ 10% of sales	0	0	0	187,500	2,975,000	7,500,000	22,000,000	48,000,000	62,500,000	62,500,000
Marketing @ 3% of sales	0	0	0	56,250	892,500	2,250,000	6,600,000	14,400,000	18,750,000	18,750,000
Use of existing trademark @ 3% of sales	0	0	0	56,250	892,500	2,250,000	6,600,000	14,400,000	18,750,000	18,750,000
Use of existing technology @ 2% of sales	0	0	0	37,500	595,000	1,500,000	4,400,000	9,600,000	12,500,000	12,500,000
Total Standard Overhead Expense	0	0	0	562,500	8,925,000	22,500,000	66,000,000	144,000,000	187,500,000	187,500,000
Start-up Overhead Expenses										
Research & development	10,000,000	5,000,000	1,000,000	0	0	0	0	0	0	0
Manufacturing engineering	0	1,000,000	2,000,000	0	0	0	0	0	0	0
Regulatory approvals	1,000,000	3,000,000	100,000	0	0	0	0	0	0	0
Start-up advertising	0	0	1,000,000	7,500,000	0	0	0	0	0	0
Salesperson training	0	0	20,000	100,000	0	0	0	0	0	0
Extraordinary promotion expense	0	0	0	3,000,000	0	0	0	0	0	0
Total Start-up Overhead Expense	11,000,000	9,000,000	4,120,000	10,600,000	0	0	0	0	0	0

EXHIBIT 15.2 EARLY-STAGE TECHNOLOGY DCF MODEL

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10
Operating Income	11,000,000	–9,000,000	–4,120,000	–10,693,750	1,487,500	11,250,000	66,000,000	144,000,000	187,500,000	187,500,000
Income taxes	0	0	0	0	595,000	4,500,000	26,400,000	57,600,000	75,000,000	75,000,000
Net Income	-11,000,000	-9,000,000	-4,120,000	-10,693,750	892,500	6,750,000	39,600,000	86,400,000	112,500,000	112,500,000
Cash Flow Analysis										
Depreciation	100,000	200,000	300,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
Capital expenditures	1,000,000	1,000,000	5,000,000	4,000,000	47,500	75,000	375,000	250,000	250,000	250,000
Additions to working capital	0	0	0	100,000	23,750	37,500	187,500	125,000	125,000	0
Net Cash Flow	-11,900,000	-9,800,000	-8,820,000	-13,693,750	1,921,250	7,737,500	40,137,500	87,125,000	113,225,000	113,350,000
Present Value @ 25%	-10,643,684	-7,012,309	-5,048,863	-6,271,008	703,864	2,267,752	9,410,988	16,342,470	16,990,541	13,607,439
TOTAL NET PRESENT VALUE	30,347,190									

EXHIBIT 15.2 EARLY-STAGE TECHNOLOGY DCF MODEL *(CONTINUED)*

Manufacturing costs are shown to start high, as a percent of sales, and later trend downward. This represents manufacturing experience, which is expected eventually to allow for manufacturing costs to be optimized at 40% of sales.

Standard overhead expenses are those typically associated with the products offered by this hypothetical company. Included in this category of expenses is a charge for use of other relevant intellectual property that is established and will be used in commercializing the new technology. Recognition of established technology and trademarks has been accounted for by charging the new product line with a royalty as a percentage of sales.

Before sales and earnings can be enjoyed, work has to be done. Start-up overhead expenses attempt to capture different efforts that must be accomplished and when they will be expected to be completed. Efforts included are:

- Research and development work takes place assuming that additional basic research is still needed.
- Manufacturing engineering represents the expenses and time needed to develop a full-scale manufacturing capability.
- The time and cost to obtain government regulations are shown, but not until the proper time frame, after R&D is proven, and the manufacturing process is considered to be viable.
- Other start-up expenses are shown for training salespeople, advertising beyond the typical amount expected, and extraordinary promotional expenses.

To calculate cash flow, consideration is given to the timing and amount of fixed assets that must be put into place. In anticipation of success, this process must be started early, but the bulk of the expenditures is delayed for as long as time will permit.

After the net cash flows are calculated, an appropriate discount rate must be chosen to reflect the risks associated with realizing the expected cash flows.

For this example, the early-stage technology has a value of over $30 million.

Some people look at the DCF task and throw up their hands—it's too hard, too complicated, they can't make such forecasts. But if you don't do it, you may as well throw darts.

Software packages are available that introduce Monte Carlo theory into discounted cash flow models. This form of DCF was discussed in Chapter 12. Instead of setting fixed values for some or all of the components, a range of values can be set. For example, in offsetting manufacturing costs, in the later years, to 40% of rates, a range can be set. The model is then run many times using different manufacturing costs from the specified range. The different values that result are then plotted on a distribution analysis showing the most likely outcome. Many people are more comfortable setting a range for the different input variables, and Monte Carlo software products accommodate this desire.

15.5 SUMMARY

The cost and market approaches are rarely appropriate for early-stage technology for the reasons stated in this chapter. They are simply unable to properly capture the unique aspects of embryonic intellectual property. The income approach is the preferred methodology, and that inevitably means a discounted cash flow technique. We must remember, as we stressed in Chapter 7, that market value is equal to the present value of the future economic benefits of ownership. The discounted cash flow technique captures this precisely and is therefore the preferred method for calculating present value not only for intangible assets and intellectual

property, but for all types of financial assets and tangible assets as well. It has been in universal use for many years and will continue to be so used in the future.

The fact that "all roads lead to Rome" (the DCF technique) should not lead us to the conclusion that the DCF is necessarily a simplistic solution. In Chapter 12 we provided an example of a straightforward DCF model. In the first part of this chapter we showed a DCF model modified to show the additional inputs that might be required for the valuation of early-stage technology. In Chapter 11, we discussed forecasting and suggested some forecasting models to assist in assembling the DCF inputs. It should be more and more obvious that our earlier statement is true:

The arithmetic is easy, it is the inputs that are difficult

(a) ADDING COMPLEXITY. While we recognize the keystone role of the DCF model, we must, in fairness, recognize that it has deficiencies. These deficiencies are brought clearly into focus in the case of early-stage technology. Referring back to Exhibit 15.2, we modified what could be called a "standard" DCF model by including line items of revenue and expenses that enable us to reflect some of the peculiarities of early-stage technology development. That is, we gave ourselves the option of altering the price per unit, calculating manufacturing costs as a varying percentage of sales, and we allowed for a return on complementary assets as well as the unusual overhead expenses associated with the introduction of new products or services built on the new technology.

As we previously noted, the present value of the forecast net cash flow shown on Exhibit 15.2 is $30.3 million. This present value conclusion is, of course, a function of the forecast net cash flows over the 10-year period. Those net cash flows are, in turn, dependent upon the attainment of the forecast revenues and expenses. Some have called such a DCF model a "single outcome" calculation, in that the calculated present value is only valid if the amount and timing of the revenues and expenses occur as forecast. If anything changes that, present value outcome would be different. This is a reasonable criticism, even though it might not be valid in every case. Obviously, manufacturing costs, as an example, would not be as forecast if revenues did not grow as forecast. We must recognize that the present value conclusion might be unchanged even if some line items in the income statement do not come out precisely as planned. We must recognize, however, the general condition that the calculated present value results from the particular inputs we used.

We also point out the fact that net cash flow, which drives the present value conclusion, is significantly negative during the first 4 years of the forecast, when expenses are being incurred without accompanying revenues. The mathematics of the present value calculations causes those early negative net cash flows to loom large because they are close at hand. It is only because net cash flows in the last years of the forecast are so large that the present value of the net cash flows is a positive amount. Early-stage technology exploitation is also characterized by high risk, hence high rates of discount are common. This exacerbates the condition of early year losses. It is therefore not unusual for such a forecast involving early-stage technology to indicate an extremely low or even a negative net present value. On the surface, this indicates that the project should not be carried out (or that the underlying technology has no value) because there is no possibility of earning a reasonable return on the investment. Some have argued that such a result could be misleading because decisions could be made (or events occur) during the development period that would ameliorate expenses and/or accelerate revenues, so that early losses would be mitigated and the net present value would be a positive amount. The

nature of a single DCF model calculation is that such midcourse correction possibilities cannot be reflected.

One method to correct this situation is to utilize different discount rates during the forecast period. Typically the highest rate would be applied to the earliest years' net cash flows, when the risk of failure is highest. The rate would be reduced in stages during the ensuing years as milestones would be reached, indicating successful development, which, in turn, indicates lower risk for future net cash flows. If the relevant development milestones and the risk elements of the discount rate can be identified, this may produce a more realistic estimate of present value.

(b) MULTIPLE SCENARIOS. Another solution to the criticisms noted above is to perform multiple DCF calculations. This is often done in the form of a "pessimistic case," "base case," "optimistic case" scenario. This can be unsatisfactory since, in most cases, managers or appraisers are seeking a single conclusion.

This can be resolved by simply making a judgment about an appropriate value conclusion based on a consideration of the multiple results. A more analytical technique is to assign probabilities to each of the multiple results and compute a probability-weighted conclusion. This could also be called a *decision tree* or *event tree* solution. It has the benefit of forcing one to identify possible outcomes and analyze their probable result.

(i) Monte Carlo Simulation. A Monte Carlo simulation is a sophisticated extension of the multiple-scenario DCF. Monte Carlo calculations are computer-based because of their complexity and multiplicity. In essence, one would address each line item of a DCF calculation such as that shown in Exhibit 15.2. For each "cell," one estimates the range of possible values and the shape of the distribution of those values. As an example, the number of units that is forecast to be sold on Exhibit 15.2 for Period 4 is 25,000. Utilizing the Monte Carlo simulation, we might estimate that the low end of the range would be zero and the high end of the range 100,000, if we saw the possibility of being unusually successful in the first year of commercialization. We would then tell the Monte Carlo model that in between these extremes the distribution of the values should be "normal" (i.e., a bell-shaped typical distribution). The Monte Carlo simulation then calculates hundreds or even thousands of net present values based upon all of the various combinations of revenues and expenses produced by our cell specifications. In addition, it provides those answers in the form of a frequency chart that allows us to visualize the probabilities of various net present value outcomes.

(c) OPTION-PRICING MODELS. In 1972, Black and Scholes published an article that outlined a model for valuing financial options.[1] That model and modifications of it have been widely used ever since to appraise financial options.[2] These options are defined as the right to buy or sell a specific underlying asset at a fixed price (so-called strike price) prior to some expiration date. The owner of such an option has the right to make this purchase, but is not obligated to do so. A so-called call option gives the owner the option to

1. F. Black. and M. Scholes, "The Valuation of Option Contracts and a Test of Market Efficiency," *Journal of Finance*, 27, 1972.

2. The reader is directed to several additional sources of information on the real option technique including: www.decisioneering.com (Crystal Ball® and Real Options Analysis software), Razgaitis, Richard, *Dealmaking: Business Negotiations Using Real Options and Monte Carlo*, John Wiley & Sons, Inc., Hoboken, NJ, 2003, and Mun, Jonathon, *Real Options Analysis, Tools and Techniques for Valuing Strategic Investments and Decisions*, John Wiley & Sons, Inc., Hoboken, NJ, 2002.

buy the specific asset, and a so-called put option grants the owner the option to sell specific property.

Recently, some have come forward with the idea that the valuation of a call option is analogous to the valuation of certain types of intellectual property. Since the rights connected with financial options are highly variable, based upon the vagaries of the marketplace and the unique prospects for a specific financial instrument, it has been suggested that the call option methodology is especially appropriate in the valuation of early-stage technology, which involves many of the same uncertain conditions. This DCF technique has been called the "real option" method. It is mathematically the most complex, and the required inputs are very difficult as well.

To utilize the option valuation methodology, one must attempt to quantify the primary determinants of value:

- The current value of the asset
- The variance in value of the asset in the future
- Income that might be reasonably expected from exploiting the underlying asset ("dividend paid" in the Black-Scholes terminology)
- The "strike price" of the option, usually taken to be equal to the investment necessary to commercialize the opportunity
- The time to the expiration of the option (economic life)
- A riskless interest rate expected during the life of the option

Current value of the asset is derived in a calculation of the present value of future cash flows. Thus the "real options" technique begins with a "standard" DCF calculation.

Variance in asset value, when used for valuing financial instruments, is usually measured by the volatility of the underlying stock or a group of similar stocks. This is much more difficult with technology. One could look to the revenue or cash flow volatility of similar technologies (if such data are available) or use an educated guess. Some have suggested using the volatility in stock prices of companies similar to the one that owns the subject technology. The difficulty with this, of course, is that stock prices reflect investors' opinions about the whole portfolio of assets that underlies an enterprise, not an isolated intellectual property asset.

Income from exploitation is the net cash flow expected to be realized in the future.

Strike price is the investment necessary to launch the product/service supported by the subject technology.

Time to expiration is the economic life of the intended exploitation—perhaps equal to legal life, perhaps not.

Riskless interest rate would be analogous to a long-term government bond.

The effect of these elements on the resulting option value is as follows:

- An increase in the value of the underlying asset will cause the option value to increase.
- An increase in the cost to commercialize the asset will cause the option value to decrease.
- An increase in the volatility of the value of the underlying asset will cause the option value to increase.

- An increase in the time to expiration of the option will cause the option value to increase.
- An increase in the "riskless" interest rate will cause the option value to increase.
- An increase in the amount of income produced by the asset during the option period will cause the option value to decrease.

That an increase in cash flow volatility causes an option to increase in value is certainly counterintuitive. We are used to the relationship great volatility = high risk = high discount rate = low present value. In our understanding, however, the mathematics of option pricing factors in all of the financial possibilities, from great success to dismal failure. But since an option is an opportunity and not an obligation, it is only going to be exercised if the outcome is slightly, moderately, or hugely successful.[3] It won't be exercised if the outcome is a disaster and the loss is limited to the option price. To us, this means that the option-pricing technique will indicate value higher than a typical DCF because it "leans" toward successful outcomes. Greater volatility, therefore, means that there is more huge success built into the calculation than otherwise.

We feel that the jury is still out relative to the advisability of employing the real options technique, and when and how it can be useful. One thing is clear, however; it is an income approach in the classic sense, and its underlying principles are those of the DCF model.

The income approach in the form of a discounted cash flow analysis is very useful for valuing early-stage technology, but it must be adjusted to reflect factors unique to the technology. Such factors include the time and money required to transform the technology into a commercially viable product or service. Several scenarios of the income approach usually are recommended for valuing early-stage technology. A best, worst, and most-likely case should be modeled, in which different assumptions are made about market penetration, unit sales forecast, product pricing, manufacturing costs, overhead expenses, commercialization development costs, development time requirements, and the use of other intangible and intellectual property assets.

When reasonable forecasts about the potential for commercial exploitation are not possible, the cost approach can serve to indicate the value of the technology. A required assumption for this method is that future and yet undeterminable economic gains will be sufficient to provide a fair rate of return on the costs used to determine the value.

The market approach is not easily implemented for early-stage technology because of the scarcity of third-party transactions that can serve as proxies for value.

3. This is of course why venture capitalists commit investment in multiple rounds in order to preserve future options to invest based on interim successes.

CHAPTER 16

INTERNATIONAL ISSUES

In Chapter 1 we discussed the global power of intangible assets, and in Chapter 5 some international accounting standards. Chapter 6 introduced the valuation aspects of transfer pricing, which is an increasingly important international tax matter. Ever since the first traders set out from home to sell the products of their labor, we have recognized the added risks of so doing business. At first, it was the possibility of being set on by robbers or being the victim of a travel accident. We are still setting out from our own turf to do business, and the added risks are still there. The highwaymen are perhaps more subtle, but they are still around, along with a host of other more complicated pitfalls.

In this chapter, we are going to address the many conditions that arise from the international exploitation of intellectual property, and analyze how they affect the economics of exploitation. We again will put this analysis in terms of evaluating the present value of future cash flows from exploitation. It is therefore necessary to consider the effect of conditions arising from the international environment. The elements that we must quantify are by now familiar: *duration* (Will this condition alter the duration of future cash flows?), the *amount* (How will the international environment change the amount of cash flow?), and the *risk* (Has the risk changed by going international?). Each day brings an increase in international commerce and accentuates the need for more commonality in the languages we use to describe business activities.

> We are finally living in a world where money, securities, services, options, futures, information and patents, software and hardware, companies and know-how, assets and memberships, paintings and brands are all traded without national sentiments across traditional borders.[1]

In large measure, property valuation technology seems to have developed in several countries of the world where views on private property and its rights—and perhaps its use as the basis for taxation—have provided impetus. The subject of valuation has now spread worldwide and has become one of intense interest in many countries. In many parts of the world, state-owned property is being privatized (faster, perhaps, than fledgling markets can absorb it), and other developing countries are seeking international commercial relationships. Both of these activities require the ability to perform credible property valuations.

Several years ago, we were part of a team conducting asset valuation seminars in China. At the time, Chinese interest in this subject was far from obvious. It became clear, however, that their interest was twofold: learning asset valuation skills so as to better participate in international transactions and using valuation concepts to better evaluate their own businesses. They were most attentive to the use of discounted cash flow techniques to compare alternative business scenarios.

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1. Kenichi Ohmae, *The Borderless World* (Harper & Row New York, 1990).

In the years that followed that visit, Asia exploded with incoming investment, building plants, skyscrapers, and housing. New industry sprang up, and standards of living in many Asian countries rose sharply. In Europe, the Berlin Wall came down and the Soviet Union was dissolved. Russia jumped into a market economy for the first time in generations. Most recently, however, that picture of worldwide growth changed dramatically. Russia suffers from political and economic disarray, and Asia is recovering from a serious recession. Against this background, however, China and India are surging ahead economically. China's exports are up 125% during the past 5 years, and India has become a technology and services outsourcing locale for some of the world's largest businesses. China's Shanghai Baosteel Group is growing explosively, not only to meet the strong internal growth of steel use, but to become an exporter as well.

Just as accounting standards define a common language by which we talk "business" to one another, valuation standards are the means by which we can evaluate business opportunities and performance on a common basis. Although the accounting profession has worked hard to develop international accounting standards, they are still evolving. The development of internationally accepted valuation standards has lagged behind, although progress has been made.

The same political, cultural, and economic differences that have hindered the development of internationally accepted accounting standards have had an impact on the development of valuation standards. If, as an example, the state owns all of the rights appurtenant to land, how are we to understand its market value? If the knowledge of how to produce a life-saving drug is considered to be the property of society rather than its developer, or is unprotected as private property, how are we to understand its value? And how are we to understand the arithmetic of a capitalization of income? What income? From where? What financial marketplace will provide some guidelines? We are not attempting to make a political point but rather to use these examples to illustrate the very real barriers that exist when we attempt to describe the valuation process in an international context.

The process is exacerbated because the property of commerce today is primarily intangible. The focus of our business has shifted from tractors to computer chips, and this applies to international commerce as well. So the leap of understanding must be made across an ever-widening chasm. Our understanding must not just cope with the jump from state-owned land to land rights in the marketplace, it must soar from state-owned land to the rights for the use of computer software or multimedia exploitation. Even those of us who have some familiarity with intellectual property valuation issues sometimes must run to catch up with events. The shift from a state-controlled economy to a marketplace one is dramatic indeed.

16.1 INTERNATIONAL VALUATION STANDARDS

Having described the problem and the need, we can address some of the solutions that are becoming available. Achieving agreement relative to international valuation standards is not a trivial matter. Previously we exposed the reader to our definition of *fair market value* (one that is nearly universally accepted in the United States). Since we are "separated by a common language," the British define the concept somewhat differently:

> "Open Market Value" is intended to mean the best price at which an interest in a property might reasonably be expected to be sold by private treaty at the date of valuation assuming:
>
> **a.** a willing seller;
> **b.** a reasonable period within which to negotiate the sale taking into account the nature of the property and the state of the market;

c. values will remain static throughout the period;
d. the property will be freely exposed to the market;
e. no account is to be taken of an additional bid by a special purchaser.[2]

This is not a shocking difference, and this definition nicely incorporates some of the modifiers we must use here to explain certain permutations of fair market value. Nevertheless, it *is* different and it requires some thought to discern the differences in a given situation. Transplant the valuation issue to Malaysia or Germany or Sweden, and the first step in the process (determining the appropriate premise of value) changes from being routine to being very important.

(a) INTERNATIONAL ASSETS VALUATION STANDARDS COMMITTEE. In 1981, The International Assets Valuation Standards Committee (TIAVSC) was founded. At the time, a number of national valuation bodies had developed and established standards of professional practice for their own memberships. Codes of professional ethics also had been developed in some countries. It became increasingly apparent to the members of these national groups that the development of international financial markets required some standardization of appraisal practices and standards.

> The principal TIAVSC objective is to formulate and publish in the public interest valuation standards and procedural guidance for the valuation of assets for use in financial statements, and to promote their worldwide acceptance and observance. The second objective is to harmonize standards among the world's states and to make disclosures of differences in standard statements and/or applications of standards as they occur. It is a particular goal of TIAVSC that international valuation standards be recognized in statements of international accounting and other reporting standards, and that Valuers recognize what is needed from them under the standards of other professional disciplines.[3]

During the years that followed the formation of TIAVSC, it became obvious that assets other than tangible ones needed to be addressed. Accordingly, in March 1995 the name was changed to the International Valuation Standards Committee (IVSC), and the objectives were widened to include all business and intangible assets. With the destruction of the Iron Curtain and the trend toward privatization of most economics, members and interest in the IVSC expanded.

The membership of IVSC comprises appointed members from national valuation societies and institutions representing their respective states. The IVSC is a Nongovernment Organization member of the United Nations and works with the OECD, the World Bank, the World Trade Organization, and the Commission of the European Union, among other agencies.

(b) IVSC STANDARDS. The most recent, sixth edition of the International Valuation Standards was published in April of 2003, and included:

- Introduction
- General Valuation Concepts and Principles
- Code of Conduct
- Property Types

2. W. H. Rees, ed., "Valuation: Principles into Practice," *The Estates Gazette Limited* (1998), p. 481.
3. "International Valuation Standards," published by The International Assets Valuation Standards Committee, p. 2.

- International Valuation Standards:
  - Introduction to International Valuation Standards
  - IVS 1: Market Value Basis of Valuation
  - IVS 2: Valuation Bases Other Than Market Value
  - IVS 3: Valuation Reporting
- International Valuation Applications:
  - IVA 1: Valuations for Financial Reporting
  - IVA 2: Valuations for Lending Purposes
- Guidance Notes
  - GN 1: Real Property Valuation
  - GN 2: Valuation of Lease Interests
  - GN 3: Valuation of Plant and Equipment
  - GN 4: Valuation of Intangible Assets
  - GN 5: Valuation of Personal Property
  - GN 6: Business Valuation
  - GN 7: Consideration of Hazardous and Toxic Substances in Valuation
  - GN 8: Depreciated Replacement Cost
  - GN 9: Discounted Cash Flow Analysis for Market and Nonmarket Valuations
  - GN 10: Valuation of Agricultural Properties
  - GN 11: Reviewing Valuations
- White Paper
  - Valuation in Emerging Markets
- Glossary

In the following, we briefly review these international standards and applications and performance guidances, touching on those items that we feel should be noted, either because they are the same as or similar to the standards presented in this book, or because they are significantly different.

Depreciation—The standards recognize the difference between accounting and valuation depreciation. In this book, we have suggested that the word "depreciation" be used to denote loss in value, and that the term "capital recovery" be used for accounting purposes. The International Standards use "depreciation" for both conditions, but differentiate by referring to "accrued depreciation" as a loss in value attributable to physical deterioration, functional or technical obsolescence, or external obsolescence, and referring to "accruals for depreciation" as allowances made by accountants as "offsets to the original cost of assets under the historical cost convention." One must therefore be a bit more attentive to depreciation terminology internationally in order to be sure whether a reference is to valuation or accounting terminology.

Market. "Market" is defined by the standards as a system in which goods and services are traded between buyers and sellers through a price mechanism. Trades between buyers and sellers are without undue restriction, and each is responding to supply-demand relationships, their knowledge, and their understanding of the use of the goods or services being traded. This is a fairly universal definition that we believe would find agreement almost anywhere.

Market Value. The IVSC standards define "market value" as: "The estimated amount for which an asset should exchange on the date of valuation between a willing buyer

and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion."[4]

Highest and Best Use. The standards define this as: "The most probable use of an asset which is physically possible, appropriately justified, legally permissible, financially feasible, and which results in the highest value of the asset valued."[5]

Going Concern Value. As defined in GN 4, this comprises the "Intangible elements of value in an operating business resulting from factors such as having a trained workforce, an operational plant, and the necessary licenses, systems, and procedures in place."[6]

Depreciated Replacement Cost. The standards recognize that highly specialized properties are rarely sold on the open market except as part of a business to which they are dedicated. In this case, the depreciated replacement cost (DRC) method is preferred. *Depreciated replacement cost* is defined as the gross replacement (or reproduction) cost, less allowances for physical deterioration and all relevant forms of obsolescence and optimization. The standards also stress that a market value determined by the DRC method must always be supported by adequate potential profitability of the enterprise. With this we wholeheartedly agree.

(c) IVSC STANDARDS—INTANGIBLE ASSETS. The IVSC Standards for the Valuation of Intangible Assets are contained in Guidance Note No. 4 (GN 4). A reader consulting this reference would not be surprised by the contents, in that the guidelines follow our discussion quite closely and there are no significant conflicts:

- Intangible assets are described as comprising rights, relationships, grouped intangibles and intellectual property.
- A distinction is made between legal life and economic life.
- Reference is made to International Accounting Standard 38, which describes the accounting for intangibles.
- A rather complete checklist is provided of the tasks to accomplish in an intangible asset appraisal, together with a good description of the application of the cost, market, and income approaches as they apply to intangible property.

16.2 OTHER INTERNATIONAL VALUATION ISSUES

In Chapters 7 through 12 we discussed the application of the cost, market, and income approaches to valuation. Although we believe that these approaches are universal in nature (although often called by other names) and that they ought to be applicable in any property situation anywhere in the world, there may be legal, economic, and practical restraints to applying them in precisely the way we described. The following paragraphs discuss some of the differences and potential pitfalls. This discussion includes some tangible asset illustrations because, as the reader will remember, we advocate the concept of analyzing the whole business enterprise (including all assets—monetary, tangible, and intangible), when possible.

(a) COST APPROACH. One might think that the application of the cost approach from country to country would be quite uniform (certainly the previous discussion on IVSC

4. IVS 1, page 1–5, para. 5.2.
5. IVS 3, page 3–5, para. 6.3.
6. GN 4, para. 3.2.2.

Standards would suggest that), but individual factors can affect its application. One of the practical matters that has to be addressed is the availability of the subject property in the country in question. We have become accustomed to assuming that almost any kind of property is readily available, and we are not used to thinking in terms of substantial delays that might be experienced in the replacement cost element. Recently we were made aware of the worldwide backlog that exists in construction of the large cranes used for ship container loading and unloading. There is apparently a two- to three-year back-order situation. Would this increase the value of a used crane in this market? Absolutely—and this is very much a worldwide market.

Associated with the preceding, significant transportation costs may be involved in obtaining replacement property, and additional taxes, duties, and other costs may be incurred, such as for customs brokers and the like.

Installation costs may be significantly different from what we are used to. Labor rates may be higher or lower, productivity may be markedly different, and costs associated with overhead and profit and benefits may be substantially different from country to country.

In most areas of the world, it will likely be impossible to utilize a trended original cost technique for the estimation of reproduction cost. Although it is tempting to use price trends, because of the ease of application, we must recognize that local country conditions and costs may be so different as to render trending impossible, unless one has available a country-specific set of trend factors.

Functional obsolescence may be quite different, in a given situation for a particular country, from what we might be used to. As an example, a machine of "semiautomatic" technology might be penalized with a significant amount of functional obsolescence in a developed country but might be well suited for its task in a less developed area. The essential criterion, from a valuation standpoint, is to define the market in which we are expressing an opinion of value.

Economic obsolescence, although present at least to some degree in nearly every case, may be extremely difficult to measure when the business enterprise to which the property is dedicated is difficult to define. Many examples of this exist in countries where factories have been owned and run by the state. Very often those factories include not only manufacturing assets but also "social" assets, such as employee housing, schools, day-care centers, and other community infrastructure. In this case, it is very difficult to isolate the business unit from the social unit, and so a consequent measurement of economic obsolescence may be very difficult to quantify.

(b) MARKET APPROACH. Of the three standard valuation approaches, the market approach is probably the most difficult to apply internationally, especially in less developed countries or those that are emerging from state-controlled economies. A number of factors contribute to this:

Markets may be very "thin," with very few transactions.

There is often a significant lack of information about the very existence of a market transaction, as well as details concerning that transaction (such as the parties involved, the terms of sale, legal description of the property, price, and the like).

There may be no real sales (of the entire bundle of rights) because of legal or political restrictions.

The People's Republic of China has retained ownership of the land, and "sales" transactions are often representative of the right to own and occupy for a shorter period of time. In the case of residential or farm property, occupancy may be in the form of a life tenancy.

Inadequate legal protection of intellectual property may hinder market activity or may negate the usefulness of market transactions, since the transferred rights are unclear.

Indefinite or nonexistent professional standards for appraisals contribute to an "anything goes" atmosphere wherein buyers and sellers have no standards by which to evaluate the fairness of a transaction.

Even in developed economics, peculiarities in reporting, or lack of reporting, of sales data and of leasing/reacting data causes substantial differences in development and usage of databases.

(c) INCOME APPROACH. The ingredients for the income approach are universal—the amount of income, the duration of income, and the risk involved in achieving it—but our ability to apply this approach may vary considerably from country to country.

Amount of Income The first uncertainty relates to accounting standards. What is meant by "net income" or "cash flow" in the country in question? Currency fluctuations, of course, can markedly affect the valuation if the value must be stated in currency different from that of the country of origin. Also, as we have stressed in previous chapters, valuing intangible assets or intellectual property by income may well involve estimation of the value of the other assets necessary to support the earnings of the subject. If we are unable to value these ancillary assets (or the business enterprise in which they reside), we will have difficulty deriving an income stream attributable to the intangibles in question.

Risk A myriad of factors can affect risk in international valuations. These include the ability to expatriate earnings, as well as political and economic risks to the business enterprise as a whole. A useful discussion of the elements of risk to an international investor can be found in the writings of José de la Torre and David Neckar, who describe political risk in terms of the investor's concern about the potential loss in value of assets.[7]

Risks also can include expropriation, nationalization (although current trends seem to be in the opposite direction), and destruction by civil war, terrorists, and the like. Perhaps more likely are economic sanctions such as host country price controls, currency or remittance restrictions, and tariffs.

Even if one has a fairly clear understanding of the risks associated with achieving a given income stream, it may be quite difficult to quantify that risk in terms of local securities markets. Typically, we go to the marketplace for discount and capitalization rates, and can observe the range of investor-required rates of return relative to different forms of investment. In a country with a fledgling securities market or an unstable economy, we may have to search for surrogate information for this element of the income approach.

Ultimately, of course risk must be reflected in the form of a discount or capitalization rate in order to accommodate the mathematics of the income approach. Appendix A discusses the development of these rates from the perspective of a national environment in which there is an active financial market with adequate historical and current data. These are not the characteristics of markets in many emerging countries, however.

Some of the basic development tools (such as the Capital Asset Pricing Model) can be used, but they require significant modification to reflect the political and economic risks

7. José de la Torre and David H. Neckar, "Forecasting Political Risks for International Operations," in *The Handbook of Forecasting*, eds. Spyros Makridakis and Steven C. Wheelwright (New York: John Wiley & Sons, 1987).

that one may find in emerging environments. Much has been written about this, and we suggest the following sources:

Stocks, Bonds, Bills and Inflation Valuation Edition 2004 Yearbook, Chapter 9: "International Cost of Capital," published by Ibbotson Associates, Chicago, IL, www.ibbotson.com

The Handbook of Advanced Business Valuation, Chapter 2: "International Cost of Capital," McGraw-Hill

Developing Discount Rates for Foreign Investments, by James T. Budyak, available from American Appraisal Associates, www.american-appraisal.com

www.bvlibrary.com Web site of Business Valuation Resources

Obviously, one of the very prominent risks with respect to intangible assets or intellectual property is the degree of protection afforded by the legal system in the host country. This issue has been in our newspaper headlines and is an extremely sensitive issue in the areas of multimedia and computer software. This type of intellectual property can be extremely costly to create (to say nothing of the artistic/creative/imaginative effort required), but, once released in the form of a computer disc or CD-ROM, it is ridiculously easy to copy by the thousands. Not so easy is the duplication of a critical element of manufacturing technology, but the same principles apply. We will not attempt to chronicle the world trouble spots in intellectual property protection. Organizations such as the Licensing Executives Society and the International Trademark Association pay particular attention to this, and excellent publications are available that enable one to keep abreast of country-by-country events in this area.

Duration All of the risk elements previously noted affect the duration of an expected income stream associated with tangible or intangible property. In addition, we recall the comments with respect to "semiautomatic" technology in connection with the quantification of functional obsolescence. If, as an example, this level of technology finds use in a developing country, its economic life cannot be expected to be as long as it was in its former life. Its economic life in the country of origin was determined by the pace of advancing technology there. In its new life, the replacement technology already exists (in perhaps a second, third, or nth generation); thus, when it has served its purpose, most likely it will be replaced by state-of-the-art technology.

(i) Trademarks—Special Issues. Technology can move across national borders with little difficulty, perhaps needing only language translation or conversion between English and metric measurement systems. Trademarks may be more difficult. There are some fairly obvious cultural risks associated with trademarks that are bound for multinational use. While a logo may not suffer problems in translation, another form of trademark may. Sarah Burgess Reed, in a light but very informative article,[8] describes some of these difficulties in China. She notes that the word for "four" is pronounced "si" (with a falling tone). The word for "death" is pronounced "si" (with a falling, then rising tone). The ideograms for the two words are completely different. Four is not a luckily number in China.

Fanciful marks in China are even more challenging, according to Reed. It may be necessary to string together characters that will approximate the name phonetically, but

8. Sarah Burgess Reed, "Chewing Virtuous Chicken," *Trademark World* (London: Armstrong Group Intellectual Property Publishing Ltd., June/July 1995).

without written meaning. Lucky for Coca-Cola, the characters that are pronounced "ke kou ke le" can be translated as "tasty—thirst quenching—capable of being enjoyed." Can we suppose that Frank Robinson *knew* that back in Atlanta in 1885?

Trademarks are also increasingly important in international commerce. The typical intellectual property development progression in an emerging economy follows this path:

- Industry is absorbed in contract manufacturing of low-tech components for others. Little or no intellectual property is involved.
- Skills improve and contract manufactured components become more complex ("medium-tech"). Intellectual property is licensed in as part of the manufacturing contract.
- Original know-how begins to emerge as a result of the manufacturing experience, which may now be for finished goods and which may also include some design work.
- Original intellectual property surfaces if the legal environment is in place to protect it.
- Manufacture of finished goods for in-country consumption. The role of contract manufacturer is disappearing.
- Entry into world markets with branded goods or branded components.

Trademark development comes at the end of this progression, but is essential for the native industry to make the leap into world markets. Once this is done, the established brand(s) provide an umbrella that ameliorates the effect of business cycles and enables expansion by brand extension.

16.3 SUMMARY

World commerce is exploding. Despite all of the business communication problems noted, progress continues. We believe that intellectual property will continue to be an important focus of our exports and imports.

PART II

LICENSING

In the Valuation section of this new volume, we explored the means for determining an absolute, fee-simple value for intellectual property. These values are a *walk away price*—the amount at which the owner transfers all rights to intellectual property. This section delves into another measure of value. Royalty rates are another form of value. They represent the economic foundation of licensing and consequently deserve their own section. Royalty rates are a form of value in that they set the price at which licensors will allow others to use a limited portion of their intellectual property rights. Instead of the prices being set as lump-sum amounts, they are set on a pay-as-you-go basis.

Joint ventures also require special attention, because such alliances require the establishment of methods for appropriately sharing the economic benefits of intellectual property rights contributed to alliances. Sometimes royalties are involved in these transactions, but sometimes an allocation of ownership in the joint venture turns on the value of the intellectual property rights contributed.

Subtle changes to the valuation methods already established in the first section of this volume are presented in this second section of this book.

CHAPTER 17

EMERGENCE OF INTELLECTUAL PROPERTY EXPLOITATION STRATEGIES

Pullman. Carnegie. Morgan. The great fortune builders of 100 years ago could not hope to recognize the current economic landscape. Their fortunes were created from railroads, oil, and real estate. Their fortunes were built from tangible property. Today, fortunes are created from intellectual property. Hard assets have become less important to wealth creation. Intangible assets have become dominant. Bill Gates is a perfect example of the present and the future. He built his billion-dollar fortune from software, and it would seem that all future wealth creation will be based on the same intellectual foundation. In *Microcosm—The Quantum Revolution in Economics and Technology*, George Gilder explains that wealth is no longer derived from possessing physical resources. "Wealth and power came mainly to the possessor of material things or to the ruler of military forces capable of conquering the physical means of production: land, labor, and capital."[1] Gilder explains that "today, the ascendant nations and corporations are masters not of land and material resources but of ideas and technologies."[2] D. Bruce Merrifield, professor of entrepreneurial management at the Wharton School of the University of Pennsylvania, echoed this theme in an article titled "Economics in Technology Licensing": "Wealth no longer can be measured primarily in terms of ownership of fixed physical assets that can be obsolete in a few years. . . .Wealth instead will be measured, increasingly, in terms of ownership of (or time-critical access to) knowledge-intensive, high value-added, technology-intensive systems."[3] Of special interest is Professor Merrifield's parenthetical highlighting of the time-sensitive nature associated with intellectual property. Not only do companies need these knowledge-based assets, but they need them right now. Consequently, time is also an important force that drives royalty rates and joint venture equity splits.

17.1 FACTORS DRIVING STRATEGIC ALLIANCES: TIME, COST, AND RISK

Companies are seeking to expand product lines, increase market share, minimize new product development costs, expand market opportunities internationally, and reduce business risks. Companies are also seeking to create corporate value for investors. All of

1. George Gilder, *Microcosm—The Quantum Revolution in Economics and Technology* (New York: Simon & Schuster, 1989), p. 17.
2. Ibid.
3. D. Bruce Merrifield, "Economics in Technology Licensing," *Les Nouvelles* (*Journal of the Licensing Executives Society*) (June 1992).

this can be accomplished by exploiting patents, trademarks, and copyrights. It is important also to consider the consequences of not having access to intellectual property. Without intellectual property, profits are low, growth is lacking, and corporate value is lost. Corporate managers realize more than ever that access to intellectual property is key to their ability to create corporate value and, more important, key to continued corporate survival. The forces driving the licensing and joint venturing of intellectual property include time savings, cost controls, and risk reduction.

(a) TOO EXPENSIVE ON YOUR OWN. Even the largest companies cannot fund all the intellectual property programs that they may desire. Research programs can run into hundreds of millions of dollars annually, and trademark costs can reach billions of dollars. A major force behind the desire to form strategic alliances is the high level of investment needed to create new intellectual properties. The list below provides an indication of the amounts required to create, acquire, or protect keystone intellectual property:

- Hoffman LaRoache paid $300 million to Cetus Corporation for the Polymerase Chain Reaction technology.
- American Brands paid $372.5 million to acquire seven liquor brand names from Seagram.
- Philip Morris spends over $2 billion annually on advertising programs to support the continuing recognition of its portfolio of brand names.

One of the first major joint ventures of the 1990s was the combination of pharmaceutical product lines from DuPont with the distribution network of Merck & Co. The new joint venture company was equally owned by the two companies. Its name was DuPont-Merck. DuPont had a product line of drugs but needed help with international distribution. The time and cost needed to create its own network of sales staff were formidable obstacles to fast growth and return on the research effort that DuPont had in the new drug line. Part of DuPont's worries included the remaining patent life associated with some of its drug products. By the time a self-created distribution network was established, some of the valuable products would be off patent. Full exploitation of patents required that sales be maximized during the premium price years that would exist before generic products hit the market. DuPont needed a way to tap its full market potential fast.

Merck had annual sales that ran above $6.5 billion. It also had one of the largest research and development budgets in the world. Even so, Merck had limitations as to the number of new drugs that it could discover, investigate, develop, and commercialize. Access to a new line of already commercialized products was a great attraction to Merck.

The DuPont-Merck joint venture saved DuPont both time and money. It gave DuPont immediate access to an international distribution network. Merck gained immediate access to a whole new product line that would have cost enormous amounts of time and money to develop.

This joint venture is a classic case of how the factors of time and cost drive strategic alliances that are founded on access to intellectual property. It also illustrates how strategic combinations of key intellectual property can reduce the investment risk associated with new strategies. If DuPont had attempted to build its own international distribution network, the cost would have been high and the time needed long, and there was no assurance that it would successfully construct a network that could move the goods. Merck enjoyed a reduction in investment risk by gaining access to the profits associated with the DuPont product line. If Merck had embarked on its own plan to duplicate the

DuPont product line, there was no assurance that it would have been completely successful. Furthermore, there existed the risk that the Merck product line could have ultimately infringed on the DuPont product line. The two companies saved research funds, gained immediate access to commercialized intellectual property, and reduced business risk. Judy Lewent, chief financial officer at Merck & Co., told the *Wall Street Journal* that the DuPont-Merck deal "added about a third to our research capacity."[4]

The cost to establish and maintain world-class trademarks is no different. Huge sums of money are required and customer recognition takes time. One of the first megalaunches of a new product in the cosmetics industry was Yves Saint Laurent's 1978 Opium party to introduce his new fragrance. In attendance were Cher, Truman Capote, BBC correspondents, the crew of *60 Minutes*, and leaders of the fashion industry. The party cost $250,000, which in 1978 was a staggering amount for a single party to launch a new product. The total launch budget was $500,000. It turns out that those were inexpensive times. Similar launch budgets now can run to $50 million and more. Joseph Spellman, executive vice president at Elizabeth Arden, said, "Today everything is global .... The competitive level is way up. The packaging, concept, advertising, staging—all of it has to be fabulous. The attention is always on big productions, so launches have escalated to mega proportions." The reason for the high costs to launch new product names was simply and accurately described by Edith Weiner, president of Weiner, Edrich, Brown, Inc., trend trackers and marketing strategists, when she told *Mirabella* magazine, "There's a product glut.... It's getting harder and harder to get people's attention." And this is exactly why an established trademark that already has an attentive audience is valuable.

(b) IMPOSSIBILITY OF MASTERING ALL THE NECESSARY TOOLS. Beyond time and cost factors are capability limitations. Products have become more complex. Mastering all of the divergent technologies that go into a single product is not always realistic. Consider battery technology that stores electricity mechanically instead of chemically. Such technology may make electric-powered automobiles a reality. The new technology may possibly power a car for 600 miles on a single charge. Conventional chemical-based batteries have a range potential of 100 miles at most. The mechanical battery technology is the product of American Flywheel Systems, a company composed of former scientists from the Environmental Protection Agency and military aerospace researchers. The battery is referred to as a flywheel electromechanical battery that stores energy kinetically. It operates on the same principle that drives the ancient potter's wheel. A heavy mass rotates at a very high speed inside a vacuum enclosure suspended by magnetic bearings and controlled by sophisticated electronics. The first electric car was created 100 years ago, but chemical batteries required frequent recharging. The old batteries also involved toxic wastes, subjected other car components to corrosives, and introduced an explosion potential. Flywheel batteries were studied in the 1970s but could not be perfected until recently. Advanced technological development in three separate fields of science were required before the flywheel battery could become viable. Advances in composite materials, computers, and electromagnetics were all required to make the flywheel battery a reality.

A confluence of three critical technologies in materials, magnetics, and computing speed were needed to make the flywheel battery a viable technology. Lightweight but strong materials, such as graphite, have come into being recently. In 1990, the army tested a flywheel battery that used graphite components having a tensile strength of 52,000 pounds per square inch. Graphite now has a tensile strength of 1 million pounds

4. "Financial Prescriptions for Mighty Merck," *Wall Street Journal* (June 30), 1992, p. A17.

per square inch. The second critical breakthrough occurred in computer power. Faster computers allow the performance of millions of calculations and the simulation of thousands of prototypes. This breakthrough allows scientists to turn ideas into working machines more quickly. The third direct scientific advance involved the development of magnetic bearings. These electromagnetic fields allow objects to spin in vacuums without friction. All of these technologies are needed for just one product idea, illustrating the problem currently challenging most companies.

Technology is becoming more complex. Investigating any one of these critical technology areas requires a multidisciplinary understanding of a wide variety of sciences such as physics, chemistry, and electronics. Advanced knowledge in each discipline is required, not just one specialty and a superficial understanding of the others. Corporations are a lot like people. A professional architect with expertise in marina design cannot cope with the complexities of modern life without outside assistance. Tax-preparation services, medical treatment, lawn services, and many other areas of individual expertise must be acquired from others in order for the architect to survive. Corporations, too, have their specialized areas of expertise, but to deliver the products of tomorrow, these specialized corporations will need to incorporate into their products advanced aspects of different technologies. This will require specialized knowledge that they do not possess and will require them to participate in corporate transactions that are centered on sharing access to technology.

Speaking to the *Wall Street Journal* about pocket-sized cellular telephones, which require wireless telecommunications technology to be integrated with portable computing, information services, and satellite technological know-how, John Sculley, former chief executive officer of Apple Computer, Inc., said, "No one can go it alone anymore."[5]

17.2 A SHORT HISTORY OF CORPORATE STRATEGIES

The primary goal of business strategies is to create corporate (shareholder) value. This has always been the goal, but the strategies used have been through various mutations, including:

- Management science magic, whereby large egos believed they could run any company any time
- Acquisition fever, whereby large egos believed they saw unrealized value in everyone else's backyard
- Financial management magic, whereby large egos believed that the trick to higher value was simply higher risk tolerance

(a) MANAGEMENT SCIENCE MAGIC. In the 1960s, businesses were driven by diversification and integration strategies. Diversification spread economic risks among many businesses to counter the negative effects of being too focused in cyclical industries. Integration merged manufacturing, raw materials suppliers, and distribution networks to bring control and profits from indirectly related activities under one corporate roof. Manufacturing companies acquired raw material suppliers. Then finance companies and other vaguely related businesses became desirable. As acquisitions hit their stride in the 1960s, completely unrelated businesses were combined into a portfolio of diversified business investments. Anything and everything was a potential acquisition target. The underlying

5. "Getting Help: High-Tech Firms Find It's Good to Line Up Outside Contractors," *Wall Street Journal* (July 29, 1992), p. A1.

notion was that acquirers would introduce management science and centralized control, thereby enhancing the value of all the portfolio components. Management science was considered the missing and magic element that would make the combined entities more powerful, successful, and profitable than when the businesses were independent. "Conglomerate" was a descriptive term that managers eagerly sought to have bestowed on their company. It carried images of power and expansive management skills. With superior organizational skills founded in management science, the acquirers of the 1960s thought that they could manage any business. Understanding the nature of the business didn't matter. Sadly, overreaching occurred and conglomerate builders found that more than a little knowledge about the acquired businesses was needed. Huge and unwieldy corporate structures were needed just to monitor the performance of the unrelated businesses that composed these conglomerates. Long delays occurred in decision making, and strategy meetings with Corporate killed any inventive ideas that were developed at the operating level. Often the accounting systems used to monitor one of the conglomerate components were completely unworkable for monitoring other components. Management time was spent studying the portfolio rather than managing the business. Instead of gaining investment performance from portfolio diversification, the centralized control structures introduced antisynergistic costs of time and money. In almost all cases the conglomerates have failed. Stock performance for these portfolios of management science was dismal. Companies soon learned that management science magic was a false deity. Conglomerates were dismantled. Managers did everything possible to shed the dark shadow that now accompanied the once-coveted descriptive word "conglomerate."

(b) EXCESS ASSET MAGIC. Acquisitions of the late 1970s and early 1980s focused on the value of excess assets. These assets were on the balance sheet but were not adequately reflected in the stock price. They included real estate, cash hoards, and resource reserves such as timberland and oil, especially oil. Companies that had excess assets were the delight of acquirers who wanted to restructure them. If the excess asset was cash, the company could be acquired and then the cash could be issued as a special dividend or used to pay down the debt associated with the purchase of the company. In some cases the target company's own cash was used to finance part of the takeover. If the excess asset was real estate, then after acquiring the company a sale-leaseback deal was put into effect. Valuable land and buildings were sold to institutional investors as safe investments, providing the acquired company with cash, while long-term leases allowed the company to continue to use the property.

In the case of oil, acquirers went on a binge. T. Boone Pickens, Jr. was trained as a petroleum geologist. In the late 1970s, the cost to find oil was at about $15 per barrel, and oil prices were rising as fast as the OPEC nations could schedule price-fixing conferences. The stock exchange became an easier place to search for oil reserves than in the Indonesian jungles. The stock market was perceived to be undervaluing asset-rich companies. On the stock exchange, the cost of oil could be as low as $5 per barrel. As with all good ideas, other people quickly see the benefits and join the party. Bidding wars erupted, bargains disappeared, and the game abruptly ended.

(c) FINANCING MAGIC. In the late 1980s and early 1990s, business strategy involved acquisition fever fueled by the idea that a little more debt and a willingness to accept just a little more risk would shower profits on those that knew how to introduce financing magic. Acquirers during this period focused on the introduction of financing capabilities,

once again not caring about the business they were buying and often not even understanding the business. Leveraged buyouts (LBOs) fueled acquisitions during the late 1980s. Raiders looked to enhance investments by using more aggressive financial structures. At times the restructuring made a lot of sense. LBOs combined an aggressive leverage strategy with the excess asset concept. Instead of gaining access to particular assets like cash and real estate, takeover artists focused on entire business units that they considered undervalued or completely unrepresented in the stock price of the target company. Initially, it can be argued, raiders contributed in a positive way to Corporate America. Leveraged buyouts provided a means to get Corporate America back on track. Overbloated corporate executives who ignored shareholders just had to go. They spent money on lavish perks, gave themselves extraordinary bonuses, even in poor performance years, and acted more like caretakers. It seemed that the attitude of corporate managers was: *Why take risks when mediocrity can get you eight-figure compensation packages?* LBOs provided a means to get rid of these timid managers and return America's business power to the hands of managers who had a financial stake in the business's success. Once again, however, good ideas are often extended far beyond realistic applications. Early successes in LBOs caught the attention of many raiders. Bidding wars erupted again and the bargains disappeared. Watching the devastating effect of "just a little" more debt became a sad legacy of the 1980s.

(d) CHANGING STRATEGIES. The earliest of the new strategies was industry domination. A growth company would capture a huge market position, and the value of the company would soar along with growing sales volume. The next step led to vertical and horizontal integration of operations. Suppliers were acquired, and distribution outlets also were folded into the dominating company's portfolio. Stock prices continued to rise until all forms of integration were optimized. Mature markets led to stagnation and stock prices stopped rising. The next strategy was to build a conglomerate. Managers could be heard to say, "I can dominate my core business and all others that I choose." The strategy involved doing for new acquisitions what the managers had done for their core business. Unwieldy portfolios of unrelated companies couldn't be controlled, and stock prices not only stopped climbing—they dropped. Since conglomerate building didn't work, the next playground was financial strategy. Managers yelled from penthouse offices, "I can tolerate risk and leverage my way to riches!" This disastrous strategy was taken to the extreme.

The failures of past business strategies coupled with new global pressures have caused managers to focus on what they know best. They also have learned a tolerance for seeking the assistance of others to fill corporate capability gaps. Managers are heard to say, although with less fanfare, "I can't do it all alone—I need help." Hence, we are entering the age of strategic alliances, when licensing deals and joint ventures rule. The focus has finally changed: "You help me, and I'll help you."

(e) THE MAGIC OF INTELLECTUAL PROPERTIES. Reviewing the annual reports and other public statements of business leaders shows that the paths being taken by successful corporations will include strategic alliances centered on intellectual property exploitation. This trend appears to have developed in the early 1990s. In the 1991 annual report of Imo Industries, Inc., a leading manufacturer of analytical and optical instruments used in the industrial and defense industries, we are told, "Our increasing focus on international markets is underscored by the fact that almost 40% of Imo's overall revenue comes from outside the United States. . . . Around the globe, we are increasingly utilizing

joint venture structures to develop opportunities."[6] In a press release, Sidney Taurel, executive vice president of Eli Lilly & Company, a leading pharmaceutical maker, says, "Strategic alliances, co-marketing agreements, and licensing agreements have become vital to the continued success of the pharmaceutical industry and an important part of Lilly's strategic direction."[7] In a press release quoting Dr. Glen Bradley, chief executive officer of Ciba Vision Worldwide, a vision care company, we are told, "The combination of internal research and development at Ciba and licensing agreements, such as the newly announced 3M license, allows Ciba Vision to fulfill our mission of developing quality products and services which will best satisfy our customer needs and expectations."[8] And in the 1991 annual report of the Liposome Company, Inc., a leading-edge biotechnology company, we learn, "The Liposome Company has licensed TLC ABLC (a new antifungal therapy) to Bristol-Myers Squibb. Pharmaceutical development and manufacturing scale-up have been a co-development effort of the two companies. Bristol-Myers Squibb is responsible worldwide for conducting all clinical trials and will handle all sales, marketing, and commercial manufacturing. The Liposome Company will be paid royalties on all sales of the product, worldwide."[9]

The trend continues. The January 9, 2003, issue of *Technology Briefing* reported that IBM and Advanced Micro Devices announced a joint agreement to develop chip-making technologies for use in the high-performance microprocessors of server computers and powerful workstations. IBM is a leader in advanced manufacturing processes, while Advanced Micro is fighting to close the gap in chip-making technologies with its chief rival, Intel. Advanced Micro is straining to gain a competitive edge with its Opteron high-performance microprocessor, which is vying with Intel's Itanium chips to run next-generation server computers based on personal computer technology. Terms of the deal were not disclosed, but industry analysts told *Technology Briefing* that Advanced Micro probably would pay IBM hundreds of millions of dollars for IBM's advanced chip-making technologies.

(f) MAJOR CHANGES TAKING PLACE. Companies are more willing to consider licensing technology from outside their walls.[10] Procter & Gamble's Jeffery Weedman is vice president of external business development and global licensing. His presentation, at the 2003 Annual Meeting of the Licensing Executives Society, powerfully conformed the move by corporations toward alliances involving intellectual property. Procter & Gamble has long been known as a "not invented here" company. Throughout its history P&G has eschewed any product ideas and technologies that were not created at P&G. Mr. Weedman says P&G has followed a long road toward a new culture, which now says, "proudly found elsewhere." P&G is now eager to evaluate new products, technologies, and trademarks from outside sources.

Scott Foraker, vice president of licensing at Amgen, indicated at the same meeting that Amgen has also left behind its previously strong "not invented here" philosophy. In the early 1990s, one of his greatest challenges was convincing others at Amgen that the company should evaluate outside opportunities. His efforts have led to a new, but good,

6. Annual Report of Imo Industries, 1991.
7. Eli Lilly Company press release, 1991.
8. Ciba Vision Worldwide press release, 1991.
9. Annual Report of the Liposome Co., 1991.
10. "Current Issues and Future Trends for Large Corporate Licensing Programs," *Les Nouvelles* (June 2004), pp. 59–68.

problem. During 2004 he expects to need to evaluate between 2,200 and 2,300 new products and technologies from others for possible commercialization by Amgen.

Another example of the new trend toward alliances was reported by Eli Lilly. David Thompson of Eli Lilly told the audience at the 2003 LES conference, "We are doing a lot of out-partnering, which you did not used to see large pharmaceutical companies do."

17.3 LEGAL ATTITUDES ENHANCE VALUE

When intellectual property laws were administered inconsistently, owners of trademarks and especially technology were lucky to get requests for license deals. Infringement did not carry the same potential for financial ruin as it does today. When a potential licensing partner approached a technology owner, the leverage needed to demand high royalty rates was not very strong. Enhanced legal protection around the world has made patented technology and trademarks more valuable than ever before. As a result, royalty rates for licenses and joint venture equity splits are moving to higher levels, and intellectual property owners are less interested in outright sales of their valuable properties. In the United States, the patent system was dramatically strengthened with the creation of the Court of Appeals of the Federal Circuit (CAFC). It is the only court in the nation that handles patent and trademark case appeals. The continuity of the court's thinking and decisions has strengthened the rights of patent and trademark owners. It has made willful infringement a very risky proposition. Damage awards by courts are higher than ever before. Several decisions have upheld damage awards that have bankrupted the infringer. Patent rights have been reinforced to such an extent that the value of patents has risen to new heights. The exploitation opportunities of licensing are greatly enhanced, and royalty income has risen as a result. The enhanced protection has trebled the avenues by which intellectual property can be exploited safely, instead of only deriving profits from internal use. The licensing option is now well protected, and joint venture projects are becoming common. Instead of only one stream of income from intellectual property, we are more likely to see three: internal use, licensing, and joint ventures. Each of these represents another source of earnings growth that adds to the value of companies.

Legal protection of intellectual property is not limited to the United States. Germany, Great Britain, Japan, and France are all providing strong legal protection for intellectual property. Even the Third World recognizes the importance of protecting these vital assets. IBM was successful in stopping five companies within the People's Republic of China from assembling knock-offs of the IBM PC. Trademark infringement cases are now common in China's provinces. Legal protection around the world is advancing in recognition that intellectual property is the most important asset and must be protected. Much of the GATT treaty negotiations focuses on the proper means for protecting internationally exploited intellectual property. The value of patents and trademarks as a result is enhanced along with the opportunities to expand economic exploitation.

CHAPTER 18

INTRODUCTION TO EXPLOITATION STRATEGIES

18.1 SOME HISTORY

It was during the Renaissance that what we know today as intellectual property first began to flourish within organizations that were the precursors of the modern business enterprise.

As the period began, craftsmen individually exploited their know-how and trade secrets in the production of goods and services. Knowledge that provided a competitive advantage was then no less jealously guarded than it is today. The craftsman's enterprise grew by "sweat equity," and he made his own tools, gathered his own raw materials, and accomplished the entire manufacturing process alone or with the help of his family.

A realization of the financial limitations of being a "one-man band" led to the emergence of the apprentice system. Typically taking seven years or so, an apprentice progressed from beginner through journeyman status and, if skill and fortune permitted, to master craftsman. Perhaps this arrangement between craftsman and apprentice was an early form of license. A master craftsman exchanged the loss of the exclusive use of his proprietary know-how for the economic advantage of additional labor and a greater quantity of product to sell. There was some protection in that the larger business that resulted increased the craftsman's market power, and so the competitors he was training in the apprentice system would likely go elsewhere to set up their enterprises if they became skilled enough to do so. The system worked as long as technology advanced at a relatively slow pace and travel and communications were such that markets were kept small and local.

At the beginning of this time, legal protection of intellectual property was largely lacking, although there came to be informal protection through the guilds. It was within the guild system that trademarks began to be recognized as the "hallmark" of a craftsman, especially in gold and silver goods, in the form of a monogram or emblem; they began to receive strict legal protection.

18.2 ENTER TECHNOLOGICAL CHANGE

As markets expanded and technological development gathered momentum, the enterprise was increasingly forced to go outside itself for capital and labor. Lenders and investors provided money capital, other enterprises became the source of raw materials, tools, transportation, and distribution, and the enterprise had to hire labor that was paid for in cash or goods rather than know-how. Paying for labor obviated the need to reveal proprietary technology, and so the intellectual property of the enterprise stayed within it, as in a walled fortress. This mentality was to persist for many years.

This do-it-yourself system of intellectual property exploitation no longer works. Why? Several very important aspects of business have undergone drastic change.

(a) TECHNOLOGY. It may well have been possible for an Archimedes to have personal knowledge of a good portion of the world's newest technology. That time is long gone, with technology growing and subdividing like an amoeba gone berserk. Now even a large enterprise cannot possess all of the technology it requires, and must look to outside sources.

This vast explosion of technology has created an equally long "cutting edge," which results in a geographically diffused proliferation that is occurring at a bewildering speed. This makes it impossible for an enterprise, even if it controls the technology it requires for current operations, to depend exclusively on a strategy of internal development.

(b) MARKETS. The ability to communicate completely and instantaneously with one another, ignoring national boundaries, has created a world marketplace and therefore world competition. John Ruskin exemplified the insularity of his time when, asked to comment on the then-new England-to-India cable, he said: "What have we to say to India?" A great deal, as we now know! It has become impossible for an enterprise to stake out a territory free of competitors. An enterprise cannot rest on its laurels and be comfortable in what appears to be a market niche. Good niches do not last long, and the interloper can come from anywhere. An enterprise needs to have a full pipeline of new or enhanced products and/or services in order to survive.

(c) COST. Most of the modern advances in technology, such as the electric light, the telephone, and the camera, were developed without extensive material resources. We do not intend to denigrate the financial sacrifices of the inventors, which were at times substantial. Thomas Edison, responding to one who commented on the large number of failures in his search for a new storage battery, replied, "Results? Why, I have gotten a lot of results. I know fifty thousand things that won't work!" The Wright brothers' historic flight was made in a craft designed and manufactured using their own skills and capital. Today, however, even small advancements in technology are gained only at great cost, notable examples being in the computer and biotechnology fields. At the very least, an enterprise must be able to assure itself of being able to quickly reach a gigantic market, if it is to commit the resources necessary to develop a new technology or product. One can no longer afford to "run a product up the flagpole to see who buys it"; it costs too much to create the flag, and the risks of nonacceptance are too great.

Significant gains are, for the most part, beyond the resources of even the largest enterprises. This is an obvious oversimplification—there will continue to be inexpensive innovation, and sometimes it will represent a breakthrough. Elias Howe nearly ran out of money and ideas while wrestling with the location of the needle's eye in a sewing machine he was developing. One night he dreamed he was being led to his execution for this failure, and he saw that the guards surrounding him carried spears that were pierced near the tip. He woke up and rushed to his workshop where, by the next morning, the design of the first sewing machine was near completion. Today, for better or for worse, progress has largely been left to the giants, corporate or governmental, or to consortia of smaller enterprises that have the wit and timing to assemble the necessary resources.

The path from idea to marketplace has become a very costly one, and competition has made it a short one as well. Those who negotiate it successfully have mastered the ability to quickly gather and deploy the massive amounts of labor and capital necessary. Intel has been successfully compressing its chip development cycle by beginning research on a following generation before its predecessor is brought to market. The list of those that have been successful is as long as those who have fallen by the wayside. Few, if any, enterprises by themselves have the resources to meet these market challenges of speed and cost.

18.3 BUSINESS ENTERPRISE MODEL

To understand exploitation strategies, it is useful to review how intellectual property is created and its relationship with the business enterprise. We will be continually returning to this model because it forms the framework for understanding both the role of intellectual property and the methods of quantifying it. As a starting point in this discussion, let us observe how a business enterprise is created. (See Exhibit 18.1.) Cash from investors or lenders is the starting point. This cash is then converted into inventory and machines, used to hire employees and advisors, and spent for product development, advertising, and other services. As a business expands, new cash is required in order to grow existing assets and create new ones.

As previously discussed in Chapter 4, assets formed in this process fall into three classifications. Every business enterprise, from a pushcart vendor of hot dogs on the street to the largest multinational corporation, comprises three basic elements: monetary assets, tangible assets, and intangible assets.

(a) MONETARY ASSETS. Monetary assets, or net working capital, are defined as current assets less current liabilities. There is usually an excess of current assets over current liabilities, and so net working capital is a positive amount. Chapter 4 contains a detailed

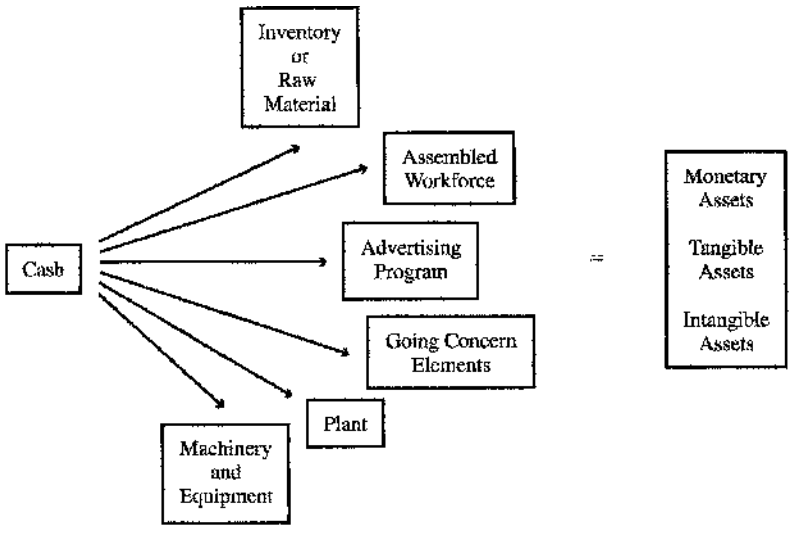

EXHIBIT 18.1 CREATION OF AN ENTERPRISE

description of the components of asset classifications. This section briefly repeats elements of Chapter 4 to remind the reader.

(b) TANGIBLE ASSETS. Tangible assets usually are shown on an accounting balance sheet as "plant, property, and equipment." Typically included in this asset category are these classifications of property.

(c) INTANGILE ASSETS. Intangible assets and intellectual property usually do not appear on a company's balance sheet, but they are present in any case.

Their existence is dependent on the presence, or expectation, of earnings. They usually appear last in the development of a business and most often disappear first in its demise. The four categories of intangible assets include:

- Rights
- Relationships
- Grouped intangibles
- Intellectual property

(i) Rights. Every business enterprise acquires rights through establishing contractual agreements with other businesses, individuals, or governmental bodies; a liquor license is a prime example. These rights exist according to the terms of a written contract that define: the parties to the agreement; the nature of the rights, goods, or services transferred; the transfer consideration; and the duration of the agreement.

(ii) Relationships. Every business has established relationships with outside agencies, other companies, and individuals. These are usually noncontractual, and they include:

- Assembled workforce
- Customer relationships
- Distributor relationships

(iii) Grouped Intangibles. Even after these assets have been identified, there may remain a residual. That residual is commonly referred to as goodwill and/or going concern value. These two assets are combined by some, but we believe them to be separate and distinct. Others define goodwill as the residual between the value of the enterprise as a whole and the value of the other identifiable assets.

Debates continue about the actual existence of goodwill and going concern. Many argue that these supposedly separate assets are really more correctly associated with, and part of, specific and separate, intangible assets and intellectual property.

(iv) Intellectual Property. The final element of the intangible asset category is intellectual property. This classification of property includes patents, proprietary technology, copyrights, trademarks, computer software, mask works, and the right of publicity.

These asset classifications within the business enterprise constitute a complex portfolio of assets. We can then see the equation in the value of invested capital, the business enterprise, and the underlying assets that compose it. (See Exhibit 18.2)

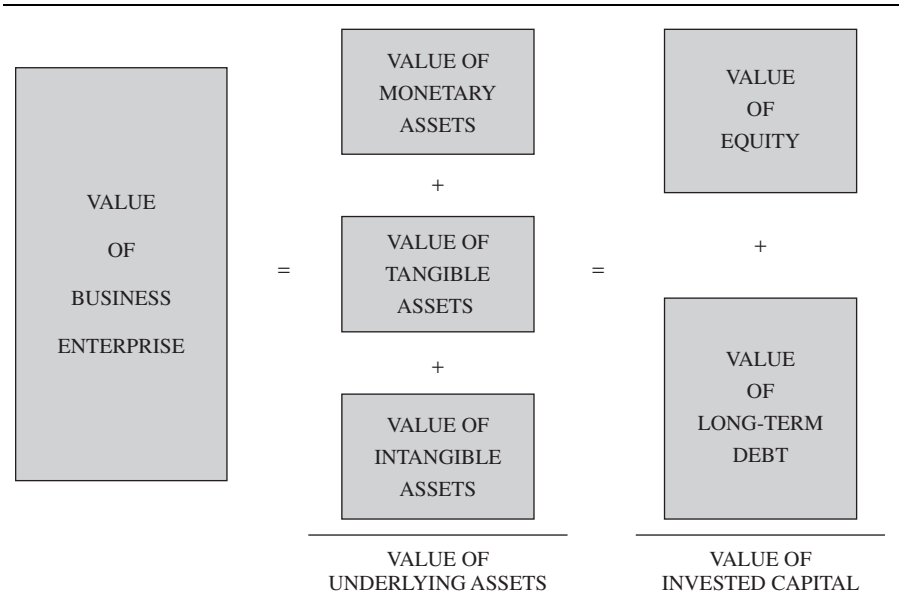

EXHIBIT 18.2 BUSINESS ENTERPRISE EQUATION

18.4 ECONOMICS OF EXPLOITATION

Intellectual property is so called because it is a *product of the mind* and is capable of *ownership*. That ownership equates to the right to possess, use, and dispose of the property, to the exclusion of others. Unlike other intangible assets, such as an assembled workforce or a favorable contract, intellectual property can by itself be purchased, sold, given away, traded, leased, used as collateral, or bequeathed. We are concerned here with the rights that are provided by law to the owner of intellectual property, not the physical embodiment of the intellectual property. We can own a BMW automobile, but that ownership does not give us the right to copy its design, trademark, or any patented components that may have physical existence in the vehicle.

Intellectual property rights are analogous to those connected with other kinds of property of a more familiar nature. We can describe these rights by paraphrasing these concepts as they apply to real property (land and/or improvements).

(a) FEE SIMPLE INTEREST. When one possesses a fee simple interest, ownership is complete and includes the entire bundle of rights associated with the property.

A patent, trademark, or copyright owner automatically is granted this full bundle of rights when that intellectual property is recognized by government. If the owner is an individual, that person is the sole owner of the interest.

It is important to remember that this interest represents the totality of property rights. Those rights can be contractually divided among parties in an infinite number of ways (to create co-owners of the fee simple interest), but *the sum of the parts always equals this whole*.

(b) MORTGAGER'S INTEREST. When property is pledged as security for repayment of a loan, the lender receives a portion of the fee simple interest in the form of a right to receive interest and principal payments and the right to force the sale of the property to liquidate the debt.

It is increasingly common for intellectual property to be pledged in this fashion, although the form of that pledge can vary, along with the specific rights conveyed to the mortgagee.

(c) LESSEE'S INTEREST. When property is leased, a portion of the fee simple rights is transferred to the lessee, usually in the form of the right to use the property in a defined way for a specific period of time. The rights of lessee and lessor when added together constitute the whole, or are said to be complementary.

This is the essential form of what we will refer to hereafter as a "license," as it applies to intellectual property.

Intellectual property is therefore very much the same as other forms of property relative to the means of its description, form of ownership, and exploitation. For a more complete discussion of particular property definitions and ownership rights, the reader is referred to *Appraisal Principles and Procedures* by Henry A. Babcock (New York: American Society of Appraisers, 1980).

Basic economic theory does not dwell on the role of intellectual property within the business enterprise, presumably because when it evolved, intellectual property did not loom large as a producer of profits. If this consideration had been made, however, we believe that intellectual property would have been seen as a source of so-called monopoly profits, at least during the period of its legal protection. These monopoly profits can be seen as a form of rent, since the asset, likened to land, is not reproducible during the period of protection. Economist David Ricardo discussed *rent* in an 1891 publication:

> as that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil...[as opposed to]...the interest and profit of capital...employed in ameliorating the quality of the land and in erecting buildings.[1]

We think that this description fits intellectual property as well. The rights enjoyed by the owner of a trademark have an "original and indestructible" flavor. The capital and labor employed to "ameliorate its quality" (research or manufacturing technology) and (perhaps through advertising) to build a brand on its foundation, to add to the value of trademark rights, enhance its earning power.

These profits also are described by economists as "tending to capitalize." That is, the value of the enterprise is increased by the capitalized amount of the monopoly profits. We concur with those economists who define intellectual property as "intangible capital." This definition allows us to examine the ways in which intellectual property can be deployed within the framework of the exploitation of other forms of capital which may be more familiar.

18.5 DEVELOPMENT OF INTELLECTUAL PROPERTY

How intellectual property assets come into existence and how they interact can best be illustrated by an analysis of a product or service in development. The reader will observe that these illustrations are similar to those discussed previously to illustrate the creation

1. David Ricardo, *Principles of Political Economy and Taxation*, Third ed. (London: George Bell and Sons, Ltd., 1891).

of a business enterprise. We will examine two situations. One is a case in which a completely new product has sprung from innovation. In the other, a product or service is commercialized to fill a perceived discontinuity in the marketplace.

(a) INNOVATIVE PRODUCT. Some products begin with an idea or the development of a technology. In 1845, Christian Friedrich Schonbein was experimenting with sulfuric and nitric acid in his kitchen, a practice understandably forbidden by his wife. When he spilled some of the mixture on the table, he quickly mopped up the liquid with his wife's cotton apron. After he hung it near the fire to dry, so his experimentation would not be detected, it exploded. Schonbein, the chemist, subsequently invented, marketed, and exploited smokeless gunpowder, known as guncotton.

Another example could be the concept of combining scrap plastic and wood chips or sawdust to make artificial fireplace logs or formed molding products for construction. This concept is attractive because it is environmentally positive (using two waste materials that are difficult and costly to dispose of) and because of the potential profitability resulting from the use of very low-cost raw materials.

Beginning with the concept, the development moves to literary research on plastics (physical properties, availability, environmental concerns), and from there, perhaps to modest experimentation with small quantities. At some point, however, successful development will have reached a milestone where:

- It appears technically possible to combine the two materials.
- The problems of combining dissimilar plastics can be overcome.
- Adequate supplies of material are determined to be available.
- The cost of raw materials and processing appears to be reasonable vis-à-vis the possible market for the product.
- The prototype products appear to meet the standards of the marketplace.

To this point, nominal amounts of money for monetary and tangible assets have been required. Development has begun with intellectual property. Whether this is in the form of proprietary technology or becomes patented technology is not relevant for this discussion. Further development will, however, require significant capital and labor as the product moves through pilot plant production, testing, market research, and finally production for the marketplace. This progression can be illustrated as shown in Exhibit 18.3.

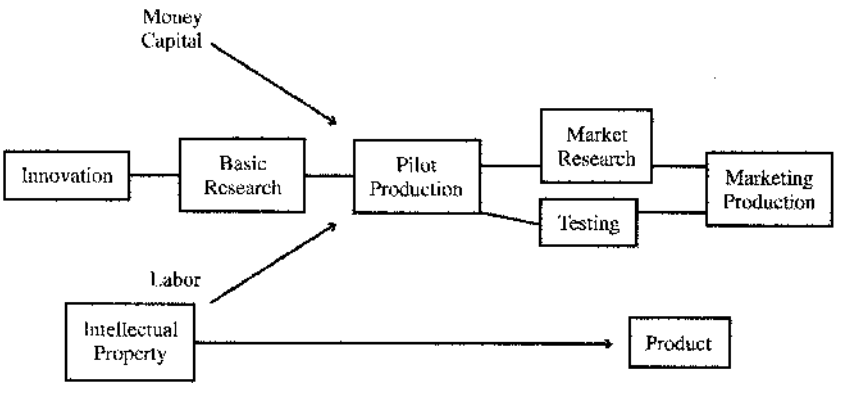

EXHIBIT 18.3 INTELLECTUAL PROPERTY DEVELOPMENT

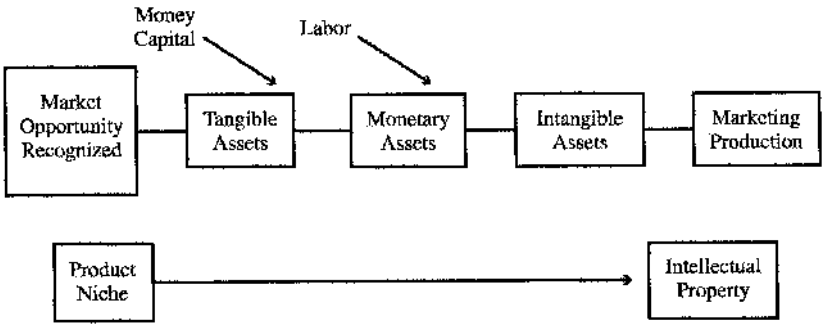

EXHIBIT 18.4 INTELLECTUAL PROPERTY DEVELOPMENT

(b) NICHE PRODUCT. Some business enterprises are created in order to fill an opportunity created by geography, population growth, price opportunities, or some other discontinuity in the market—an opportunity that comes about because of a need unfulfilled. The enterprise arises not from a new concept, but from a market opportunity. The innovation already has been done; the concept exists. The first order of business for this entrepreneur is to assemble capital and labor to enter the market. There are many examples of this in the retail business segment. Ben & Jerry did not invent ice cream, and Mrs. Fields did not invent chocolate chip cookies. These entrepreneurs recognized a potential market segment, enhanced and individualized existing products, accumulated capital, converted it to monetary and tangible assets, obtained labor, and were successful in entering the market.

In this case, the creation of intangible assets and intellectual property, in the form of market position, trademarks, and all of the other intellectual property assets associated with a brand, generally followed that of monetary and tangible assets. In this situation, the formation of the enterprise is illustrated in Exhibit 18.4.

18.6 SOURCE OF PRODUCTION FACTORS

At every intermediate point along either of these two paths, decisions must be made about how to obtain the necessary resources. We can easily transplant the situations described above to the corporate world, where the exact same conditions arise. The research efforts of the IBMs and Mercks of the world continually produce innovations. Their marketing people continually observe opportunities in the marketplace. By whatever path these opportunities come to management, however, decisions must be made as to *how* these opportunities will be exploited, or *whether* they will be exploited.

Until relatively recently, the corporate world had a do-it-yourself approach to every such situation. This corporate xenophobia dictated that ideas were to be kept "in the family," hoarded, and nurtured privately. Even those not pursued were kept in the vault to gather dust. Long an innovative leader in the chemical industry, DuPont for many years firmly adhered to this policy. It has, along with the rest of the corporate world, however, come to the realization that no company has a lock on anything anymore. Enterprises in touch with innovation and/or the marketplace have come to the realization that they cannot go it alone. The long cutting edge of technology development has created a veritable flood of opportunities. If an enterprise depends for exploitation on its own resources alone, so few of these opportunities can be dealt with that it inevitably drops behind in the race.

As with any business strategy, we must have a clear idea of our direction and what we need to accomplish our goals. A process called "gap analysis" can be a valuable tool.[2] There are four primary steps in this analysis:

Step 1. Describe the industry and economic conditions that will exist 10 to 15 years from now.

Step 2. Describe the business characteristics of a hypothetical company that will dominate this future industry and economic scenario (the future winner).

Step 3. Assess the current competencies and business characteristics of your company.

Step 4. Compare your company to the future winner to find areas where important future competencies are lacking.

While this analysis should address all aspects of your business, including customers, markets, competitors, production facilities, distribution channels, and the like, one of those elements is, of course, technology.

As we consider this subject from the standpoint of either a seeker of technology or one who has technology to exploit, it is very important to examine and carefully define our overall strategies. These can include:

- Generate cash from core technology.
- Generate cash from noncore technology.
- Obtain a path to market for our own technology.
- Reduce the potential for costly infringement litigation.
- Gain access to complementary assets that we need to exploit our own technology.
- Obtain technology that will fill in blank spots in our own portfolio.
- Acquire technology to keep it out of the hands of competitors.
- Acquire complementary technology that will provide synergistic value.
- Make our technology available to competitors to reduce their in-house research and development efforts and progress.
- Make our technology available to competitors in order to harvest cash from their markets.
- Use our technology as the basis for establishing alliances or joint ventures.
- Obtain a larger technology portfolio to provide design freedom.
- Obtain technology in order to avoid the time and cost of self-development.

We next examine the alternatives among the strategies that are available to marshal the resources necessary to stay in the race.

18.7 INTERNAL STRATEGIES

(a) GROW YOUR OWN. While the necessity for intercompany collaboration has been recognized, the option of developing a product or service in-house is still valid and, if it is the fastest and most economical way, desirable. After all, 100% ownership and control of a promising innovation is still the best option, provided one has the resources to

2. Russell L. Parr and Patrick H. Sullivan, eds., *Technology Licensing—Corporate Strategies for Maximizing Value* (Hoboken, NJ: John Wiley & Sons, Inc., 1996), p. 137.

commercialize it by providing the most efficient research, development, design, production, marketing, sales, and distribution. The Greek philosopher Thales once bought up all the olive presses in Miletus at a time when his knowledge of meteorology told him a bumper crop of olives was on the way. He was right, and he charged monopolistic prices for the use of his presses, becoming wealthy in one year.

The most obvious course is therefore to create internally the factors of production that the enterprise needs. If research in a commodity chemical company has brought forth a drug patent in a new and unfamiliar field, manufacturing facilities and a distribution system can be built and organized. If the marketing staff has identified a potentially profitable opportunity, research resources may have to be created or redirected to augment the product line.

The advantage of this approach is that the new element will be created "in the image" of the rest of the enterprise. There will be no clash of corporate cultures. Complete control will be maintained. There can be assurance of adequate protection of the intellectual property from competitors. The new venture or element will provide career opportunities for existing staff. There may be currently underutilized resources that can be put to work in the expansion.

The disadvantages relate primarily to speed and ability.

(i) Speed. Obtaining intellectual property resources by self-development is the slowest path, if they already exist elsewhere and are accessible by some means. Developing a trademark and a market position is a slow endeavor.

(ii) Ability. One would question the ability, as an example, of the commodity chemical company noted above to develop the manufacturing and distribution capability following the patenting of the drug. There are simply too many practical barriers to overcome. Its manufacturing personnel, skilled though they may be, have never dealt with Food and Drug Administration standards, its marketing staff would be unfamiliar with the distribution channels for drugs, and so forth.

It is for this reason (as well as a lack of financial resources) that universities and research organizations rarely elect to internally develop the means to exploit the technology that they continually produce.

The *cost* of internally developing resources may not be very different from that of obtaining them externally, if there is a knowledgeable marketplace. To illustrate: If I have the manufacturing capability sought by the commodity chemical company with the new drug patent, I am certainly aware of what it costs to build and staff such a plant. Even though it might involve little *incremental cost* to add the manufacture of the new product to my existing complement of products, I will most certainly *price* that manufacturing function based on the *value* of that service, rather than the cost of providing it.

18.8 THE ENTREPRENEURIAL CORPORATION

Corporations have adopted a number of strategies attempting to retain total control over the development of intellectual property while obtaining benefits that otherwise might have to come from outside the organization. Large organizations are notably poor at creating an atmosphere of innovative thought and deploying resources rapidly. The new strategies combine a creation of the entrepreneurial climate for innovation with the existing development resources of a large corporation. Names such as "intrapreneuring" or "internal venturing" have been used to describe these techniques. These techniques are

designed to encourage innovation from within by a system of policies, performance measures, and rewards, or by establishing autonomous "skunk works" within the organization, as IBM did to develop its line of personal computers. Most often, early-stage development of new products is the objective. Kodak, 3M, and Monsanto have all had a run at this strategy.

In 1988, Xerox Corporation created an internal venture capital operation—Xerox Technology Ventures. Other companies have since followed this lead. The objective was to enable the exploitation of technology developed in-house, but for which the decision had been made at the corporate level not to commercialize. Scientists and engineers who develop such technology can approach the Ventures group for funding a start-up development company. If accepted, they form an enterprise on company premises, and if commercialization is successful, they receive a portion of the new company's stock. Several of the ventures have been successful.

The advantage of these strategies is, of course, that total control and ownership is maintained. There are five disadvantages:

- In spite of best efforts otherwise, many organizations simply are unable to tolerate this "intrusion," and there is a dampening or extinguishing of the spirit necessary for this to succeed.
- Compensation schemes are put awry. To maximize the entrepreneurial spirit, it is beneficial to give the occupants of the "skunk works" an opportunity to share financially in the success of a project. Other employees probably do not mind if the development is unsuccessful, but if the reverse is true, problems can arise.
- Another question is where to locate the operation within the organization. No product manager, whose compensation may be dependent on product line profitability, wants to have a nonearning development team as part of his or her group. Beyond that, start-ups absorb an inordinate amount of management time and energy.
- At the corporate level, these operations are a drag on earnings per share, and the short-run outlook of the financial markets makes this a serious consideration.
- There is also the added risk that the failure of a fledgling product could tarnish the image of the larger entity.

18.9 ACQUISITION

Another strategy is to obtain intellectual property or the elements to exploit it by acquisition. This usually involves the purchase of an entire enterprise, although occasionally product lines are exchanged. We classify this as internal because the result is 100% control through ownership. This can be the quickest way to obtain intellectual property or access to a market.

One might expect that corporate mergers and acquisitions would represent a very prevalent exploitation strategy. The reason for this may be that the businesses of both acquirer and target are a portfolio of different kinds of assets. In addition, both corporations probably are involved in a fairly broad range of products or services. So, almost inevitably, if one acquires an entire business in order to gain access to specific technology, many other unwanted assets come in the transaction. Assimilating those unwanted assets or disposing of them can be time-consuming, can deflect management energies, and can use up financial resources. All of these things increase the real cost of obtaining control of the desired body of technology. In addition, the acquisition of a business enterprise can bring other

liabilities, such as environmental problems, product liability claims, unresolved national and international tax issues, and the like.

There are other disadvantages to this strategy as well:

- If the target enterprise becomes aware of the strategic need for what it has, the price will be high, factoring in the time value of being able to supply to the buyer a ready-made solution.
- When the objective is to obtain innovative entrepreneurship, the target enterprise is usually small, relative to the buyer. Small businesses are different from large ones in many ways besides size. The small business corporate culture (if it can be called that) is likely to be vastly different, and the people who gravitate to such an atmosphere tend to have different motivations and needs. The result is that there is a high likelihood that, in spite of best efforts, a marriage of large and small enterprises will fail. The small enterprise will be swallowed up in the larger, and the characteristics that originally made it so attractive will disappear (along with the people).
- Even if the marriage lasts, there is a strong possibility that the high energy level that was attractive in the target will wane, as the people become "corporatized" (or wealthy, as a result of the purchase).

A partial acquisition often is used as a tool by large companies to acquire innovative technology. By this we mean acquiring a partial interest in the target company's common stock. This has been a very successful strategy utilized by several very large companies. This strategy allows the smaller company to retain its entrepreneurial spirit and the energy of innovation necessary to get the technology to the point of commercialization. If the small company is successful, then the large organization may have the option of acquiring control.

18.10 EXTERNAL STRATEGIES

We define external strategies as those in which there is co-ownership, collaboration, or a license between otherwise unrelated and sometimes competitive parties, for the purpose of exploiting intellectual property or some resource. These arrangements often are collectively referred to as strategic alliances or strategic partnerships, and they are becoming the primary focus of business development strategies.

(a) STRATEGIC ALLIANCES—GENERAL. The business language of the 1990s popularized the term "strategic alliance" to describe a planned state of cooperation between enterprises, and this term remains in active use. Alliances often are between competing businesses. I once asked the proprietor of one of three custom gun shops in a small western Pennsylvania town whether all the competition was a problem. He quickly informed me to the contrary, that gun fanciers came from miles around knowing that their needs surely would be met by one shop or the other. There was close cooperation among the three proprietors, realizing that $1 + 1 + 1 = 5$ in the marketplace. This was a strategic alliance of a very simple and informal sort.

In the corporate world, a common alliance is between a small, start-up enterprise and an industry giant for the purpose of combining innovation and resources. Some alliances are vertical in nature, linking the research and development (R&D) function of one entity with the manufacturing function of another, or manufacturing with marketing or distribution,

and the like. A horizontal alliance would link two perhaps competing but complementary manufacturing processes. Increasingly, alliances cross international borders to overcome the barriers of language, currency, or standards. There is an almost limitless variety of strategic alliances, and we will discuss only the more common situations.

We bifurcate strategic alliances into those in which there is some form of shared or cross-*ownership* and those in which there is only an *exchange* of goods or services.

(b) EXCHANGE ALLIANCES. Alliances of this type are characterized by an exchange at arm's length of goods or services for rights in intellectual property.

(i) Marketing/Distribution Agreement. Some landmark vertical alliances of this kind have occurred in the pharmaceutical industry, in which one company with a strong or strategically placed marketing staff has agreed to sell the complementary products of a competitor. The objective might be to avoid the time and cost of establishing a sales force (perhaps in another country) or to round out a product line.

(ii) Collaborative Research and Development. Competitors also have agreed to horizontally combine efforts on research or development that are important to each, with the objective of sharing cost or shortening the development cycle.

(iii) Joint Bidding. Often small enterprises will join together to submit a bid in competition with larger entities. This may be needed to assemble the requisite skills or products or simply to achieve the critical mass that none of them has individually.

(iv) Manufacturing Agreements. An enterprise with excess capacity or highly specialized capability may agree to manufacture components for a competitor.

(v) Financial Agreements. There are many permutations available that do not involve cross-ownership. Smaller enterprises chronically suffer from a lack of money capital. Traditional money sources often reject these opportunities because of the perceived risk of default or because they do not, or will not, take the time to understand the underlying intellectual property that may be driving such a business.

Larger enterprises, with access to traditional markets, can serve as a source of money capital. Their price may be some future rights to developed technology, options to purchase it, access to new markets, or the like. This arrangement is quite common between a corporation and a university or research organization.

(vi) Licenses. By far, the most common of the exchange alliances is the license. A license is directly analogous to the rental of property. The owner of the complete bundle of rights to intellectual property agrees to transfer some of those rights to another in exchange for money, goods, or services. The transfer is contractual, and as in a lease, the terms of the exchange are specified.

There are four advantages to licensing as a means of exploiting intellectual property:

- The cash investment is relatively small. This is not to say that one can sneeze at the cost of negotiating a license, but licensing typically does not require the capital resources of a cross-ownership form of exploitation.
- It may not require a long-term commitment. Ideally, if a license turns out to be a win-win situation, it can last for years and lead to close ties between two enterprises. Alternatively, the license form of exploitation also can provide an "out" to

either party if the arrangement turns out to be unsatisfactory, giving the technology owner the opportunity of finding another means of exploitation before the economic life of the intellectual property expires.

- The owner of the intellectual property licensed retains some rights and control over the property.
- It provides an opportunity to exploit intellectual property that is out of the mainstream of one's enterprise, or to exploit certain features of intellectual property that would be useful in another business segment.

There are five disadvantages to the licensing strategy:

- Control is lost for a time relative to those rights that have been conveyed by means of the license.
- The licensee may fall prey to one of a host of evils that may have been unforeseen in the license, and that effectively block the licensor from the exercise of the licensed rights. These can include bankruptcy, capital shortage, environmental problems, or a natural disaster that could prevent the licensee from exploiting the intellectual property while holding the intellectual property captive.
- There can be excessive administrative costs, especially in the case of a recalcitrant licensee.
- A poorly designed license may, in effect, grant more rights than were originally anticipated.
- The licensee might be able to take advantage of knowledge gained as a result of the license to bypass the intellectual property or to improve on it so as to become a competitor.

(c) PORTFOLIO LICENSING. In the financial world, a "portfolio" is defined as any combination of assets. The assets in the portfolio can be focused narrowly on one kind of property, such as the common stock of young biotechnology companies, or the assets can be a diverse and unrelated collection of investment assets. Owners of diverse portfolios can reduce investment risk with a broadly composed portfolio. Although the investment return on a diverse portfolio will not be as great as the return of its best investments, neither will it be as low as its worst. The return will be equal to the weighted average return of the aggregated assets.

A research and development program, along with the resulting intellectual property and patents, can be looked at as an investment strategy. Some R&D programs are narrowly focused on pursuing "keystone" patents that protect niche markets from invasion by competitors. Other strategies seek a blanket defense in an entire technology area by developing a broad patent portfolio that attempts to cover narrow market niches as well as broad commercial exploitation. For those pursuing a broadened intellectual property strategy, there may emerge a different licensing strategy as well.

(d) REASONS FOR A PORTFOLIO LICENSE. A unique licensing practice, quite prevalent in large, high-tech industries, is that of granting a license to a *portfolio* of patents. When we refer to "large, high-tech" industries, we focus on those with heavy dependence on technology and those in which technology advance is rapid, with quick obsolescence of yesterday's technology. The heavy dependence on technology necessitates a strong R&D program that, in turn, is likely to create an extensive portfolio of patented technology. The rapid changes in the state of the art bring a high risk of infringement

because there may be several well-financed and qualified competitors, each with research programs all directed at the same market or field of use. In such industries, there is great potential for infringement, including unintentional infringement. Efforts to avoid infringement become very time-consuming and costly. The likelihood of infringement and the costs to fashion designs that avoid infringement can be extremely debilitating to a company in this environment.

This is vividly illustrated by current events. In May of 1997, Digital Equipment Corp. sued Intel for patent infringement. As Michael Slater reported:

> Intel will comb through its nearly 1,000 microprocessor patents, find a dozen that Digital's processors arguably infringe, and countersue. . . . After each company spends millions, they'll negotiate. . . . Gaining an Intel patent cross-license could be Digital's hidden agenda.[3]

Conventional wisdom suggests that litigation costs for a small (less than $1 million at risk) infringement suit can be $500,000. When $25 million is at risk, costs can be four to five times as much, and for bigger cases they can reach $100 million.

Some of these problems have been evident in the software industry, in which there are thousands of developers working at the same time to produce software for the same, or similar, user applications. Most of these efforts have proceeded unhindered, due to the lack of definition under the law as to the form and extent of software protection as intellectual property. There are those within the software community who are opposed to narrow protection of software because it will mire every developer in potential infringement constraints. In addition, they argue that such tight protection would be a disservice to software buyers. Computer users, as an example, find a similar "look and feel" to be beneficial because it reduces the amount of learning needed to acclimate oneself to new software.

Portfolio licenses can be bilateral, in essence a cross-license between two portfolio owners, or unilateral, between one party with money and another with a patent portfolio. Typically, a portfolio license is an exchange between two parties of rights to each other's portfolio of patented technology. The rights granted can be limited to a portion of the licensor's total patent holdings or can grant rights to all technology owned by the parties currently and in the future. Keystone patents, which are critical in supporting or protecting an important product or service, may be excluded from such a portfolio license, but usually portfolio licenses grant rights to a large portion of the patented technology of each party. Portfolio licensing is a strategy fitted for two intellectual property owners who are pursuing generally parallel science. The relationships between the parties exchanging portfolios can represent quite a mix. The parties in portfolio licensing can be direct competitors or companies operating in completely different industries. Usually there is some overlap in the products and/or services that the parties to a portfolio license provide. This is the incentive to enter into such a transaction.

We would not expect to see a portfolio license negotiated between a tire manufacturer and a pharmaceutical company, because of the incompatibility of the technologies. We might, however, find a portfolio license between an automobile tire manufacturer and a truck tire builder. The auto tire manufacturer and the truck tire manufacturer may have mutually beneficial technology that they can share without competitive worries. Two pharmaceutical companies, however, would be unlikely candidates for such a broad transaction because, for them, a patent often is a product. But we have seen direct competitors in the disposable diaper industry engage in product-oriented portfolio licenses to end continuous infringement litigation: Procter & Gamble with Kimberly-Clark, as an

3. Michael Slater, "The Trouble with Patents," *Fortune* (June 9, 1997), p. 26.

example. Trademarks and copyrights are unlikely to be subject to portfolio swapping transactions, because they are so uniquely associated with a specific product or service that such a license would be the same as giving up rights to the product or service itself. A portfolio license tends to be a *caveat emptor*, "as is, where is," transaction. Each party to the transaction is saying, in effect:

- My patent portfolio is large, covers years of research, and contains "good stuff" and "not-so-good stuff."
- My patent portfolio contains some valid patents and some that, if questioned, might turn out to be invalid.
- With the portfolio license, I will give you a list of patent numbers. You have to discover what they are all about.
- The portfolio license does not include any know-how or show-how or any guidance at all as to how the patented technology is being used (or not used) in my products, or how it might be used in yours.
- You can use my stuff and I can use your stuff.

A portfolio license becomes, in essence, an insurance policy that provides protection from infringement claims and allows design freedom. The license eliminates, or at least greatly reduces, the potential for infringement litigation and thus reduces the constraints imposed on researchers and designers.

(e) OTHER PORTFOLIO LICENSING STRATEGIES. A portfolio license also can be used to fill gaps in a company's technology base. As an example, we might look to the personal computer industry—more specifically, the segment of notebook computers. An extremely important component of a notebook computer is its battery. It must be rechargeable, long-lasting, and light in weight. Early notebook computer developers would have had the option of contracting with a battery manufacturer to develop and produce batteries for their computers. They might have found, however, that the battery manufacturers were not interested in entering this uncertain market. Another option would have been to negotiate a portfolio license with such a manufacturer in order to gain access to a broad base of battery technology. Armed with this, the computer developer could have turned its own researchers loose to design for its specific needs. The portfolio license would have given it both a good head start on the project and relative freedom from infringement worries.

Many companies have carried this "gap analysis" technique even further, using it to identify *potential* gaps in their technology base that may appear years in the future. The key to the process is to identify and describe a product or business environment that will exist in the future. This is often done by observing what has occurred in the past. The first task is to describe, in as much detail as possible, the market that is expected to develop; the products or services that are expected to serve the market; the surrounding economic conditions; the facilities, funding, and people that will be required; and the intellectual property that will underpin the participation. The second task is to describe the characteristics of the company or product that will be successful in the anticipated market. The third task is to identify which of the required ingredients for success one already has, which are under development, and which are missing. The missing ingredients are, of course, the "gap."

One gap-filling strategy is to identify other companies that already may have the missing ingredients or have the ingredients under development. If those other companies have not done the same gap analysis, they may not realize what they have. In any case, a

portfolio license transaction could be the means by which the gap is filled, or the means to provide the technology base for further development to accomplish the task. A portfolio license may also be a good competitive strategy to avoid tipping off the source of the technology to the direction of one's interest.

As we noted, a portfolio license typically involves no know-how or show-how. If that is a required ingredient of the transaction—either because of the nature of the technology or because the licensee has not got the skill set to exploit it—then another strategy must be employed. Probably the most common of these is a joint venture or other form of strategic alliance. The two parties license their portfolios to the joint venture and provide the know-how to it. This provides both licensor and licensee with the economic incentive to provide what may be relatively costly follow-on consultation and to share proprietary technology, which would not occur with a simple portfolio license.

(f) PORTFOLIO LICENSE CHARACTERISTICS. What does such a license look like? It can be general in appearance because the rights granted are broad, but in some cases it will specifically list patents. The focus on specific use can be broad, or it can be limited to industries or even specific products. Geographical boundaries will likely be large. Term limits can coincide with the patents themselves, but this may be irrelevant for licenses that include future technology with a high obsolescence factor.

Payments under the license are usually in the form of a lump sum at the time of license execution, or perhaps a series of fixed payments over several years. Payments are made by the party perceived to have the portfolio of lesser value. Such a determination requires agreement as to the respective values of the exchanged portfolios, which may require that each patent in the two portfolios be individually valued. At a minimum, we suggest a number of elements to be considered in this transaction, including:

- The average economic remaining lives of the two portfolios
- The relative strength of the parties' R&D efforts, which would make the grantbacks of additional technology more plentiful and potentially more valuable
- The "insurance value," as measured by the likelihood of infringement conflicts between the parties, the potential costs of litigation, and each party's perception of its exposure to substantial damages
- The breadth of portfolios exchanged
- The importance of patented technology in the products or services of each party
- The relative pace of each party's product or service development cycle
- The existence of a keystone patent in one or both of the portfolios

Running royalties keyed to the use of the portfolios are not likely to be specific to individual patents. The administration of such a royalty scheme likely would be very difficult, so if running royalties are called for in the license, they would be associated with specific products, but cover the use of all the portfolio technology.

Portfolio licenses are unique and are much more reflective of the particular motivations of the parties at the time the transaction is made than they are of any market forces for patented technology. In one such license, the "insurance" factor may be dominant, whereas in another, the ability to gain design freedom may be paramount. As a practical matter, it is probably impossible to judge the effect of such a license on the financial performance of either party. Yet value is inherent in such exchanges, because they are becoming widely used.

We also caution the reader about using the royalty rates from portfolio licenses as comparables in other situations, especially licenses for the use of specific intellectual property. One can observe from this discussion that the circumstances surrounding a portfolio license transaction are extremely varied and that the parties may have many differing motivations. Such transactions, therefore, have an enhanced degree of uniqueness that may preclude their use as surrogates to quantify other transactions.

18.11 OWNERSHIP ALLIANCES

The other broad form of alliance involves some type of ownership rather than an exchange of money, goods, or services. Most commonly, the form of that ownership is an investment by one company in the *securities* of another.

As an example, a manufacturing enterprise may have intellectual property that is applicable to some business segment out of its own mainstream. It might seek an alliance with an enterprise that is already in that market and consummate that alliance by purchasing, in exchange for its intellectual property, some of the common stock of that enterprise. By doing so, it will perhaps receive representation on the board of directors, be able to ensure that proper resources are devoted to exploiting its intellectual property, and perhaps receive a share of dividends. It may look forward to selling its holding for a profit in the future.

In another scenario, the parties could form an entirely new enterprise, with common ownership—a joint venture. If that co-ownership involves the receipt of some form of security in another enterprise, an important complexity is introduced. The co-ownership of securities versus property is a situation that has some unique characteristics.

(i) Type of Security. In the evaluation of this type of arrangement, one must be sensitive to the fact that there is an important difference between the ownership of *property rights* and the ownership of the *securities* of a business enterprise. If one co-owns an acre of land, the rights of all parties are commensurate with their pro rata share of ownership. The securities of a business represent very specific and sometimes limited interests in the enterprise. They are, in a sense, "once removed" from direct ownership, and can take various forms.

(ii) Long-Term Debt. Debt securities include bonds, mortgages, and long-term notes. The investment may or may not be collateralized, but usually will have a stated interest rate and term. For the investor (lender), the attraction is receiving payment for the use of the capital, together with its ultimate return (barring default).

As a form of strategic alliance, there is little motivation for one party to provide long-term debt capital to another. There is no potential payoff if success strikes. It is a financing instrument only. When one of the entities or the joint venture is a start-up, as is often the case, the risk is high and the resulting interest rate would be so high that the business could not pay it anyway. The risk of default also would be so high that an investor would view it as equity.

(iii) Preferred Stock. Much the same can be said of this form of financing. Unless there is an opportunity to convert in the future to a security that will share in the upside, there is little reason to use this form of ownership in a strategic alliance.

(iv) Common Stock. Common stock ownership is the vehicle most used to form alliances. It has the greatest degree of risk, but that is counterbalanced by the opportunity for future wealth. If the enterprise fails, it is highly unlikely that common stockholders will realize any of their investment, especially if the business was developing high technology. If the enterprise is successful, the common stockholder will reap the largest rewards.

(a) SIZE OF INTEREST. It is extremely important to understand the impact on value of the size (relative to the total) of a security interest in a business enterprise. This is especially true of common stock holdings, and since they are the most common form of cross-ownership in a strategic alliance, we will concentrate our discussion there.

If one is a co-owner of a fee simple interest in property, for example, a coauthor of a book or a coinventor holding a patent, one's pro rata share of the benefits of ownership is clear.

Investing in the common stock of an enterprise is altogether a different matter. In this milieu, one consigns the investment to another entity—the enterprise that has its own management. A layer of control over the investment is therefore introduced, with a diminution of the original investor's rights. The degree of loss is generally related to the size of one's investment vis-à-vis the total common equity.

To illustrate, assume that I invest $1 million (or the equivalent goods, services, or intellectual property) in a joint venture, and the parties involved agree that this gives me 10% of the common stock of the new enterprise. If one of the other parties owns 55% of the stock, they have clear control. They have the power to hire and fire management, set policy for the business, buy or sell assets, make acquisitions, make a public offering of the stock, pay or not pay dividends, and change the articles of incorporation or the bylaws of the enterprise. This majority holding can withhold financial information, can issue new stock to dilute my holding, and, in a sense, can freeze me out if they wish. While there are legal remedies for this, they are expensive and time-consuming to muster.

In addition, if I reach the point at which I want to sell my interest in a joint venture, then the value of my 10% stock ownership can be expected to be less than 10% of the whole enterprise. Any potential buyer would recognize the possibility of a "tyranny of the majority" and be willing to pay less.

Control, therefore, is a very important consideration in a cross-ownership alliance involving holdings of common stock. An equal division of control between two parties (50–50 *stock ownership*) could be just as debilitating if the parties become locked in an impasse over policies or direction. Early in his career, Benny Goodman shared an apartment with Jimmy Dorsey. Jobs were few, and since they played the same instruments, competition was strong. They agreed that whoever answered the telephone first got the job. There was an occasion, however, when there was a dead heat. As Goodman described it: "Jimmy got the mouthpiece of the phone and accepted the date. But I had the receiver and knew where the job was."

There are also tax consequences to the size of stockholding. If one corporation owns at least 80% of the common stock of another, the results of operation of the two entities can be consolidated for (U.S.) federal income tax computation. The losses to be expected in a start-up therefore could be offset against the profits of the parent, reducing income taxes. If none of the parties to a cross-ownership alliance has an 80% holding, then it must wait until the venture has taxable income before the early-year losses can be utilized.

18.12 OTHER LIQUIDITY CONCERNS

Other factors must be considered in a cross-ownership alliance. Generally, such an investment is highly illiquid. First, the common stock of a start-up is rarely publicly traded, so there is no market for it. A private sale of such a stock interest would be time-consuming and costly because one would have to seek out a particular buyer who had a particular interest in the enterprise. There may be restrictions as to the sale of the stock so that the original parties have control over who is a stockholder. One therefore cannot make such an investment with the idea that "We can always sell our stock if things don't work out."

It is also important to consider preemptive rights in order to preserve one's original pro rata share of assets, earnings, and voting power. These rights give a shareholder the right of first refusal on additional stock if it is necessary to raise additional equity capital (a not unlikely situation for a start-up venture).

(a) MARKET RISK AND THE DISCOUNT FOR LACK OF MARKETABILITY. Benjamin Graham is often referred to as the father of modern investment analysis. He stated in his famous book, *Security Analysis*:

> It is obviously better to own a readily marketable security than one with a poor market.[4]

It can be argued that many forms of intellectual property have very limited characteristics of marketability. Trademarks may be limited to a specific industry with few participants.

During the late 1960s, many registered investment companies invested in restricted stocks (those that cannot be actively traded on a stock exchange or over the counter). During the early 1970s, investor confidence was severely eroded by high inflation and a no-growth economy. As investors clamored to redeem their shares, many of the mutual funds ran into substantial liquidity problems. One of the problems was the inability to liquidate their restricted investments. At a time when investors wanted to liquidate, they found that a lack of marketability forestalled their ability to limit further decline in the value of their investments. This lack of marketability clearly increased the risk of their investment. Shannon Pratt provides a very complete discussion of the effect and quantification of this lack of marketability.[5]

One method that allows a means by which to measure the discount on investment value because of illiquidity is to study the private placements of restricted stocks. Restricted stocks are often common stocks of a publicly traded corporation. The restricted securities are identical to securities that are registered in every way, except that the restricted securities are not able to be traded in a public market. Since the only difference between the two investments is the ability to publicly trade the security, analysis of the price differentials between a trade of the registered stock and a trade of the restricted stock on the same day provides an indication of the value of marketability.

Quite a number of individuals, firms, and agencies have made studies intended to quantify an appropriate discount for lack of marketability based on restricted stock studies. Among the studies are:

Lance S. Hall and Timothy C. Polacek, "Strategies for Obtaining the Largest Valuation Discounts," *Estate Planning* (January/February 1944).

"Discounts Involved in Purchases of Common Stock (1966–1969)," *Institutional Investor Study Report of the Securities and Exchange Commission*, H.R. Doc. No. 64, Part 5, 92nd Congress, 1st Session, 1971, pp. 2444–2456.

Milton Gelman, "An Economist-Financial Analyst's Approach to Valuing Stock in a Closely-Held Company," *Journal of Taxation* (June 1972).

Robert E. Moroney, "Most Courts Overvalue Closely-Held Stocks," *Taxes* (March 1973).

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4. Benjamin Graham and David L. Dodd, *Security Analysis* (New York: McGraw-Hill, 1934).
5. Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs, *Valuing a Business—The Analysis and Appraisal of Closely Held Companies* (New York: McGraw-Hill, 2000).

Robert R. Trout, "Estimation of the Discount Associated with the Transfer of Restricted Securities," *Taxes* (June 1977).

J. Michael Maher, "Discount for Lack of Marketability for Closely-Held Business Interests," *Taxes* (September 1976).

Robert P. Oliver and Roy H. Meyers, *Discounts Seen in Private Placements of Restricted Stock*, Management Planning, Inc., Long-Term Study (1980–1996).

William F. Pittock and Charles H. Stryker, "Revenue Ruling 77-276 Revisited," *SRC Quarterly Reports* (Spring 1983).

William L. Silber, "Discounts on Restricted Stock: The Impact of Illiquidity on Stock Prices," *Financial Analyst's Journal* (July/August 1991).

Others have studied this issue by comparing the price of stock when offered to the public in an initial public offering with the price of the same stock in private transactions just prior to that event. Robert W. Baird & Company made several studies under the direction of John D. Emory. The results of these studies were published between 1985 and 1997 in *Business Valuation News, the Journal of the Business Valuation Committee of the American Society of Appraisers*. Willamette Management Associates also conducted studies based on similar data. The results of these studies are published in the Pratt, Reilly, and Schweihs book previously referenced.

It must be remembered that the amount of discount indicated in these studies reflects the fact that the underlying corporation has similar securities that are indeed marketable and that the restricted stocks most often contain provisions to arrange for their registration in a few years. Thus, the restricted securities will enjoy liquidity in the future. The private transaction prices used in these studies therefore reflect the positive fact that active trading in the public marketplace will be possible. An investment that does not possess this near-term marketability characteristic might well be discounted even further.

The discount to the publicly traded price is the same as requiring a higher rate of return on the illiquid investment. The market sees the lack of immediate marketability as an additional risk beyond the risks already discussed, and requires a higher return to compensate for the added risk.

While the studies cited are based on marketability discounts of common stock, the same principle is valid for all investments, including an investment in intellectual property. It is useful for those involved in licensing to understand the concept of investment marketability and the bases of its qualification.

The market for intellectual property may be very limited. The number of corporate investors that possess the needed complementary assets of plant and equipment may be few. Further, if the intellectual property for which a market is desired is unfinished, embryonic technology, the possibilities for recovering the research investment may be more limited. A lack of marketability introduces higher risks, and a higher rate of return is appropriate.

18.13 ESTABLISHING A CROSS-OWNERSHIP ALLIANCE

There are several common scenarios for joint venturing:

- *Purchase of Equity.* One option is simply to purchase with cash an equity position in a new enterprise (joint venture), along with another entity. The only difference between this and an initial public offering of a new company is that one is assured of the existence of only one other stockholder. The assumption is that the

ownership will be divided between two entities and that those entities have enough common interest that the focus of the enterprise will remain as envisioned by the parties originally.

- Presumably, the value of contribution will be measured by the cash invested in the enterprise. If one of the parties put up cash, the share of ownership between the two parties is clear. If one party put up goods or services, then the question of the other party's share of ownership is not clear, and it depends on the value of that investment.
- *Contribution of Equity.* Very often, a portion of the equity of the new venture is in the form of goods or services. It could be intellectual property as yet undeveloped for the marketplace, manufacturing capacity, a contract for the supply of raw materials, an agreement to market or distribute the developed product, or R&D resources—only the imagination limits the possibilities. If those same possibilities apply to the contribution of the other party, then there is a real problem determining the relative ownership in the outcome of the enterprise.
- *Contingent Contributions.* Sometimes the partners agree on an initial contribution and also agree to make further contributions as the enterprise develops or as milestones are passed. This presents a "moving target" in terms of relative ownership, and the preemptive rights discussed earlier become important.

The benefits and problems associated with joint ventures will be more fully discussed in Chapter 23, where we also present the financial tools to evaluate them.

18.14 STRATEGIC ALLIANCES—RAPID TECHNOLOGICAL CHANGE

A combination of core competencies into joint venture alliances typically requires a sharing of the resulting economic benefits. Although distasteful to many corporations still harboring remnants of a go-it-alone mentality, strategic alliances are often the most likely way in which each participant can maximize an opportunity. This has come about because of the accelerating pace of technological advancement, as illustrated in the context of the industry technology cycle.

S. P. Magee pursued studies that extended the well-known product life cycle theory into an industry technology cycle.[6] He refashioned the introduction, growth, and maturity stages of the product life cycle into the invention, innovation, and standardization stages of an industry technology cycle. (See Exhibit 18.5.)

Invention involves the commitment of funds for research efforts that might develop new products or processes before the commercial potential is well defined. Innovation takes invention and begins the process of commercializing the invention into a product. The innovation stage of the industry technology cycle encompasses the first two stages of the product cycle (product introduction and growth). The final stages of each theory are identical: maturity and standardization.

Technological advancement accelerates as new inventions are founded on knowledge gained from the process of inventing prior technology. The continued invention process compounds at an accelerating rate. As a result, next-generation products come about in a matter of years instead of decades. Exploitation of commercial potential must be conducted more rapidly and efficiently than ever before.

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6. S. P. Magee, "Multinational Corporations: Industry Technology Cycle and Development," *Journal of World Trade Law* (1977), 297–321.

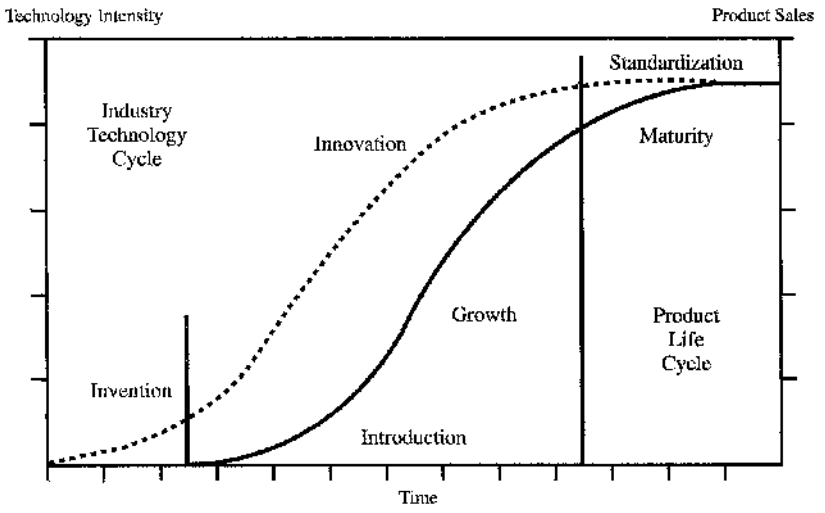

EXHIBIT 18.5 COMPARISON OF THE INDUSTRY TECHNOLOGY AND PRODUCT LIFE CYCLES

In Exhibit 18.6, the cash flows expected from commercialization of a new technology are depicted. The time frame used in the illustration is elongated for discussion purposes. One of the lines represents the cash flows expected by a firm that undertakes the commercialization process alone. The other line represents the cash flow of the same firm, assuming a strategic alliance is established with a partner.

(a) ALONE. A firm that commercializes a new product without the assistance of a strategic partner must bear the brunt of all development and testing expenses. Added expenses may be required, depending on the core competencies of the firm. The firm

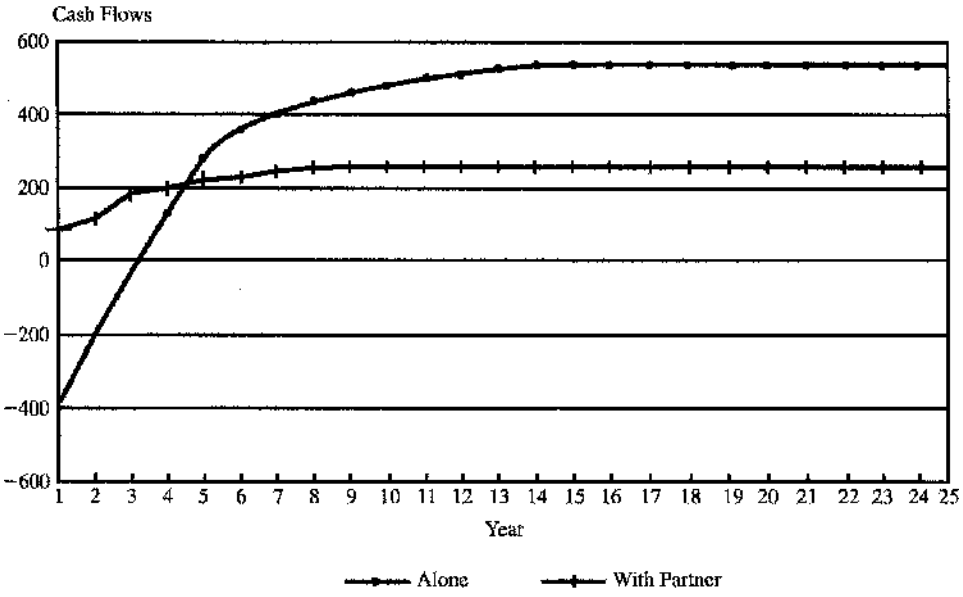

EXHIBIT 18.6 JOINT VENTURE DECISIONS AND TECHNOLOGY LIFE

may be required to develop new (to the firm) complementary intangible assets needed to exploit the new technology. The single-firm exploiter also may not have a suitable distribution network for the product that embodies the new technology. The single-firm exploiter also may not have the talents necessary to gain government approval. The single-firm exploiter may be more accustomed to commercial marketing and need to establish competencies in consumer marketing. Full commercialization may require acquisition of new competencies. Such activities cost money, but, more important, the acquisition of new complementary intangible assets takes time, and the acceleration of technological advancement and the parallel compression of the industry technology cycle make delays very costly. As depicted in Exhibit 18.6, deficit cash flows are expected for the single-firm exploiter as commercialization requires the acquisition of complementary intangible assets in the early years of commercialization.

(b) WITH PARTNER. The need to acquire missing competencies can be satisfied by entering into a strategic alliance with another firm able to provide access to the missing competencies. In Exhibit 18.6, the cash flows are shown as positive from inception of the project because the strategic partner contributed access to missing competencies. At the same time, the cash flows expected from eventual commercialization are dramatically reduced because, in return for contributing competencies, the single firm must now share the positive cash flows expected in later years. High amounts of expected commercialization cash flows can tempt a company to select a single-firm exploitation strategy, but recognition of the accelerating industry technology cycle may help control such greedy tendencies.

Exhibit 18.7 shows the present value of the expected cash flows assuming different periods of time for the industry technology cycle. Each point on each curve represents the present value of the cash flows from Exhibit 18.6, assuming that the remaining economic life of the subject technology corresponds to a particular year along the x-axis. As

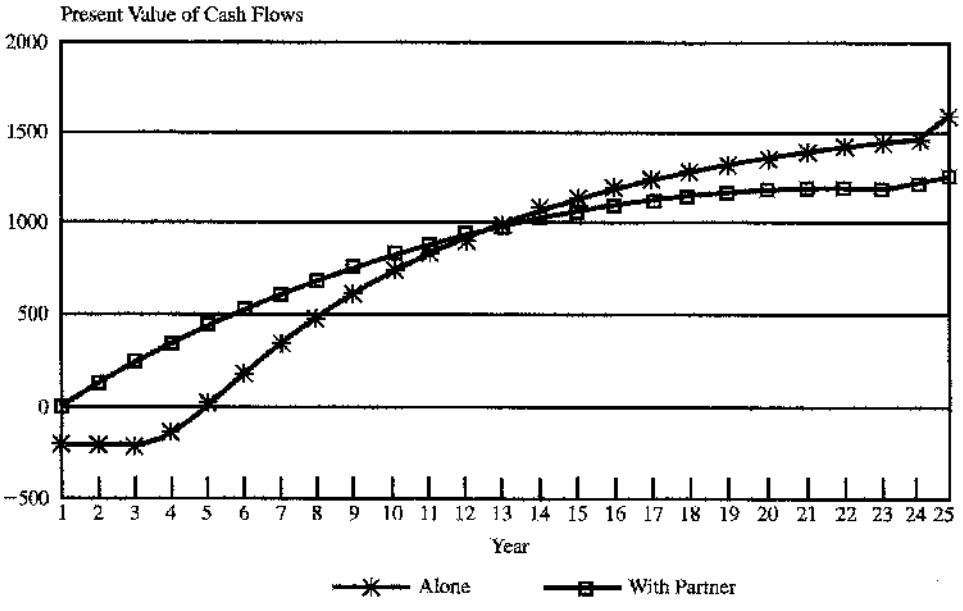

EXHIBIT 18.7 JOINT VENTURE DECISIONS AND TECHNOLOGY LIFE

an example, look at year 5. If the technology being considered for commercialization has a five-year life, the present value of the cash flows from single-firm exploitation is zero. With a partner, the present value approaches $500, because the strategic alliance saved the expenses of developing missing core competencies and allowed commercialization to begin sooner. When long industry technology cycles exist, single-firm exploitation provides a higher present value. This happens because the single firm has more time during which it can recover the amounts invested in developing the new competencies. Long industry technology cycles are associated with single-firm exploitation. Short cycles require strategic alliances.

A point of indifference occurs at the point where the two curves intersect (year 12 of Exhibit 18.7). The same financial outcome results from a single-firm exploitation strategy and a partnering strategy. At the indifference point, qualitative factors may indicate that a partnering strategy is still desirable. Considerations may include future benefits of collaboration not yet defined but that may evolve from an association. It may be decided that, regardless of the neutral financial outcome, a strategic alliance is desirable. It also may be decided that without positive financial rewards, more harm than good will come from sharing complementary intangible assets. Until the financial outcome is quantified, qualitative considerations lack a context in which to be considered.

This discussion has shown that commercialization time frames in the face of accelerating technological advancements and compressed industry technology cycles are a driving force behind the notable trend toward multinational strategic alliances.

18.15 CREATING INDUSTRY STANDARDS

Licensing strategies are not always tuned for maximizing royalty income. Sometimes wide and early adoption of a technology can provide vastly superior benefits. Fast acceptance of a new technology by a particular market often provides the innovator with a significant competitive barrier. The late introduction of the superior Beta version of videotapes by Sony could not overcome the initial acceptance of VHS. This chapter looks at the licensing strategy used by many innovative companies aimed at gaining wide acceptance for a new technology. The benefits that the companies derived in place of maximizing royalty income are discussed.

(a) EASTMAN KODAK. Kodak provides the first example of a licensing strategy that aimed at gaining market acceptance for a new technology instead of aiming at deriving royalty income. The story is instructive because initially the licensing strategy was conceived to maximize royalty income until market realities caused a major reevaluation.

Kodak ended 1994 with $13.6 billion in revenues and $554 million in net income from continuing operations. The company is divided into seven primary business sectors: Consumer Imaging, Business Imaging Systems, Digital and Applied Imaging, Health Sciences, Motion Picture and Television Imaging, Office Imaging, and Professional and Printing Imaging. Kodak spent 1994 refocusing itself on imaging. It sold its Sterling Winthrop pharmaceutical business and the household products and do-it-yourself businesses of L&F Products.

Kodak's patent portfolio exists primarily to protect the company's market position. Central management of Kodak's intellectual property in photography had served it well. The market for its products is well established, and its competitive environment did not change rapidly. Consequently, Kodak adopted a licensing philosophy in its photography business whereby technology licensing to outsiders is conducted for the benefit of the

entire industry. Kodak's leadership position in traditional photography means that it experiences direct benefits from almost any actions that help expand the traditional photography industry. Generally, the company will consider granting licenses to all comers, but requests for technology licenses from competitors get careful analysis. When a direct competitor requests a license, opportunity costs and other competitive issues such as market share are scrutinized, and royalty negotiations are driven by a fair market value standard. In other instances, when license requests come from noncompetitors, royalty rates are determined by considering industry standard rates. Royalty rates based on industry standards do not reflect the impact of competitors on Kodak's business. Royalty rate negotiations with competitors are analyzed to reflect the unique conditions existing between Kodak and the competitors who request licenses.

The management of Kodak's technology requires that a dynamic balance among the different business units be maintained. Kodak's many different business units share the same technology. Instances can arise in which a license agreement may benefit one business unit while harming another. The result is that technology management at Kodak requires input from both front-line and corporate levels. Kodak's technology management is conducted as a team effort with participation from corporate groups and business units. The symbiotic relationship of the different business units and the company technology is of paramount concern when licensing decisions are made.

(i) Accelerated Market Acceptance. Forces driving Kodak's licensing practices in its traditional lines of business are those that will encourage widespread adoption of new technologies in the marketplace. Licensing at Kodak focuses on system inventions in the photography business that include camera, film, printing paper, and chemical formulas for making the film and developing it. In 1963, Kodak introduced the Instamatic; in 1972, the Pocket Instamatic; and in 1982, the Disk Camera. In each case Kodak licensed many companies to participate in these new product offerings. Outsiders were licensed to manufacture cameras for both Kodak and for themselves. Kodak generally follows a strategy based on the belief that the more cameras in the market, the greater its potential for gaining sales of other related products, from film to developing services.

Kodak believes that a larger overall market, with a variety of licensed participants, will maximize its sales and profits much more than monopolizing the technology. Admittedly there are risks associated with inviting others to exploit your technology, but Kodak believes that its competitive products and lead position in the market will serve it well in an expanded market. In Kodak's traditional business of chemical-based imaging, the oligopolistic nature of the industry allowed for relatively straightforward implementation of established licensing practices. As imaging moves quickly toward a digital foundation, Kodak is meeting new challenges and complexities head-on.

(ii) Photo CD Technology. Kodak faced the complexities associated with new digital technology when it developed a licensing strategy for its Photo CD product. The product was a new concept and its market was undefined. The identity of potential competitors was unclear. None of the factors affecting Kodak's traditional business applied. Instead of operating in a mature market, Kodak was entering a new arena.

Launched in 1992, the Photo CD stores photographic images on a compact disk. The images can be displayed in different ways. In essence, the product is a digital photo negative. The images can be printed from digital color printers, viewed on personal computer monitors, broadcast for television reception, transferred electronically, and displayed on standard television sets. Kodak's patent portfolio for this invention covers

the creation, capture, manipulation, storage, and display of the images. The invention involves creating images from data processing instead of through chemical processing. It also involves the conversion of photographs captured using traditional means—film—into digital images.

The company initially expected to concentrate its efforts on the home market, where consumers would view their still photographs on their televisions or home computers. This was the focus of Kodak's commercialization efforts. It considered most other applications as secondary. The philosophy behind granting licenses in the secondary market negotiations was a desire to directly profit, in the form of royalty income, from use of the technology by others.

(iii) The First Strategy. The initial commercialization plan had two components: Kodak would develop the home use for itself and gather royalty income from all other users of the technology outside the home-use market. Commercialization categories for Photo CD technology included different patent portfolio licenses for each group.

- *Software developers*, including Microsoft, Apple, and Adobe, would be licensed with the expectation that the technology would be incorporated into their utility and application software products.
- *Manufacturers* of Photo CD players would be licensed to make equipment for the home-use market.
- *Software publishers*, whose focus was on entertainment and education, would be licensed to create new products that used Photo CD technology.
- *System integrators*, who provide systems that facilitate the authoring of software games, applications, and other types of software products, would be licensed.

Participants in each category were offered a portfolio of patents they needed in order to participate in their product area at terms that would allow Kodak to benefit directly from royalty income. A reasonable plan was devised and implementation began.

(iv) Reality Can Be Rude. The primary market for the Photo CD was slow to embrace the product. Consumers did not seem to take to the idea of viewing still pictures on their television screens. Good news was not far away, however. The markets Kodak had considered of secondary importance to its strategy were very interested. Kodak had underestimated the demand from desktop computer applications outside the home market. Other uses of the technology became the dominant commercial force.

The new opportunities brought new challenges. Software companies were reluctant to pay royalties for patents. They also were reluctant to spend development money to incorporate Photo CD technology into their products when demand for it had yet to materialize. Considering the required development costs and uncertainty regarding demand, royalty payments were vigorously resisted. Other companies in businesses outside the home-use market also balked at paying continuing royalties because acceptance in their markets had yet to be established.

Kodak realized that its expectations for royalty income were premature. It first had to face market acceptance and had to establish industry standards. For Kodak this was new territory. In its chemical-based businesses, market acceptance and industry standards were a given. In the digital arena, these fundamentals had to be created. The response to changing conditions was accomplished quickly by establishing a team composed of business unit and corporate staff personnel.

(v) Revised Strategy. Faced with new opportunities but reluctant licensees, Kodak decided to open licensing. The new strategy provided interested parties with complete access to the technology. Kodak decided to adopt a strategy that would advance the technology's acceptance and then allow Kodak to benefit indirectly from offering complementary products and services. Instead of royalty income, Kodak expected to (and ultimately did) benefit from demand in the expanded market for these products and services:

- Digital cameras
- Film scanners
- Digital color printers
- Paper used in digital color printers
- Compact disk recorders (CD writers)
- Recordable compact disks
- Integrated systems for creating software programs
- Retailer systems for converting Photo CDs into printed pictures
- Photofinishing services to convert film into a Photo CD

As business conditions changed, the licensing policies evolved quickly. Changing licensing policies to reflect changing market conditions is not a surprise. The speed at which these changes took place, however, illustrates a fundamental change in intellectual property management for Kodak.

Expanding licensing policies for the Photo CD technology opened a floodgate of opportunities for Kodak. Recent stories in *Licensing Economics Review*, a technology journal based in Moorestown, New Jersey, demonstrate the willingness of other parties to adapt new technologies when the proper licensing policy is in place.

From the March 1995 issue of *Licensing Economics Review*:

> All-electronic cameras are a new product that will be introduced by the Eastman Kodak Company. The cameras will cost between $200 and $300. Photofinishing will not be required to turn the pictures captured in the camera into printed documents. The pictures will be generated by printing images on printers that are expected to cost about $300. Widespread use of this technology is expected within five years by Kodak. The company already makes digital cameras aimed at professional photographers but is planning to primarily serve the general consumer. Already the company is selling digital print stations that allow customers to scan photographs, adjust the image, and print out the changed photo. Kodak plans to participate fully in the next generation of desktop publishing where color photographs will be scanned into documents composed on personal computers and printed on low-volume printers. The maintenance of color during such a process is challenging so the company has joined forces with Microsoft, Motorola, and Apple to meet the challenges. Kodak will bring its color management systems to the party, and the others will provide expertise in software, electronics, and computers.[7]

From the April 1995 issue of *Licensing Economics Review*:

> Eastman Kodak Co., seeking to push ahead in digital technology, opened up access to its proprietary Photo CD system and forged alliances with other top technology players. The company hasn't been able to leverage its expertise in pictures to gain marketing advantage in the digital arena. It recently adopted a new strategy to move forward. Among the recent announcements is a plan to create retail kiosks with Microsoft Corp. that will let customers manipulate and print photographs and put them on Photo CD disks. Kodak has also said IBM will market Photo CD products.

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7. AUS Consultants, *Licensing Economics Review* (Moorestown, NJ, March 1995).

> Kodak had jealously guarded Photo CD, a means for storing and editing images on compact disk. The company announced that it will allow Photo CD technology to be licensed by software developers, eliminating royalty fees. Adobe Systems, Inc., will include the technology in future versions of its best-selling PhotoShop software, allowing customers to put their own images on Photo CD instead of relying on film developers or printers to do it for them.
>
> Kodak's move to form alliances is considered likely to come under heavy pressure from the computer industry, which resented Kodak's hoarding its imaging technology. The new strategy reflects the realization by many that complex technologies cannot be fully exploited by one company. Kodak's Chief Executive Officer, George Fisher, told reporters, "We used to try to do it by ourselves. We've learned very quickly that in this digital world, the opportunities are just too massive for any one company to do it on its own."

(vi) Credibility for New Technology. Kodak's licensing policy for the Photo CD technology was adapted for three reasons. The first was to gain market acceptance for its technology in new fields as quickly as possible. The second was to gain credibility for the technology. The third was to help establish industry standards for digitally based imaging.

Kodak believed that its Photo CD product would be most successful if many others made compatible products. The quickest way to create a large market is to have many uses for a product; the quickest way to accomplish that is to have a large number of companies selling products based on the underlying technology. When home use of the technology was contemplated, additional participants in the market were not critical to success. When the secondary markets became primary, Kodak needed help in expanding demand and addressing and serving the different forms of demand.

Another benefit of licensing the technology widely had to do with credibility. As other prestigious companies in consumer electronics, telecommunications, software, and computers adopted the technology, the reputation of Kodak's Photo CD technology grew. Kodak needs no such assistance in traditional photography, but its management wisely saw that the trademarks and reputations of others in diverse fields would do for its new technology what Kodak could not do alone.

Kodak was criticized as being slow to change its Photo CD licensing strategy. It was quite an accomplishment, however, for a mature company steeped in the characteristics of a traditional business such as chemical-based photography to depart from established practices and adopt an open-access licensing policy for its new technology.

(b) ALUMINUM CORPORATION OF AMERICA. Easy access to new ideas is not a new strategy. In 1962, aluminum first appeared as the top of steel soda cans. The aluminum was easier to pierce with old-fashioned can openers. The technology then progressed to tear-off openings. An opening was scored into the aluminum top of the cans and a tab was used to tear the scored area off of the top. Eventually the technology progressed to the current can openings where a tab is lifted, causing downward pressure on a scored area of the top, which then pushes the scored area into the can. All of the aluminum can technology was widely licensed around the world. Aluminum Corporation of America (Alcoa) was interested in gaining wide adoption of the technology, thereby increasing the demand for aluminum use in soda cans. The strategy adopted by Alcoa eventually led to the use of aluminum for the manufacture of the entire can. Alcoa initially derived no revenues as a supplier to soda can companies and eventually became a major player in the market. Companies in the United States that were licensed to use the technology included Continental Can, Crown Cork & Seal, and American Can. These can makers are just examples. Virtually all can makers around the world were licensed.

Royalties initially were charged on a sliding scale at the rate of $0.12 per 1,000 can ends for the first 1 million units, declining to $0.6 per 1,000 for volumes that exceeded 500 million. Over time, the rates dropped to $0.8 for the first million and $0.4 for the larger volumes. Eventually the rates dropped to $0.4 for the first million units and less than $0.01 for the largest volume. The final rates, translated to a royalty rate as a percentage of sales, were in the tenths of a percentage range. As the technology improved, all licensees received the upgraded technology for the same royalty rates. Royalty payments ended around 1989 when the last patents covering the inventions expired, but the sale of aluminum by Alcoa to can makers continues.

(c) AVOIDING A FREE-FOR-ALL. Great difficulties arise when more than one company has patents covering a new technology. It can be hard for a single company to determine licensing terms and whether to allow for broad access to a new technology. When multiple players are involved, the difficulty rises exponentially. The third generation (3G) of wireless telephone technology is an illustration.

In June 1999, the Universal Mobile Telecommunications System (UMTS) Intellectual Property Association (IPA), which includes the world's major telecommunications equipment makers, proposed a maximum 5% royalty for the licensing of patents essential to the making of various types of 3G mobile communications equipment. These terms were a compromise found to be acceptable to most of its constituents by a self-imposed deadline of June 30, 1999. The UMTS IPA represents the 3G patent platform as the commercial enabler for 3G systems. It invited interested parties to join a partnership beginning on September 1, 1999, prior to the 3G Patent Platform coming into effect on March 1, 2000. In May 1999, Qualcomm Inc. was saying it disagreed with the proposed 3G patent arrangements. The alternative could have been a free-for-all, as happened in GSM, with a multitude of bilateral agreements that would have made UMTS technology very expensive to acquire and possibly derailed its introduction.

Proponents of third-generation cellular telephony set up an independent company to oversee intellectual property claims for 3G technologies. Observers have complained that the effort lacks the clout of a full patent pool or licensing agency. The debate came as the industry grappled with how best to handle patent claims from multiple companies on technologies destined for wide deployment. Independent consultants—largely attorneys and accounting firms—are assuming what appears to be a growing role in areas such as licensing administration, patent evaluation, and royalties collection. Indeed, hiring outside experts to sort through the tangled web of intellectual property rights has also become standard operating procedure.

The 3G Patent Platform appears to be following an uncharted path. It will be set up as a new, nonprofit company called NewCo that is neither a patent pool nor a licensing agency. Rather, the group will oversee the task of licensing administration and patent evaluation, which it plans to outsource. Under the 3G Patent Platform scheme, the licensees will pay royalties directly to the companies holding the corresponding licenses. Patent holders and licensees are free to negotiate deals to meet their business requirements. All licenses, whether obtained through the 3G Patent Platform or by separate negotiation, are made between the patent holder and the licensees. In this way, the 3G Patent Platform aims to create a voluntary, industry-led process that simplifies intellectual property rights and cuts the cost of patents, in hopes of gaining a bigger market for the platform. According to industry sources, a lesson was learned from GSM phones. Nearly 20% of the cost of a second-generation GSM handset goes to intellectual property rights, due to the lack of a joint

licensing program. How this strategy will play out is still an open question. Those seeking patent licenses will need to enter into many negotiations.

In contrast to the UMTS effort, Denver-based MPEG LA is an independent agency that has established a successful intellectual property model for MPEG-2 video patent pooling. By getting a clean bill of health from the U.S. Department of Justice, which ruled in June 1997 that the agency is not anticompetitive, MPEG LA is believed to have shown the way for commercializing complex, cross-industry standards. The business models for MPEG LA and the UMTS effort are markedly different. Since 3G royalty payments are arranged between licensees and licensors, no fee is taken out of the royalty revenues for licensing administration. At MPEG LA, it is the licensing administrator's responsibility to collect royalties and to bring companies holding essential intellectual property to the joint licensing program. The MPEG LA effort is trying to represent a one-stop shopping center for those needing licenses.

(d) FREE ACCESS CAN STILL BE PROFITABLE. Sometimes a company can make more money in the long run by allowing full and open access to its new technology. Allowing free access to new technology can provide more financial benefits at a faster rate than holding out for royalty-bearing licenses. This usually happens when an invention must be accepted as a new technology standard by an industry that is served by many different participants. An important factor in making this decision centers on the costs associated with adoption of the new technology by industry participants. High adoption costs can be a barrier to industry acceptance. Removing the barrier of a license fee and running royalty rate can encourage faster adoption. When the new technology is disseminated throughout an industry faster, the originating company can sell its new products more quickly. Kodak gave up an opportunity to obtain royalty income from its Photo CD technology. With royalty-free licenses, more companies incorporated the technology into their products. As a result, Kodak sells more products that are used in conjunction with the new technology sooner than it would have without the royalty-free access to the new technology.

Free access to a new invention is not the best strategy for everyone. The ability to participate in the exploding market demand for products supporting the new technology is fundamental to achieving economic benefits. The licensor should be in a position to exploit rapid acceptance of the new technology. Proven products, manufacturing capabilities, recognized trademarks, and distribution networks must be well established so that the company giving free access can immediately meet the market demand that is generated, it is hoped, by adoption of the new technology.

Giant corporations typically are well situated to benefit from a royalty-free strategy. It will be interesting to see which companies use such strategies. Large corporations are just now starting to manage their technology portfolios as significant income generators. This new perspective is good but could establish corporate licensing policies that limit a company from identifying opportunities where royalty-free licensing is a better strategy.

CHAPTER 19

ECONOMIC CONTRIBUTIONS OF INTELLECTUAL PROPERTY

Fully expanded, this chapter title is really asking the question: *How much of the earnings of a business enterprise are derived from intellectual properties such as patents, proprietary technology, trademarks, and copyrights?* The answer to this question is the foundation on which licensing royalty rates and joint venture profit splits are based.

This chapter first discusses the basic ways in which intellectual property delivers enhanced corporate earnings. Then a detailed example is provided. The analysis focuses on the earning power of patented pharmaceuticals. When these earnings are contrasted with the meager earnings of generic drugs, the earning power of intellectual property is demonstrated. The analysis presented in this chapter provides a framework for isolating the earnings contribution of almost all forms of intellectual property. It serves as the basis for negotiating royalty rates in licensing transactions and equity splits for joint ventures. Also presented in this chapter are the weaknesses associated with commonly used royalty rate derivation methods.

19.1 INTELLECTUAL PROPERTY CONTRIBUTES POWERFULLY TO EARNINGS

Delivering a product or service to customers involves costs. Rent, maintenance, utilities, salaries, raw materials, sales commissions, and advertising are just some of the costs involved with delivering a product or service. When these costs are kept below the amount that customers pay for the product or service, a profit is earned.

The mere existence of profit, however, is not enough to justify company investments in intellectual property. Before creating, buying, or licensing intellectual property, a company must determine its contribution to the overall earnings of the enterprise in which it will be used. Earnings derived from operations must be of an amount, on a consistent basis, to yield a fair rate of return on investment. A huge investment in fixed assets must be justified. Raw materials inventory, industrial land, delivery trucks, manufacturing buildings, and production equipment cannot be justified if the funds that were used to acquire these assets could generate a higher return from alternate investments. When T-bills produce a 1.4% return, a plant and equipment investment must deliver an investment rate of return that exceeds that safe rate by an amount necessary to compensate for the added investment risk.

19.2 INTELLECTUAL PROPERTY SUSTAINS SUPERIOR EARNINGS

In our competitive economic environment, profits are eventually driven downward to the lowest level at which a fair return still can be extracted from participation in a mature

market. Above-average profits are not often sustainable for long periods. Competitors are quick to recognize and enter high-profit markets. New entrants in a high-profit market force lower selling prices and squeeze profitability. This microeconomic process is efficient in general, but can be bumpy for market participants along the way. Attractive profit levels often attract more competitors than the market will bear. When supply exceeds demand, the corresponding reduction in selling prices can make the entire industry an unprofitable one in which to continue competing. After the inevitable shake-out, the profitability of the industry tends toward the lowest price at which a fair return can still be earned. Previous glories of above-average profits become only memories. Keystone intellectual property, however, can help deliver sustained superior profits.

19.3 ENHANCED PROFITS AND INTELLECTUAL PROPERTY

When above-average profits are generated on a consistent basis, intellectual properties are responsible. Intellectual properties can control costs of production or introduce product characteristics that command premium selling prices. Sometimes intellectual property contributes by commanding a premium selling price on a consistent basis, regardless of competitor actions. Well-recognized trademarks are good examples. Two polo shirts of identical material and construction quality can differ in selling price by as much as $25. Customers are willing to pay, on a consistent basis, more money for the "Lacoste" logo. The same can be said to be true for other consumer goods such as SONY television sets, TORO lawn mowers, MAYTAG appliances, and some of the Japanese automobile offerings. As long as the entire amount of the premium is not spent on image-creating advertisements, net profits are enhanced.

Premium selling prices are not only associated with trademarks. Patented products also can command premium prices. Patented pharmaceuticals are an example. Generally the production equipment investment that is needed to manufacture medicine tablets is similar to the equipment investment needed to make other medicines, such as aspirin. Patented drugs, however, can sell at several dollars per tablet, while aspirin costs pennies.

Production cost savings are another example where intellectual properties are a source of enhanced earnings. There are various ways that intellectual property can directly contribute to controlling production costs, including:

- Reduction in the amount of raw materials used
- Substitution of lower-cost materials without sacrifice of quality or product performance
- Increases in the amount of production output per unit of labor input
- Improved quality that reduces product recalls
- Improved production quality that reduces waste or finished product rejects
- Reduced use of electricity and other utilities
- Production methods that control the amount of wear and tear on machinery and thereby reduce the amount of maintenance costs and production downtime for repairs
- Elimination of manufacturing steps and the machinery investment previously used in the eliminated process
- A process that reduces or eliminates effluent treatment

When above-average profits are earned on a consistent basis, some form of intellectual property is responsible. Exhibit 19.1 illustrates two ways in which intellectual property contributes to earnings.

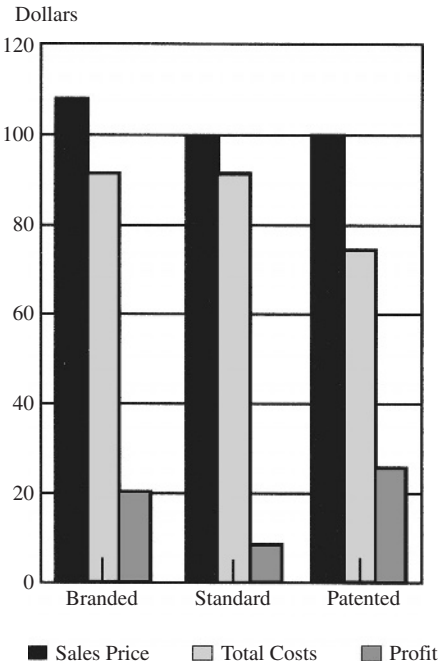

EXHIBIT 19.1 INTELLECTUAL PROPERTY EARNINGS ENHANCEMENT

The middle set of bars presents the *standard* profitability for a product that is associated with a mature market. The selling price is competitively determined in a mature industry at a level that allows market participants to earn a marginally fair rate of return on their fixed asset investment, but above-average profit levels are not possible. Costs of production and overhead costs associated with administration, selling, and general expenses are shown at a hypothetical 90% of the selling price. The remaining 10% represents operating profits before taxes. In a mature market, net profits, after paying income taxes, can be as low as 4 to 6% of sales.

The set of bars on the right shows the enhanced profitability that might be contributed by a *patented* process. Excluding use of the process by competitors allows the company to sell at the competitively determined market price, but at the same time enjoy higher profits due to production cost savings. Operating profits are enhanced by the exact amount saved in production costs. Total costs in this example are reduced from the standard 90% of the selling price to 75%. The earnings contribution derived from the patented process is represented by the enhanced profit margin of 15%.

The set of bars on the left shows a product that can consistently command a higher selling price in an otherwise competitive market. All of the costs of producing and selling the branded product are the same, but the higher selling price allows enjoyment of above-average profits. The 10% premium price translates directly to a 10% increase of operating margins. This example might be associated with a product that has a well-regarded trademark for which people are willing to pay the premium price shown. The brand name intellectual property contributes directly to enhanced earnings, but this is true only if the higher price that the brand image commands can be obtained without higher advertising expenses. Most likely the reason that a higher selling price can be commanded in a competitive market is that an image has been established for the brand. Image creation

and maintenance requires huge advertising budgets, but as long as the additional advertising expenses are not greater than the earnings enhancement from better selling prices, then the brand name intellectual property can contribute directly to earnings.

A combination of the two forces is also quite possible. A combination of intellectual properties can provide a premium price and also allow lower production costs, producing a compounding of enhanced earnings.

Enhanced profitability also can be indirectly derived from intellectual property where profits are not directly enhanced from premium selling prices or cost savings. These intellectual properties can be just as valuable, but their contribution to earnings enhancement is more subtle. Some intellectual properties allow a company to enjoy a large market share. A dominant position in a market allows a company to enjoy a large sales volume on a consistent basis. Manufacturing and operating synergies can then enhance profits. Very often costs are saved just from operating efficiencies associated with large-scale production.

When large and reliable amounts of production volume consistently go through an organization, synergistic advantages are possible, and they generally lead to enhanced profits. Some of the typical synergies associated with large production volumes include:

- Raw materials can be purchased at large-order discounts. Suppliers are likely to offer discounts to customers that place large orders. A cost savings is the result.
- Manufacturing efficiencies can be introduced throughout each step of the process.
- Selling expenses might be more controllable, with fewer salespeople covering large accounts.
- Retail efficiencies can include special arrangements with distributors or discounts in the purchase of shelf space at retailers.
- Regulation and compliance costs can be spread over a larger production base, along with other fixed overhead costs.
- Large volumes can allow companies to provide utility companies with guaranteed energy purchases, which could be obtained at a bulk-rate discount.

Each synergistic benefit combines with the rest to provide enhanced profits, which is made possible by market-dominating intellectual property such as trademarks and distribution networks. One area in which we can observe these factors is the calculation of infringement damages.

(a) DIFFERENTIAL PROFIT ANALYSIS. Differential profit analysis is a method for deriving a reasonable royalty, first expressed in a patent infringement court decision. This method also is sometimes referred to as the analytical approach. While a license negotiation may be independent of any legal actions, insight can be gained from considering the royalty rate models that sometimes are used in legal proceedings. Differential analysis determines a reasonable royalty as the difference between profits expected from use of infringing intellectual property and a normal industry profit level. The analysis can be summarized by this equation:

$$\text{Expected Profit Margin} - \text{Normal Profit Margin} = \text{Royalty Rate}$$

In *TWM Mfg. Co., Inc. v. Dura Corp.,* 789 F.2d 895, 899 (Fed. Cir. 1986), a royalty for damages was calculated based on an analysis of the business plan of the infringer, prepared just prior to the onset of the infringing activity. The court discovered the infringer's profit expectations from using the infringed technology by review of internal memorandums written by top executives of the company. Internal memorandums showed

that company management expected to earn gross profit margins of almost 53% from the proposed infringing sales. Operating profit margins then were calculated by subtracting overhead costs to yield an expected profit margin of between 37% and 42%. To find the portion of this profit level that should be provided as a royalty to the plaintiff, the court considered the standard, *normal* profits earned in the industry at the time of infringement. These profit levels were determined to be between 6.6% and 12.5%. These normal industry profits were considered to represent profit margins that would be acceptable to firms operating in the industry. The remaining 30% of profits were found to represent a reasonable royalty from which to calculate infringement damages. On appeal, the Federal Circuit affirmed.

Differential analysis is a calculation whereby the profits derived from use of a patented technology are subtracted from the profits that would be expected without access to the technology. The difference is attributed to the patented technology and is considered by some as an indication of a royalty.

(b) NORMAL INDUSTRY PROFITS. A problem with this analysis centers on answering the question, *What is a normal industry profit margin? Normal* is hard to quantify. It is meant to reflect the profit margins that might be gained from operating the businesses in an industry absent the technology in question. It also can be difficult to find agreement on what constitutes normal profit margins for an individual company. Different subsidiaries, divisions, and even different product lines within the company can display wide swings in profitability. Many large companies have a portfolio of businesses. Some of the product offerings are mature products that enjoy large market shares but contribute only moderate profit margins because of selling price competition. Other product offerings are emerging products that have great potential for profits and market share but will not deliver earnings contribution until a later date. Still other products of the same diversified company might contribute huge profits because of a technological advantage, but only from exploitation of a small market niche.

Missing from the classical differential analysis is consideration of the amount of complementary assets required for exploitation of the subject intellectual property. A unique intellectual property might require significantly more investment in manufacturing assets than is typical for an industry. The analysis loses sight of the balance sheet. Profits are important, but they are not independent of investment in complementary business assets, as previously discussed in this book. Otherwise, everyone with an idea would be in business. The profit and loss statement is derived from the management of the investment in the assets reported on the balance sheet. Exploitation of intellectual property requires the integration of different types of resources and assets. Intellectual property by itself rarely earns a profit. The equation of commercialization requires working capital, fixed assets, intangible assets, and intellectual property. A more comprehensive version of differential analysis should be utilized—enhanced to the extent that the profits to be allocated between the licensor and licensee reflect the dynamic relationship between profits and the amounts invested in the complementary assets.

A company that produces a commodity product is by definition in a competitive environment. The product price is impacted by heavy competition, and profit margins are thin. In such an environment, an efficient market eventually will stabilize the pricing of the commodity product to a level that allows participants in the market to earn a fair rate of return on the assets invested in the business, but no more. A fair return would be earned on the working capital, fixed assets, and intangible assets, but excess profits are not typically earned from the production and sale of a commodity product.

A company producing an enhanced product, using proprietary technology, possesses elements of product differentiation that allow the producer to charge a premium price. The premium might be due to a trademark that consumers associate with quality. Alternatively, the premium might be derived from special utility offered by the product covered by patented technology. The price premium might even be derived from a combination of trademark and technological advantages. The producer of the enhanced product would earn a profit that represents a fair return on its working capital, fixed assets, and intangible assets, and an excess return from the intellectual property. The highest royalty that a commodity product producer should be willing to pay to license rights to manufacture and sell the enhanced product is *the amount of excess profits associated with the intellectual property.* It would be very rare for a licensee to be willing to pay this highest indication of a royalty since, by doing so, it would forgo all of the economic benefit of exploiting the intellectual property. A licensee might be willing to do so if the intellectual property is of a must-have nature—a licensee must obtain it in order to protect an existing product or service or in order to remain in an existing marketplace in the hopes of future, unrelated benefits. The commodity product licensee would expect to continue to earn a fair rate of return from its investment in working capital, fixed assets, and intangible assets.

The investment returns earned by a commodity product manufacturer on the complementary assets used to manufacture and sell the commodity product can be equated to the normal or standard industry profits. When this amount is subtracted from the total returns earned from commercializing the enhanced product, the difference represents the amount contributed by the intellectual property.

Differential analysis can work well when the normal industry profit is derived from analysis of commodity products. The analysis requires that the benchmark commodity profit margin be derived from products competing in the same, or similar, industry as the infringing product, for which a reasonable royalty is being sought. The benchmark profits also should reflect similar investment requirements in complementary assets—similar to those required to exploit the enhanced product that is based on the infringed intellectual property. This equation can provide an indication of a reasonable royalty if the above conditions are met:

Enhanced Product Profit Margin – Commodity Product Profit Margin = Maximum Royalty Rate

(c) EXAMPLE. Presented in Exhibit 19.2 are the profit margin expectations of Exciting Biotech, Inc. associated with commercialization of a new patented drug therapy. Subtracting the enhanced operating profit margins from an industry *norm* isolates the portion of profits that can be attributed to proprietary technology as a royalty rate. To calculate the industry norm, we would select a group of generic drug companies that arguably are producing commodity products. It is reasonable to assume that these products would be competitively priced, mass produced, and widely distributed, and would provide their makers with slim profit margins in comparison to proprietary products. In a calculation

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Primary Market Revenues	0	0	100	300	400	550	600	625	650	675
Net Income before Tax	–25	0	80	150	225	350	375	385	395	400
Profit Margin	deficit	0%	80%	50%	56%	64%	63%	62%	61%	59%
Average Profit Margin 98–05	62%									

EXHIBIT 19.2 U.S. NEW PRODUCT REVENUE FORECAST, EXCITING BIOTECH, INC. ($MILLIONS)

of profit margins for these companies, we might make adjustments to isolate profit margins associated with the commodity products. Therefore, we would eliminate income and expenses associated with nonoperating assets and nonrecurring events when possible. We also would eliminate interest expenses in order to negate differences that might arise from capital structure. For this example, we will assume that the profit margin indicated by this group of generic drug companies is 25%.

Differential analysis indicates a royalty rate of 37% as calculated by subtracting the 25% generic drug company profit margin from the 62% profit margin expected by Exciting Biotech, Inc. from commercialization of the new proprietary invention.

(d) GENERIC DRUG PRICING. Additional information that supports this level of royalty rate is developed from considering the price differential between a proprietary drug under patent protection and the same product sold as a generic drug after patent protection expires. The primary difference is the loss of patent protection. Patent protection has enormous value.

- In a 1994 story about drug pricing, *Business Week* reported that the patent protection for the ulcer drug Tagamet is about to expire and "Mylan Laboratories is planning a clone of Tagamet for half the price."[1] This represents a 50% discount off the price of the product while under patent protection. In the same story, *Business Week* said, "Gross margins for generics are 50% to 60%, vs. 90% to 95% for branded products." The profit differential indicates a royalty rate under the analytical approach of between 30% to 45%.[2]
- *Business Week* also discussed a new strategy being followed by the proprietary drug companies.[3] Faced with huge market share losses when a proprietary drug loses patent protection, these companies are introducing their own versions of generic copies of their proprietary drugs. *Business Week* said: "The majors often price generics at only 10% to 25% less than the brand-name price, while generics ideally should be half [50%] the full price."
- *Forbes* reported that patent protection for Naprosyn, a $500 million (1992 annual sales) arthritis drug made by Syntex, expired in December 1993.[4] Prior to the loss of patent protection, the company introduced in October 1993 a generic version of the drug to try to ease the loss of its market share. A few months after the launch of Syntex's generic version, five other generic drug companies entered the market. *Forbes* said: "Soon the generics were selling at one-tenth [10%] of Naprosyn and had over 80% of the market." A royalty rate of 90% is indicated by this information.
- *Pharmaceutical Business News*, a medical and health industry publication, reported, "Generic drugs typically cost 30% to 50% less than their brand-name counterparts."[5]

1. "A Big Dose of Uncertainty—An Industry Plagued by High Costs of Health-Care Reform," *Business Week* (January 10, 1994), p. 85.
2. Ibid.
3. "The Drugmakers vs. the Trustbusters," *Business Week* (September 5, 1994), p. 67.
4. "Drug Wars," *Forbes* (August 29, 1994), p. 81.
5. "Market Forces Usher in a Golden Age of Generic Drugs," *Pharmaceutical Business News* (November 29, 1993), published by Financial Times Business Information, Ltd., London, U.K.

- *Chemical Marketing Reporter*, a pharmaceutical industry publication, reported, "Industry analysts agree that brands will continue to be new drug innovators and generics will provide off-patent copies at one-fifth [20%] to one-half of the price [50%]."[6]

A huge royalty rate is indicated by differential analysis for some patented pharmaceuticals, as demonstrated in the preceding example. Not many other intellectual properties can command such a large royalty. Still, differential analysis can provide insight into the amount of economic advantage that is derived from intellectual property for many different industries.

19.4 INVESTMENT RATE OF RETURN ANALYSIS

One of the weaknesses of differential analysis concerns the investment in complementary assets. The following discussion addresses this weakness and presents an approach for determining a royalty rate based on investment rate of returns. This analysis requires consideration of the profits expected from exploitation of the various assets of a business, including the technology that will be licensed. By allocating a fair rate of return to all of the integrated assets of a business, including the licensed technology, a fair rate of return for use of a specific patent can be derived and expressed as a royalty rate.

The basic principles in this type of analysis involve looking at the total profits of a business and allocating the profits among the different classes of assets used in the business. When a business demonstrates an ability to earn profits above that which would be expected from operating a commodity-oriented company, then the presence of intellectual property, such as patented technology, is identified. An allocation of the total profits derived from using all assets of the company can attribute a portion of the profits to the technology of a business. When the profits attributed to technology are expressed as a percentage of revenues, royalty rate guidance is obtained.

The investment rate of return analysis yields an indication of a royalty rate for a technology license after a fair return is earned on investment in the other assets of the business. Thus, a royalty rate conclusion that is supported by an investment rate of return analysis allows for payment of a royalty to a licensor while still allowing a licensee to earn a fair investment rate of return on its own, nonlicensed assets that are used in the business.

(a) INVESTMENT RATE OF RETURN ROYALTY RATES. This section of the chapter explores the use of advanced financial analysis techniques to derive royalty rates. The method is based on the idea of allocating the total earnings of a technologically based business among the different asset categories employed by the business. Exhibit 19.3 starts with the concepts introduced earlier in this book and adds notations that will be used to develop the method.

The earnings of a business are derived from exploiting its assets. The amount of assets in each category along with the nature of the assets, and their quality, determines the level of earnings that the business generates. Working capital, fixed assets, and intangible assets are generally commodity types of assets that all businesses can possess and exploit. As previously discussed, a company that possesses only these limited assets will enjoy only limited amounts of earnings because of the competitive nature of commodity-dominated businesses.

6. "Into the Mainstream (Greater Cooperation between Generic Drug and Name-Brand Drug Makers)," *Chemical Marketing Reporter* (Schell Publishing Company, Inc., March 9, 1992).

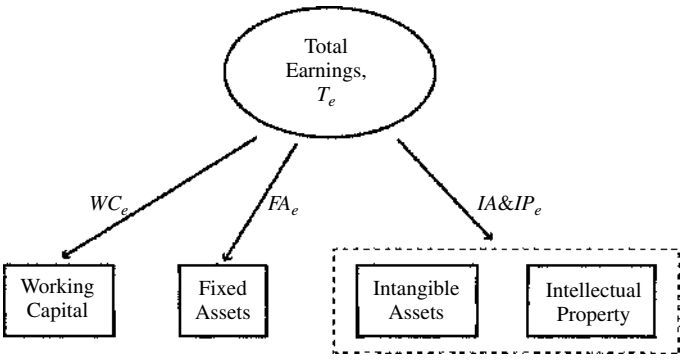

EXHIBIT 19.3 DISTRIBUTION OF EARNINGS

A company that generates superior earnings must have something special: intellectual property in the form of patented technology, trademarks, or copyrights. The distribution of the earnings among the assets is primarily driven by the value of the assets and the investment risk of the assets. The total earnings of the company (T_e) consist of earnings derived from use of working capital (WC_e), earnings derived from use of fixed assets (FA_e), and earnings derived from use of intangible assets and intellectual property ($IA\&IP_e$).

$$T_e = WC_e + FA_e + IA\&IP_e$$

The earnings associated with use of intangible assets and intellectual property are represented by $IA\&IP_e$. This level of earnings can be further subdivided into earnings associated with the use of the intangible assets (IA_e) and earnings associated with the use of intellectual property (IP_e).

$$IA\&IP_e = IA_e + IP_e$$

(b) ROYALTY RATES. An appropriate royalty rate is equal to the portion of IP_e that can be attributed to the use of the subject technology. The royalty rate to associate with a specific technology equals the earnings derived from the technology divided by the revenues derived with the technology, as shown in Exhibit 19.4.

Specifically, a company lacking intangible assets and technology would be reduced to operating a commodity-oriented enterprise where competition and lack of product distinction would severely limit the potential for profits. Conversely, a company possessing proprietary assets can throw off the restrictions of commodity-oriented operations and earn superior profits.

When a portion of the profit stream of a company is attributed to the proprietary assets of a company, an indication of the profits contributed by the existence of the proprietary assets is provided and a basis for a royalty is established when the attributed profits are expressed as a percentage of the corresponding revenues. The total profits can be allocated among the different asset categories based on the amount of assets in each category and the relative investment risk associated with each asset category.

Exhibit 19.5 presents an allocation of the weighted average cost of capital for an example business enterprise, allocated among the business assets used in the business

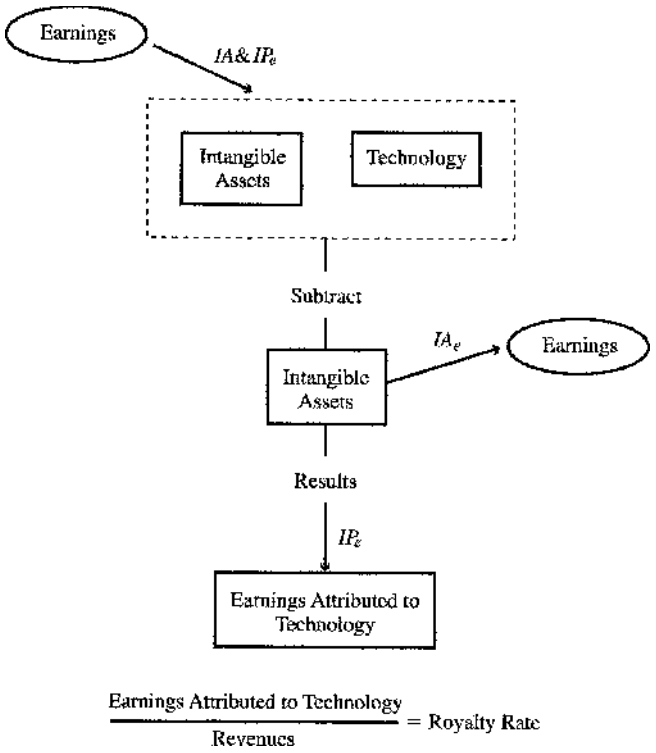

EXHIBIT 19.4 EXCESS EARNINGS AS A PERCENT OF REVENUES

enterprise.[7] The various rates of return assigned to each of the assets reflect their relative risk. The relative returns provided by each asset category also are indicated.

(c) APPROPRIATE RETURN ON MONETARY ASSETS. The monetary assets of the business are its net working capital. This is the total of current assets minus current liabilities. Current assets are composed of accounts receivable, inventories, cash, and short-term security investments. Offsetting this total are the current liabilities of the business, such as accounts payable, accrued salaries, and accrued expenses. The value of this asset category usually can be taken directly from a company balance sheet.

Asset Category	Amount	Percent%	Required Return%	Weighted Required Return%	Allocated Weighted Return%
Net Working Capital	10,000	10	2.00	0.20	1.6
Fixed Assets	20,000	20	7.00	1.40	11.1
IA & IP	70,000	70	15.71	11.00	87.3
INVESTED CAPITAL	100,000	100		12.60	100.0

EXHIBIT 19.5 EXAMPLE COMPANY INC., REQUIRED RETURN ON INTANGIBLE ASSETS & INTELLECTUAL PROPERTY (IA & IP)

7. The weighted average cost of capital is an investment rate of return required from business investments that is a weighting of the rates of return required by debt and equity investors. See Appendix A.

Working capital is considered to be the most liquid asset of a business. Receivables usually are collected within 60 days, and inventories usually are turned over in 90 days. The cash component is available immediately, and security holdings can be converted to cash with a telephone call to the firm's broker. Further evidence of liquidity is the use of accounts receivable and/or inventories or collateral for loans. In addition, accounts receivable can be sold for immediate cash to factoring companies at a discount of the book value.

Given the relative liquidity of working capital, the amount of investment risk is inherently low. An appropriate rate of return to associate with the working capital component of the business enterprise is that which is available from investment in short-term securities of low risk levels. The rate available on 90-day certificates of deposit or money market funds serves as an appropriate benchmark.

(d) APPROPRIATE RETURN ON TANGIBLE ASSETS. The tangible or fixed assets of the business are composed of production machinery, warehouse equipment, transportation fleet, office buildings, office equipment, leasehold improvements, and manufacturing plants. The value of this asset category may not be reflected accurately on company balance sheets. Aggressive depreciation policies may state the net book value at an amount lower than the fair market value on which a return should be earned. Correction of this problem can be accomplished by estimating fair market value somewhere in between original equipment costs and net book value. A midpoint between the two points is usually a reasonable compromise. Accuracy in this area is not crucial for the drug business. The amount and value of tangible assets used in the industry are usually minor relative to the value of revenues, earnings, markets, and the value of the entire business enterprise.

An indication of the rate of return that is contributed by these assets can be pegged at about the interest rate at which commercial banks make loans, using the fixed assets as collateral. Although these assets are not as liquid as working capital, often they can be sold to other companies. This marketability allows a partial return of the investment in fixed assets, should the business fail. Another aspect of relative risk reduction relates to the strategic redeployment of fixed assets. Assets that can be redirected for use elsewhere in a corporation have a degree of versatility that still can allow an economic contribution to be derived from their employment, even if it is not from the originally intended purpose.

Although these assets are more risky than working capital investments, they possess favorable characteristics that must be considered in the weighted average cost of capital allocation. Fixed assets that are very specialized in nature must reflect higher levels of risk, which, of course, demand a higher rate of return. Specialized assets are those that are not redeployed easily for other commercial exploitation or liquidated to other businesses for other uses.

(e) APPROPRIATE RETURN ON INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY. Intangible assets are considered to be the most risky asset components of the overall business enterprise. These assets may have little, if any, liquidity and poor versatility for redeployment elsewhere in the business. This enhances their risk. Customized computer software for tracking the results of clinical studies may have very little liquidation value if the company fails. The investment in trained employees who know how to get government approvals may be lost altogether, and the value of other elements of a going concern is directly related to the success of the business. A higher rate of return on these assets is therefore required.

An appropriate investment rate of return is then derived, and assigned to the intangible assets and intellectual property of the business, including the subject technology, by using the weighted average cost of capital for the business, the return on fixed assets deemed appropriate, and the return on working capital deemed appropriate. The earnings associated with the intellectual property and intangible assets of the company are then calculated as depicted in Exhibit 19.4. Conversion of these earnings into a royalty rate can be accomplished by dividing the earnings by the associated revenues.

Exhibit 19.5 tells us that over 87% of the profits of Example Company, Inc. are derived from intangible assets and intellectual property. If Example Company shows operating profits of 20% on sales, then 17% of sales should be attributed to intangible assets and intellectual property. Depending on the characteristics of the subject technology, it may deserve to have the majority of the 17% attributed to its contribution to the business. The final allocation requires considering the amount, types, and importance of other intellectual property used in the business. The royalty just derived may include earnings derived by the business from exploitation of intellectual property and intangible assets unrelated to specific technology.

(f) ROYALTY RATE FOR THE SPECIFIC PATENTED INVENTION. The next step is to answer this question: *How much of a royalty rate should be subtracted from the derived 17% royalty rate to isolate the portion that is attributable to only the subject patents?* It must be remembered that the 17% rate is for all of the intangible assets and intellectual property possessed by Example Company, Inc., including use of the subject patented invention.

The answer to this question can be estimated by focusing on a company that operates in a similar industry and possesses most of the intangible assets possessed by a typical personal computer company. However, the selected company must be one that does not possess or use the subject proprietary and patented inventions. By duplicating the same analysis presented in Exhibit 19.5 for a surrogate company, we can isolate the amount of income to associate with all intangible assets and intellectual property *except* for the subject patent. When this analysis was concluded, the royalty rate to associate with everything other than the subject patent was 10%. The difference between this rate and the 17% is the royalty rate to associate with the subject patent—7%.

When IP_e includes earnings from nonlicensed intellectual property, another step is needed to develop a proxy for earnings that represent the contribution from the noninfringing IP_e. (See the example in Exhibit 19.6.) Attribution of earnings for intangible assets can be accomplished by an investment rate of return analysis that derives a royalty for a company that possesses intangible assets but not technology. These earnings can serve as a proxy for the intangible assets earnings of the subject company. When they are subtracted from the earnings associated with $IA\&IP_e$, then only the earnings for IP_e are left. When these remaining earnings are converted to a royalty, then a royalty rate for use of specific technology is indicated.

(g) BENEFITS OF AN INVESTMENT RATE OF RETURN ANALYSIS. An investment rate of return analysis enhances royalty rate determination models in these ways:

- Considers the investment risk associated with the business and industry environment in which the licensed technology will be used
- Reflects specific commercialization factors associated with the licensed technology as embedded in forecasts associated with sales, production costs, and operating expenses

Investment Rate of Return Associated with All Intangible Assets and Intellectual Property of Example Company, Inc. *Including* the Patented Therapeutic Drug
MINUS
Investment Rate of Return Associated with All Intangible Assets and Intellectual Property of Surrogate Pharmaceutical Companies *Excluding* the Patented Therapeutic Drug
EQUALS
Royalty Rate Associated with the Patented Technology

EXHIBIT 19.6 EXAMPLE COMPANY, INC., ROYALTY RATE FOR PATENTED THERAPEUTIC DRUG

- Allows for an investment return to be earned on the fixed assets used in the business
- Allows for an investment return to be earned on the working capital assets used in the business
- Allows for an investment return to be earned on the other intangible assets and intellectual property used in the business *other than* the subject patent

19.5 DISCOUNTED CASH FLOW ANALYSIS

A variation of the investment rate of return analysis also can be used for royalty rate derivation. This alternate method makes use of a discounted cash flow analysis that converts a stream of expected cash flows into a present value. The conversion of expected cash flows is accomplished by using a discount rate reflecting the riskiness of the expected cash flows. In addition to the benefits just listed from using an investment rate of return analysis, the discounted cash flow analysis also reflects the:

- Time period during which economic benefits will be obtained
- Timing of capital expenditure investments
- Timing of working capital investments
- Timing and amount of other investments in intellectual property and intangible assets not associated with the subject technology

The basis of all value is cash earnings. The net amount of cash flow thrown off by a business is central to corporate value. Net cash flow—also called free cash flow—is the amount of cash remaining after reinvestment in the business to sustain continued viability of the business. Net cash flow can be used for dividends, charity contributions, or diversification investments. Net cash flow is not needed to continue fueling the business. Aggregation of all future net cash flows derived from operating the business, modified with respect to the time value of money, represents the value of a business. A basic net cash flow calculation is depicted in Exhibit 19.7.

NET SALES minus
MANUFACTURING COSTS equals
GROSS PROFITS

GROSS PROFITS minus
RESEARCH EXPENSES and
MARKETING EXPENSES and
GENERAL OVERHEAD EXPENSES and
ADMINISTRATION EXPENSES and
SELLING EXPENSES equals
OPERATING PROFITS

OPERATING PROFITS minus
INCOME TAXES equals
NET INCOME

NET INCOME plus
DEPRECIATION equals
GROSS CASH FLOW

GROSS CASH FLOW minus
ADDITIONS TO WORKING CAPITAL and
ADDITIONS TO FIXED PLANT INVESTMENT equals
NET CASH FLOW

EXHIBIT 19.7 BASIC NET CASH FLOW CALCULATION

Sales represent the revenue dollars collected by the company from providing products or services to customers. Net sales are the amount of revenues that remain after discounts, returns, and refunds.

Manufacturing costs are the primary costs associated with making or providing the product or service. Included in this expense category are expenses associated with labor, raw materials, manufacturing plant costs, and all other expenses directly related to transforming raw materials into finished goods.

Gross profit is the difference between net sales and manufacturing costs. The level of gross profits reflects manufacturing efficiencies and a general level of product profitability. It does not, however, reflect the ultimate commercial success of a product or service. Many other expenses important to commercial success are not accounted for at the gross profit level. Other expenses contributing to successful commercialization of a product include:

- Research expenses associated with creating new products and enhancing old ones
- Marketing expenses required to motivate customers to purchase the products or service
- General overhead expenses required to provide basic corporate support for commercialization activities
- Selling expenses associated with salaries, commissions, and other activities that keep products moving into the hands of customers

Operating profits reflect the amount left over after nonmanufacturing expenses are subtracted from gross profits.

Income taxes are an expense of doing business and must be accounted for in valuing any business initiative.

Depreciation expense is calculated based on the remaining useful life of equipment that is purchased for business purposes. It is a noncash expense that allocates the original amount invested in fixed assets. Depreciation is calculated to account for the deterioration of fixed assets as they are used to produce, market, sell, and deliver products, and administer the process of generating sales. Depreciation accounts for the using up of assets. It is called a noncash expense because the cash associated with the expense was disbursed long ago, at the time that fixed assets were purchased and installed. The depreciation expense is subtracted before reaching operating profit so that income taxes will reflect depreciation as an expense of doing business.

Gross cash flow is calculated by adding the depreciation expense, previously subtracted from calculated operating income, back to the after-tax income of the company. Gross cash flow represents the total amount of cash that the business generates each year.

Additions to working capital and additions to fixed plant investment are investments in the business required to fuel continued production capabilities.

Net cash flow is everything that remains of gross cash flow after accounting for the reinvestment in the business for fixed plant and working capital additions.

Value is derived from the net cash flows by converting the expected amounts into a present value, using discount rates that reflect investment risk and the time value of money, as previously discussed in the investment rate of return section of this chapter.

(a) PHARMAPROD COMMODITY CORP. VALUE. Consider the discounted cash flow analysis presented in Exhibit 19.8 as a simple example of using discounted cash flow analysis for royalty rate derivation. Exhibit 19.8 represents the future net cash flows for PharmaProd Commodity Corp. as it currently operates. The sales, expenses, and earnings for the company reflect the commodity-like nature of the business. Product prices are under pressure from strong competition, translating into low profitability. Strong competition also severely limits the opportunity for the company to achieve any substantial growth in the future. The present value calculation contained in Exhibit 19.8 shows a value for the company at $10,118,000 using a discount rate of 13%. The calculation of the value of the company includes the present value of the net cash flows expected after year 11. Constant growth, reflecting inflation and minimal volume growth into perpetuity, is captured in the final year discount rate factor used in year 11. The $10.1 million value equals the aggregate value of all the assets of the company. This amount indicates that the company has earned its required weighted average cost of capital and an excess present value of $10,118,000.

PharmaProd Commodity Corp. is planning to embark on a major business initiative with the introduction of a new product using new technology, thus changing itself into New PharmaProd Corp. It will continue to offer its commodity product but also add a new proprietary product to its offerings. The technology will be licensed from another company. Exhibit 19.9 represents the present value of the company, including the net cash flows from the existing operations of the company and the net cash flows from the new product initiative. Additional sales, manufacturing costs, and expenses are reflected in the analysis. The additions to working capital and fixed assets required for the new product commercialization effort also are reflected, as are the research and development

expenses needed to prove the technology and obtain FDA approvals.[8] As a result of the initiative, the present value of the company increases to $15,593,000.[9] The higher value reflects the added revenues and earnings of the new product at the higher profit margins of the new product. A comparison of Exhibits 19.8 and 19.9 shows that research, marketing, working capital additions, and fixed asset additions are all higher, and by more than just a proportional share of the higher sales forecasts. This is especially true for the early years in the discounted cash flow analysis because the new product initially does not contribute significant sales volume but definitely has expenses.

(b) NEW PHARMAPROD CORP. ROYALTY RATE. *What royalty rate should the company pay for use of the new product technology?* The highest amount of royalty the company should be willing to pay for the licensed technology is shown in Exhibit 19.10. A royalty of 10.9% of the sales associated with the new product represents a royalty expense to New PharmaProd Corp. and yields a present value of $10,118,000—the initial value of the company. At this royalty, the company has earned a return on the additional investment required to commercialize the new product technology, and not a penny more. A royalty rate of less than 10.9% would increase the value of the company. It is highly unlikely that New PharmaProd Corp. would agree to a royalty rate of 10.9% unless it was compelled to do so by the fact that the licensed technology represented a must-have ingredient. Therefore, licensing negotiations could reasonably be expected to settle on a royalty rate less than 10.9%. Thus the rate would represent a division of the economic benefit between licensor and licensee.

Intellectual property value is without comparison. It is the central factor in the creation of business value. The enormity of recent infringement damage awards is partial proof. The stock performance of corporations based on this property is also proof. Indications of a reasonable royalty for technology are available from a wide variety of analytical methods and models. Considering the importance of intellectual property, royalty rates based on industry norms and rules of thumb are not enough; a comprehensive analysis that reflects revenues, profits, expenses, and investment is one of the best ways to isolate the income attributed to intellectual property and form the basis for royalty rate negotiations.

19.6 COMPARABLE LICENSE TRANSACTIONS

Indications of reasonable royalties sometimes can be derived from market transactions centered on similar technology. The amount at which independent parties licensed similar intellectual property sometimes can provide an indication for a reasonable royalty. Market transactions considered useful for deriving reasonable royalties are usually between unrelated parties where intellectual property is the focal point of the deal. When a market transaction centers on intellectual property similar to the infringed property, the royalty terms of the transaction may be appropriate for application to the subject property.

Transactions most often cited as useful indications for reasonable royalties are license agreements that disclose the compensation terms for other licenses involving the intellectual property being studied. As an alternative, an analysis of licensing transactions involving *similar* intellectual property often is relied on for deriving reasonable royalties. Very

8. The time span for many pharmaceutical projects is greater than depicted in this example. For illustrative purposes, a short span has been used.

9. For simplicity, the same discount rate of 13% has been used in Exhibits 19.8 and 19.9. The introduction of the new production initiative might warrant increasing the discount rate as the risk of the company is increased with the introduction of a new product.

Year	1	2	3	4	5	6	7	8	9	10
Sales	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
Gross Profit	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
Gross Profit Margin	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Operating Expenses:										
General & Administrative	3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914
Research & Development	0	0	0	0	0	0	0	0	0	0
Marketing	2,500	2,575	2,652	2,732	2,814	2,898	2,985	3,075	3,167	3,262
Selling	5,000	5,150	5,305	5,464	5,628	5,796	5,970	6,149	6,334	6,524
Operating Profit	2,000	2,060	2,122	2,185	2,251	2,319	2,388	2,460	2,534	2,610
Operating Profit Margin	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Income Taxes	760	783	806	830	855	881	907	935	963	992
Net Income	1,240	1,277	1,316	1,355	1,396	1,437	1,481	1,525	1,571	1,618
Net Profit Margin	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Cash Flow Calculation:										
+ Depreciation	19	38	59	79	101	123	146	169	193	218
– Working Capital Additions	140	150	155	159	164	169	174	179	184	190
Capital Expenditures	175	188	193	199	205	211	217	224	231	238
Net Cash Flow	944	978	1,026	1,076	1,128	1,181	1,235	1,291	1,349	1,408
Discount Factor 13%	0.9413	0.8330	0.7372	0.6524	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value	888	815	757	702	651	603	558	517	478	4,149
Net Present Value	***10,118***									

EXHIBIT 19.8 PRESENT VALUE CALCULATION PHARMAPROD COMMODITY CORP. BUSINESS ENTERPRISE VALUE

Year	1	2	3	4	5	6	7	8	9	10
Sales	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
New Product Sales	100	1,000	4,000	8,000	10,000	11,000	12,100	13,310	14,641	15,080
New Product Cost of Sales	35	350	1,400	2,800	3,500	3,850	4,235	4,658.5	5,124	5,278
Gross Profit	12,565	13,525	15,861	18,859	20,569	21,641	22,791	24,025	25,351	26,112
Gross Profit Margin	50.1%	50.6%	52.0%	53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
Operating Expenses:										
General & Administrative	3,012	3,210	3,663	4,238	4,577	4,798	5,034	5,287	5,557	5,724
Research & Development	5,000	1,500	0	0	0	0	0	0	0	0
Marketing	2,510	2,675	3,052	3,532	3,814	3,998	4,195	4,406	4,631	4,770
Selling	5,020	5,350	6,105	7,064	7,628	7,996	8,390	8,811	9,262	9,540
Operating Profit	(2,977)	790	3,042	4,025	4,551	4,849	5,171	5,521	5,901	6,078
Operating Profit Margin	– 11.9	3.1%	11.5%	14.7%	16.2%	16.7%	17.3%	18.0%	18.6%	18.6%
Income Taxes	(1,131)	300	1,156	1,530	1,729	1,842	1,965	2,098	2,242	2,310
Net Income	(1,846)	490	1,886	2,496	2,822	3,006	3,206	3,423	3,659	3,768
Net Profit Margin	– 7.4%	1.9%	7.1%	9.1%	10.0%	10.4%	10.7%	11.1%	11.6%	11.6%
Cash Flow Calculation:										
+ Depreciation	368	387	408	428	450	472	495	518	542	567
– Working Capital Additions	160	330	755	959	564	369	394	421	451	278
– Capital Expenditures	3,665	188	193	199	205	211	217	224	231	238
Net Cash Flow	(5,303)	360	1,346	1,766	2,503	2,898	3,090	3,296	3,520	3,820
Discount Factor 13%	0.9413	0.8330	0.7372	0.6524	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value	(4,992)	300	992	1,152	1,445	1,481	1,397	1,319	1,246	11,253
Net Present Value	***15,593***									

EXHIBIT 19.9 VALUE INCLUDING NET CASH FLOWS NEW PHARMAPROD CORP. BUSINESS ENTERPRISE VALUE WITH LICENSED TECHNOLOGY

Year	1	2	3	4	5	6	7	8	9	10
Sales	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
New Product Sales	100	1,000	4,000	8,000	10,000	11,000	12,100	13,310	14,641	15,080
New Product Cost of Sales	35	350	1,400	2,800	3,500	3,850	4,235	46,58.5	5,124	5,278
Gross Profit	12,565	13,525	15,861	18,859	20,569	21,641	22,791	24,025	25,351	26,112
Gross Profit Margin	50.1%	50.6%	52.0%	53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
Operating Expenses:										
Royalty 10.9%	**11**	**109**	**437**	**873**	**1,092**	**1,201**	**1,321**	**1,453**	**1,598**	**1,646**
General & Administrative	3,012	3,210	3,663	4,238	4,577	4,798	5,034	5,287	5,557	5,724
Research & Development	5,000	1,500	0	0	0	0	0	0	0	0
Marketing	2,510	2,675	3,052	3,532	3,814	3,998	4,195	4,406	4,631	4,770
Selling	5,020	5,350	6,105	7,064	7,628	7,996	8,390	8,811	9,262	9,540
Operating Profit	(2,988)	681	2,605	3,152	3,460	3,648	3,850	4,068	4,303	4,432
Operating Profit Margin	–12.0%	2.6%	9.8%	11.5%	12.3%	12.6%	12.9%	13.2%	13.6%	13.6%
Income Taxes	(1,135)	259	990	1,198	1,315	1,386	1,463	1,546	1,635	1,684
Net Income	(1,853)	422	1,615	1,954	2,145	2,262	2,387	2,522	2,668	2,748
Net Profit Margin	– 7.4%	1.6%	6.1%	7.2%	7.6%	7.8%	8.0%	8.2%	8.4%	8.4%
Cash Flow Calculation:										
+ Depreciation	368	387	408	428	450	472	495	518	542	567
– Working Capital Additions	160	330	755	959	564	369	394	421	451	278
– Capital Expenditures	3,665	188	193	199	205	211	217	224	231	238
Net Cash Flow	(5,310)	292	1,075	1,225	1,826	2,154	2,271	2,396	2,529	2,799
Discount Factor 13%	0.9413	0.8330	0.7372	0.6524	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value	(4,998)	243	793	799	1,054	1,100	1,027	958	895	8,247
Net Present Value	***10,118***									

EXHIBIT 19.10 NEW PHARMAPROD CORP. BUSINESS ENTERPRISE VALUE WITH LICENSED TECHNOLOGY AND A ROYALTY PAYMENT

often license agreements involving similar intellectual property just do not exist. When such agreements are actually discovered, there is not any guarantee that the parties involved will be eager to disclose specific details that would be useful for comparative purposes. Even if all of the specific details of a comparable transaction can be discovered, many hurdles remain to be jumped before the market transaction can be considered as a reliable indication of a reasonable royalty for application to a specific case.

Many aspects of market transactions must be studied closely before it can be concluded that a specific transaction represents a reasonable royalty for comparison purposes. The remainder of this section considers the appropriateness of using unrelated license agreement royalty terms as a proxy for a subject case when analyzing similar intellectual property licenses. The following points should be considered as guidance. In a perfect world, comparable licenses would satisfy all of the points discussed. Rarely do we enjoy such conditions.

(a) INTERNAL LICENSES ARE OFTEN SELF-SERVING. Multinational corporations often transfer intellectual property to foreign subsidiaries. Parent companies often own keystone intellectual property, and their subsidiaries hold licenses allowing them to use the property. These licenses are referred to as internal licenses. In the past they were not reliable market transactions for deriving reasonable royalties. Many of the royalty terms in these types of transactions were structured to shift income into jurisdictions with lower income tax burdens. Hence the royalty rate did not reflect the economic contribution of the intellectual property but reflected the differential corporate income tax rates between a multinational corporate parent and a foreign subsidiary. Internal licenses were missing a fundamental element because the royalty terms were not established by arm's-length negotiation where each party to the transaction argued its self-interests. Royalties specified in internal licenses were clouded by many other self-serving issues. This situation is beginning to change. International taxing authorities are looking at transfer pricing issues, and intellectual property is getting close scrutiny. Many corporations are commissioning studies to use as the basis of their intellectual property pricing. These studies are based on market transactions and the investment rate of return analyses explored later in this book. As more corporations set internal transaction pricing in line with third-party transaction pricing, internal licenses will become useful indications of royalty rates.

(b) RELEVANT TIME PERIOD. The price paid for a stock in the past is an interesting notation but has little to do with a current pricing analysis. The same is true when corporations engage in mergers and acquisitions. The prices at which businesses are exchanged seldom relate to amounts at which prior transactions were consummated. When considering the purchase of an investment real estate property, a lot of analysis goes into determining the price to offer. Included are considerations of prevailing interest rates, inflation, rental income, operating expenses, property taxes, and income taxes. All of these considerations are analyzed from the perspective of quantifying future expectations about profits and return on investment. Very little, if any, consideration is given to the price at which the property historically has changed hands. Manhattan Island was purchased from the original owners for $24 worth of novelty trinkets. Historic transaction prices are interesting footnotes but not usually relevant for current transaction pricing. It is no different for intellectual property. A reasonable royalty must be based on future expectations that both the licensee and the licensor individually possess and that eventually converge as negotiations reach a conclusion. Reasonable royalties must be determined with an eye to the future. The amount paid decades ago for licensing intellectual property is not often relevant.

(c) FINANCIAL CONDITION OF BOTH LICENSING PARTIES. When one of the parties in a similar license is desperate to complete the transaction, the amount paid for the license is clouded. A nearly bankrupt licenser may not have enough time to shop for the best offer and could leave a significant amount of money on the negotiating table. Yet a manufacturing company with obsolete technology may find itself going out of business without access to new technology. A fair and reasonable royalty is best determined in an environment where both of the negotiating parties are on equal footing. Both parties should have the option to walk away from the deal. When ancillary forces are compelling one of the negotiating parties to capitulate to the demands of the other, then a fair and reasonable royalty may not be indicated in such a license agreement.

(d) RELEVANT INDUSTRY TRANSACTIONS. Some licenses may involve property that is similar to a specific property under negotiation but the property is licensed for use in a different industry. To be useful for deriving a fair market royalty, a proxy royalty rate must have been negotiated for similar property that is used in a similar industry. Each industry has its own set of unique economic forces. Some industries are highly competitive, like consumer electronics. Others are oligopolies, like airlines. Some industries are sensitive to interest rates (construction). Others are not (food). Some industries are under strong pressure from foreign producers (apparel). Others are only regionally competitive (gravel quarries). All of these factors drive the profitability and growth prospects of the industry participants. These factors also impact the amount of economic benefits that intellectual property can contribute to a commercial operation that directly relates to the royalties that can be considered reasonable.

(e) INTERNATIONAL TRANSACTIONS. In developing nations, where intellectual property protection is weak, the amount paid for a license would likely be far less than in developed nations, where intellectual property rights are protected and respected. This assumes that an intellectual property owner would even consider allowing for the use of its property in such countries. A low rate in developing nations reflects that exclusive use of the property may not be realistic, regardless of what the license agreement says. A low royalty in some countries also might reflect differences in governmental regulation, inflation, and general economic conditions. Consequently, license agreements in different countries might possess different royalty rates for the same intellectual property, none of which may be relevant for a specific case, depending on the country in which the technology in question is being licensed. The main consideration here is the comparability of the economic conditions of the geographical regions under comparison. Royalty rates for a patent in Western Europe might be appropriate for a U.S. license. Royalty rates for a patent in Costa Rica might be less useful for negotiating a royalty rate in the United States.

(f) INTELLECTUAL PROPERTY REMAINING LIFE. The remaining time during which economic benefits are expected to continue being contributed by intellectual property is important to the level at which royalties will be paid. Remaining lives of a short duration are likely to be associated with low royalties. Long remaining lives typically are associated with higher royalties, all other things being equal. The required investment in complementary assets (working capital and fixed assets) is the primary reason for the relationship between royalty rates and remaining lives. Licensees usually must invest in complementary assets in order to fully exploit intellectual property. The future cash flows from exploitation therefore must provide for a return on the complementary investment. Exploitation of the intellectual property also must allow for enough earnings to be

generated to recapture the initial investment in complementary assets. Significant up-front investments may take a long time to recapture. If the remaining life of intellectual property is short, then more of the earnings from exploitation must be allocated to recapturing the initial investment, and less is available for royalties. In cases where up-front investments are negligible, the level of royalties likely will not be as sensitive to the remaining life of the intellectual property. Cases where exploitation requires significant up-front investments are in the minority.

(g) NONMONETARY COMPENSATION. Compensation for the use of intellectual property can take many different forms. Sometimes cash alone is the basis of licensing compensation. A cash payment is made by the licensee, and no further payments are required. Lump-sum payments with additional running royalties are another example of license compensation. Running royalties alone are another example. Sometimes the licensor gets a royalty and also an equity interest in the licensee's company. Sometimes the licensor gets only an equity interest. License agreements also can call for the licensee to share technological enhancements, as grant-backs, with the licensor. In return, the licensee might demand a lower royalty rate because a portion of the licensor's compensation will be in the form of access to enhancements of the original property. For similar license agreements to be used as a proxy for derivation of a fair market royalty, the form of license compensation must be on a like-kind basis.

(h) EXCLUSIVITY. *What should the basis of reasonable royalties be regarding the aspect of exclusivity?* Typically, higher royalty rates are associated with license agreements providing the licensee with exclusive rights to use the intellectual property. Exclusive rights to use a keystone intellectual property place the licensee in a superior position. If the intellectual property provides highly desirable utility, then premium prices can be demanded for the product. Competitors cannot counter with the same product without risking infringement, and the exclusive licensee will earn superior profits. Such an arrangement is worth higher royalty payments. DuPont negotiated a license involving worldwide and exclusive rights to a drug patent. Later the agreement was changed to a nonexclusive basis. As a result, the royalty dropped by 27%.

(i) TECHNICAL ASSISTANCE FROM THE LICENSOR. Very often market transactions include technical assistance. Incorporated into the license agreement are compensation terms for the value of the expected technical assistance. When a separate amount is identified as being compensation for technical assistance, then the remaining amount of compensation can be associated with the royalty for utilization of the licensed intellectual property. Sometimes, however, the technical assistance compensation is part of the overall running royalty specified in the agreement. Unfortunately, an allocation of the royalty, such as 20% for technical assistance and 80% for the underlying intellectual property, is not always defined. When using market licenses as a proxy for deriving a fair market royalty, the compensation for the underlying technology must be the focal point.

(j) PACKAGE LICENSES. Licenses do not always grant use of one specific item of intellectual property. Several patents may be granted as a group, with one royalty rate specified as compensation for all of the property. Sometimes patents and trademarks are licensed together for a single royalty. Sometimes they are licensed separately. A problem of comparability arises, however, when leases that are used for comparison not only cover a similar patent but also grant use of other property not pertinent to the subject analysis.

(k) OLD LICENSE DEALS SELDOM REFLECTED RETURN ON INVESTMENT. Intellectual property is fast being recognized as a strategic asset of enormous value. It is finally being considered in the same category as high-quality investment assets. Transactions involving a transfer of rights to use these assets are based more than ever on thorough financial analyses. Return on investment analysis is becoming fundamental to decisions about intellectual property exploitation strategies and to royalty negotiations. The history of licensing and royalty rate negotiations is not, however, founded on investment analysis. Thus, royalty rates in older licenses may not fully reflect the economic contribution of the property transferred.

(l) COMPARATIVE ANALYSIS SUMMARIZED. Comparative analysis of similar technology licenses can be very useful for negotiating royalty rates, but many aspects of the license agreement must be analyzed for a royalty provision to be a useful proxy. In a perfect world, a useful proxy license for establishing a fair market royalty would:

- Not be an internal license between a parent corporation and a subsidiary[10]
- Have been negotiated at a date that is relevant to the date of the subject analysis
- Have been negotiated between two independent parties, neither of which was compelled to complete the transaction because of financial distress
- Involve similar intellectual property licensed for use in the same industry in which the fair market royalty is desired
- Transfer license rights for use of similar intellectual property into a country having similar economic conditions as the country in which the fair royalty is desired
- Involve similar intellectual property with similar remaining life characteristics
- Require similar complementary asset investment requirements for commercial exploitation
- Specify royalty terms that are not clouded by nonmonetary components of compensation
- Include comparable aspects of exclusivity
- Include royalty terms that were freely negotiated and unencumbered by governmental regulations
- Specify royalty terms that are not clouded by undefined amounts that are indirectly attributed to technical assistance compensation

19.7 SIMPLISTIC RULES OF THUMB

(a) THE 25% RULE. Fully stated, this method calculates a royalty as 25% of the expected profits of the enterprise operations in which the licensed intellectual property is used. This rule is fully discussed in Chapter 22.

(b) INDUSTRY NORMS. The industry norm method focuses on the rates that others are charging for intellectual property licensed within the same industry. Investment risks, net profits, market size, growth potential, and complementary asset investment requirements are all absent from direct consideration. The use of industry norms places total reliance

10. As previously mentioned, this problem is slowly being resolved as multinational corporations bring their internally specified royalty rates in line with third-party transactions.

on the ability of others to correctly consider and interpret the many factors affecting royalties. It places total reliance on the abilities of the founders of the industry norm rate. Any mistakes made by the initial setting of an industry royalty are passed along.

Changing economic conditions along with changing investment rate of return requirements also are absent from consideration when using industry norms. Even if an industry norm royalty rate was a fair rate of return at the time it was established, there is no guarantee that it is still valid. Value, economic conditions, rates of return, and all of the other factors that drive a fair royalty have dynamic properties. They constantly change, and so must the underlying analysis that establishes royalties. Industry norms are legacies passed down from those that have licensed before us. Royalties based on the industry norms method are royalties based on rumor.

(c) RETURN ON RESEARCH AND DEVELOPMENT COSTS. When considering a reasonable royalty, the amount spent on development of the intellectual property is a terribly attractive factor to consider. Unfortunately, development costs are also terribly misleading. The main theme of the analysis presented throughout this book concentrates on providing a fair rate of return on the value of the intellectual property assets. The amount spent in the development is rarely equal to the value of the property. A proper royalty should provide a fair return on the *value* of the asset regardless of the *costs* incurred in development.

The underlying value of intellectual property is founded on the amount of future economic benefits that are expected to be derived from commercialization of the property. Factors that can limit these benefits include the market potential, the sensitivity of profits to production costs, the period of time over which benefits will be enjoyed, and the many other economic factors that have been discussed already. Development costs do not reflect these factors in any way, shape, or form. Basing a royalty on development costs can completely miss the goal of obtaining a fair return on a valuable asset.

The U.S. government spent many millions on development of nuclear-powered aircraft engines in the 1950s. Engines were tested and prototypes were built. Aircraft were designed and development costs soared. Nuclear-powered aircraft engines were, unfortunately, never able to deliver the thrust needed to get aircraft airborne. As a result, the value of nuclear aircraft engine technology would appropriately be considered low (zero). But a royalty method based on development costs would indicate a high royalty because future economic benefits are not a factor. Whenever someone cites development costs as a reason for a high royalty, remind that person of the royalty he or she would likely pay for nuclear-powered aircraft engine technology.

(d) THE 5% OF SALES METHOD. For unknown reasons, one of the most popular royalty rates is 5% of sales: Sales multiplied by .05 equals royalty payment. It shows up in a lot of different industries. It is associated with embryonic technology and mature trademarks. It has been found in the food, industrial equipment, electronics, construction, and medical device industries. Forget profits, capital investment, earnings growth, operating expenses, investment risk, and even development costs. Somehow 5% of sales prevails. Do not be fooled. It is not a magic bullet answer.

CHAPTER 20

GLOBAL EXPLOITATION POTENTIAL

It is said that in 40,000 B.C., Cro-Magnons migrated to Europe from the Near East. One wonders what they brought with them that may have amazed the local residents who remained alive. About A.D. 950, New Zealand was discovered by Maori sailors. By the early 1500s, Spain was discovering everything in sight, exporting religion and importing silver and gold. All of these and other explorers and migrants carried information and technology with them as they roamed the land and seas.

When the electric telegraph was invented in 1816, a significant amount of information could be transmitted for the first time without someone carrying it. Geography and national boundaries were still barriers, however. Guglielmo Marconi's wireless telegraph finally broke those barriers, and by sending electric signals into the ether, it was possible for information to be transported anywhere. Today radio, television, and satellite transmissions go everywhere in the fashion of a giant party line to which anyone with the proper equipment can connect. The worldwide use of the Internet has virtually exploded. We have gotten so accustomed to sending information by fax and with e-mail from computer to computer that one wonders whether, if we could eavesdrop on international telecommunications traffic, all we would hear would be the porpoiselike beeping of one fax machine or computer to another and very little human speech.

Reflecting our commercial existence, we have communicated lifestyles, social standards, and product information over the national, geographical, and ideological boundaries that have existed between us. The world knows about Coca-Cola soft drinks and Nike athletic shoes and McDonald's hamburgers, even though the majority of the world community may not have experienced these products personally. Brand images have flown around the world like Tinkerbelle. Now that national boundaries are more permeable to commerce, and geographical barriers are yielding to transportation, the pent-up demand for goods and services created by the advance guard of telecommunications is building. And it will be met, perhaps not as rapidly as we would wish, but it will be.

Manufacturing and distribution must catch up with this demand. There is a great deal of work to do, as anyone who has followed the development of the European Community can attest. Monetary systems and manufacturing standards must be made common; capital must become readily available across national borders, intellectual property protection needs to be consistent, and taxation should be equitable.

20.1 IMPACT OF THE INTERNATIONAL ENVIRONMENT

Ever since the first traders set out from home to sell the products of their labor, we have recognized the added risks of so doing business. At first, it was the possibility of being set on by robbers or being the victim of a travel accident. We are still setting out from our own turf to do business, and the added risks are still there. The highwaymen are perhaps more subtle, but they are still around, along with a host of other more complicated pitfalls.

In this chapter, we are going to address the many conditions that arise from the international exploitation of intellectual property and analyze how they affect the economics of exploitation. We again will put this analysis in terms of evaluating the present value of future cash flows from exploitation. It is therefore necessary to consider the effect of conditions arising from the international environment. The elements that we must quantify are by now familiar: the *duration* (Will this condition alter the duration of future cash flows?), the *amount* (How will the international environment change the amount of cash flow?), and the *risk* (Has the risk changed by going international?).

The unique effects of exploiting intellectual property internationally can usually be quantified by any one of these factors. In Chapter 30, we will use them to evaluate the terms of a joint venture. We will use them again to assist in quantifying the conditions introduced by exploiting intellectual property internationally.

We might, as an example, recognize that there is an element of political risk in doing business in another country. We might, in our projections of cash flow, reflect that in an increased discount rate or in a shorter life of the income stream. Our feeling is that the international elements ought to be reflected in a way that is as close as possible to the potential events. As an example, if the country into which we have licensed technology has a history of unstable government, then the most appropriate way to reflect this is in the discount rate. We do not know what might happen or how this political instability might manifest itself. It is not uncommon for a government, observing the success of a licensee or joint venture within its borders, to effectively "handcuff" that enterprise in order to effectively control the business and obtain the full benefit of the technology for its citizens. If there is any history of this, this possibility ought to be reflected in a shortened economic life of the license or joint venture.

In the discussion that follows, we will provide some examples of risk quantification. In some cases, it is impossible to do so without reference to a specific situation. The tools of measurement are the same, however.

20.2 ACCOUNTING ISSUES

Any exploitation technique involves, at some point, an analysis or examination of financial records. Previously we suggested that an important step in the exploitation process is a financial evaluation of the intended licensee or joint venture partner(s). Some knowledge of accounting standards is necessary to the process. Increasingly, international accounting standards are being homogenized, and the most longstanding effort in that direction has been the responsibility of the International Accounting Standards Board (IASB),[1] which is an arm of the International Federation of Accountants.

In spite of the IASB's efforts, and those of other groups, accounting standards vary from very detailed codes such as we are used to in the United States, to general or very high-level principles that allow considerable latitude on the part of an individual company. Our standards, and those of the United Kingdom, are aimed toward providing complete financial information to stockholders and potential investors, to enable them to make informed investment decisions. These, of course, are precisely the standards that are useful in licensing and joint venturing. In Germany, where businesses have more debt in their capital structure, financial statements are oriented toward lenders' evaluation and toward tax issues, since they are used by tax authorities as well. Japanese financial statements tend also to be oriented toward lender and tax matters, and have more latitude in their presentation than do ours. Swedish financial statements are heavily influenced by tax law as opposed to stockholder information.

1. Formerly the International Accounting Standards Committee.

The point is that there is great variety in the accounting information available about foreign enterprises. There are many references available that can guide the reader in the accounting peculiarities of a given country. They can be used to familiarize oneself about them before entering into joint venture negotiations, or to estimate the administrative costs that are likely to be encountered to monitor a license agreement. In a joint venture, one approach is to attempt to obtain agreement as to which national accounting standards will prevail in the financial reporting.

The primary areas of difference in national accounting standards that affect the type of transaction we are discussing are those applying to depreciation, research and development (R&D) expense, and the accounting for goodwill. In each case, there is disagreement over how these expenses should be reflected in future periods. At the one extreme, depreciation is reflected as quickly as possible, R&D is expensed when incurred, and goodwill acquired in the purchase of another company is written off immediately. In terms of earnings, one takes the hit now, and future financials do not bear the burdens of the past. The other extreme is to reflect these charges over future periods when the benefits of the expenditure will be realized. Great differences of opinion exist as to how far into the future one should go with this idea. The impact of these opinions is felt on the bottom line. As we will discuss, if one accounts for a joint venture in the currently recommended way, the manner of the joint venture's accounting may have a marked effect on the books of the parent companies.

(a) JOINT VENTURES. International Accounting Standard (IAS) 31, effective January 1, 1992, applies to the financial reporting of interests in joint ventures by "venturers" (who share in control of the operation) as opposed to "investors." This applies to the reporting by the partners to the joint venture. This standard recommends that joint venturers report their holdings by the *proportionate consolidation* method. In this method, venturers combine their proportionate share of the joint venture's assets, liabilities, income, and expenses with their own financial statements. Therefore, as an example, if the joint venture shows losses in the early years, those losses will be combined with the earnings of the joint venture partners on their own statements. If the joint venture incurred debt on its own, that debt would be apportioned to the partners' financials. This could have a significant effect on the partners' borrowing power. This is quite different from the *equity* method (which is an allowed alternative) of joint venture accounting in which only the original equity investment of the partners is shown on their balance sheets.

(b) BUSINESS COMBINATIONS AND INTANGIBLE ASSETS. IAS 22, which covers accounting for business combinations, has been modified in recent years to bring it very close in concept to FAS 141 and 142 of the Financial Accounting Standards Board in the United States. Nearly all business combinations are presumed to be acquisitions and accounted for using the purchase method, in which the total purchase price is allocated to the acquired assets in proportion to their fair value. Intangible assets are assigned a useful life (for amortization purposes) in accordance with their own facts and circumstances. IAS 38 indicates that there is a "rebuttable presumption" that the useful life of intangible assets will not exceed 20 years. It acknowledges that in rare cases the useful life of an intangible asset may exceed 20 years, but an infinite useful life may not be assigned. This is different from U.S. accounting practice, which permits the assignment of an infinite useful life (therefore no amortization expense) to trademark assets. Both accounting systems, however, call for periodic tests of intangible assets for value impairment.

20.3 TAXES

Our purpose is not to provide a reference on the subject of international taxes, but some consideration of taxes is essential in the exploitation of intellectual property on an international scale. Nowhere has the human mind been more fertile than in devising ways to impose taxes. The idea of a required contribution to the common good no doubt surfaced in unrecorded history, and has been enhanced steadily ever since. The Roman emperor Vespasian imposed taxes on many commodities, including urinals, in an effort to restore solvency to the empire. The success of his efforts and the discomfort of his population are unrecorded.

We have, through the centuries, become equally inventive at avoiding taxes. The story of Lady Godiva's ride is well known, but we may forget that she made this trip to reduce taxes. She had long pleaded with her husband, the Earl of Mercia, to reduce the taxes on the people of Coventry. He offered to do so if she would ride naked through the streets. He did not appreciate the strength of her resolve.

(a) INCOME TAXES. When the subject of taxes arises, one tends to focus on income taxes. We have come to accept this form of tax as part of our lives and rightly assume that this holds true internationally as well. We are not going to dwell on the differences between countries with respect to their income taxes, because these differences are well documented in other references and because we do not feel that these differences are especially critical in intellectual property exploitation. We have, as an example, a whole range of state taxation in this country, from no income tax to high income tax. For the most part, however, we are of the opinion that state and local taxes do not control many important business decisions. If, as an example, we wish to serve the northwestern U.S. market by establishing a warehouse and distribution center, the decision on where to locate the facility is more likely to be driven by the availability and cost of real estate and labor, proper access to the transportation system, and potential customers than by the state and local tax structure. Taxation may become a factor if several otherwise equal sites are located. In the same way, the selection of a manufacturing site overseas may be influenced by local income taxes as a secondary consideration.

We do not believe that licensors, licensees, and joint venture partners come together because of the income tax structure of their home countries. They do so because of their respective needs for the subject intellectual property, or because the transaction represents a good marriage of their respective resources. They must be aware, however, of the effect of taxes on income as they affect the net cash flow to licensee, licensor, or joint venture partner. Taxes may vary according to the potential structure of the transaction. It may, for example, be preferable for a given party to receive income in the form of a royalty (from a license) than in the form of dividends (from a joint venture). This desire may stem from a different tax rate on these two forms of income. It may be prudent to domicile a nonoperating holding company in a low-tax jurisdiction. These considerations ought to come after the primary business needs are satisfied.

In nearly every country, there is some form of tax withheld on dividends and royalties that are paid to foreign interests. This can be a significant cost in the licensing process, and discounted cash flow (DCF) methods to evaluate royalty rate provisions should consider this.

Another thought about income taxes relates to the negotiation process. As a licensor, I might recognize that a potential licensee enjoys some income tax breaks in his home country. Could I expect to extract a higher payment for the use of my intellectual property than otherwise? No. I may be able to negotiate it, and my success probably will

depend on how much the potential licensee wants the intellectual property or how much competition there is for it. I should not, however, expect it. Conventional wisdom tells us that businesspeople do not pay others for what they bring to the table. A safe assumption is that any tax breaks enjoyed by the parties to intellectual property exploitation will remain in their own pockets.

(b) TAXATION OF JOINT VENTURES. Issues relating to taxation are likely to be more critical to joint venture alliances than to other forms of intellectual property exploitation. A joint venture creates a new entity that will be subject to all forms of taxation in its home country. If, as an example, the joint venture is a manufacturing operation that has been granted tax incentives in the host jurisdiction, then the partners will seek to maximize profits in the joint venture. If the joint venture must be located in a high-tax jurisdiction for operations reasons, then the partners will seek to maximize tax-deductible items. The partners then must carefully consider the asset of value (i.e., intangible assets and intellectual property) that they have provided to the venture and charge the venture as much as is reasonable for them. Royalties, interest, and management fees might be part of this consideration.

We caution, however, as we will note in a subsequent discussion on transfer pricing, that the financial relationship between the joint venture and its partners can introduce "taxable events." We also will discover that efforts to shift profits between entities to minimize taxes are becoming increasingly difficult.

20.4 TRANSFER PRICING

We believe that transfer pricing issues will become increasingly important to those involved in licensing of intangible assets and intellectual property. While Chapter 7 discusses transfer pricing for valuation, in this section we consider transfer pricing as it impacts licensing. Even those not directly involved in tax matters will find themselves drawn into transfer pricing questions—for example, if a company's transfer prices for intellectual property rights are audited by a tax authority. One of the first areas of investigation will be that company's existing third-party licenses. These can become a de facto benchmark in the investigation. Licensing personnel may be called on to assist in documentation as to whether these licenses are appropriate for this use. For these reasons, it is essential for licensing personnel to be familiar with the tax standards applying to transfer pricing. In fact, we believe that in any case or jurisdiction in which the arm's-length aspect of royalty rates or licensing provisions is called into question, the transfer pricing guidelines developed for tax purposes may well become the yardstick.

The essence of these issues is the fact that payments across state or national borders for goods, services, or intellectual property rights are a tax deduction for the payer and (perhaps) taxable income to the payee. When the payer and payee are both part of the same business organization, tax authorities become concerned as to whether the amount of the payment is a function only of tax avoidance and is not based on business reality. An arm's-length standard is applied nearly universally to test such a transaction. This chapter focuses on international transfer pricing issues that are, as the result of the issuance of regulations and the outcome of litigation, becoming clearer. This is not intended to be a definitive text on transfer pricing, but rather a discussion of the "high spots" as they relate to licensing activities.

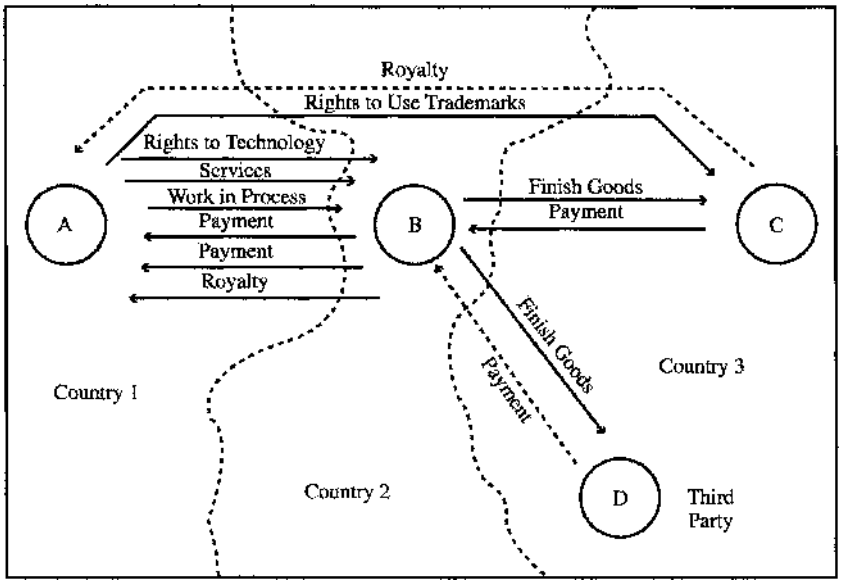

EXHIBIT 20.1 ILLUSTRATION OF TYPICAL TRANSFER PRICING TRANSACTIONS

Exhibit 20.1 depicts the essence of transfer pricing issues. A, B, and C are three facilities of the same multinational company. Facility A is the "headquarters" location at which primary research and development takes place and where ownership of the intellectual property resides. Manufacturing is done at A, and partially completed goods are shipped to B, which finishes the product and ships it to C for distribution. A also provides engineering and design services to B and licenses to B certain manufacturing technology. A also has licensed to C the right to use its trademarks. Payments for these goods, services, and intellectual property rights flow back along the supply chain and across national borders. D is a third party, and, of course, its transactions are important because they would be thought to represent an arm's-length situation.

This illustration may seem complex, but it represents a situation that is not unusual. There are many points at which goods, services, and intellectual property rights (and the payments therefor) cross national borders under the scrutiny of various tax authorities, all of which probably have diametrically opposed viewpoints about the fairness of the transactions.

(a) ARM'S-LENGTH STANDARD. The regulations emphasize: "In determining the true taxable income of a controlled taxpayer, the standard to be applied in every case is that of a taxpayer dealing at arm's-length with an uncontrolled taxpayer."[2] On this subject, the OECD Model Tax Convention (Article 9) defines the international standard for analyzing transfer pricing in this way:

> [W]here conditions are made or imposed between two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly.[3]

2. Reg. § 1.482-1(b)(1).
3. Ibid., "OECD Transfer Pricing Guidelines," Chapter 1, B(i) 1.6.

The OECD makes some additional interesting observations relative to intangible assets as they pertain to the arm's-length standard (Chapter 1, § 1.10):

> A practical difficulty in applying the arm's-length principles is that associated enterprises may engage in transactions that independent enterprises would not undertake. . . .For example, an independent enterprise may not be willing to sell an intangible (e.g., the right to exploit the fruits of all future research) for a fixed price if the profit potential of the intangible cannot be adequately estimated and there are other means of exploiting the intangible. . . . [T]he price might not reflect the potential for the intangible to become extremely profitable. Similarly, the owner of an intangible may be hesitant to enter into licensing arrangements with independent enterprises for fear of the value of the intangible being degraded. . .[but]. . . the intangible owner may be prepared to offer terms to associated enterprises that are less restrictive because the use of the intangible can be more closely monitored.[4]

(b) COMPARABILITY. A common thread running through the section 482 regulations is the discussion of comparability. That is, the arm's-length test usually will be based on a comparison of the results of that transaction with those of an uncontrolled comparable transaction.[5] Examples of the use of comparable transactions and data are found throughout the regulations. Using comparable transactions to test the arm's-length quality of an intracompany transaction seems logical and uncontroversial. If we sell a product to an outsider for $3.00, then we ought to sell it to our foreign subsidiary at the same price. But what if our subsidiary must carry an inventory of these items (and bear the cost of doing so), and what if it must pay us in U.S. dollars (and bear the risk of fluctuating currency values), and so on? Should the price then be the same? Probably not. What if our subsidiary is paying us for the right to use certain proprietary technology? Where do we go then for this magic comparable? If we can find a "near comparable," can it be useful?

The regulations tell us that comparability (of a transaction or the parties) depends on several factors:

Functions. Who does what to whom? Functions the parties perform, such as R&D, design/engineering, manufacturing, materials management, marketing, distribution, warehousing, legal, accounting, collections, and the like.

Contractual Terms. Consideration paid, sales/purchase volumes, warranty terms, technical support, rights to updates or revisions, duration, termination or renegotiation rights, collateral transactions, and credit and payment terms. This information might be taken from a third-party license executed by the tested party.

Risks. Consideration of all business and financial risks, including market and currency risk, credit and collection, product liability, and risk of success or failure of R&D. The primary concern is which of the parties to the transaction bear these risks.

Economic Conditions. Similarity of market size, geography, share, competition, and the level of sales (retail, wholesale, etc.).

Property or Services. Comparability of the products and/or services being transferred in the transactions. Of particular interest to us is the recognition that there may be intangible assets embedded in tangible property or services being transferred.

4. Ibid., Chapter 1, § 1.10.
5. Reg. § 1.482-1(d)(1).

There are refinements to these standards as they apply to transfers of intangible assets and intellectual property:

- Assets should be used in similar products and processes within the same industry or market.
- Assets should have similar profit potential as measured by "the net present value of the benefits to be realized (based on prospective profits to be realized or costs to be saved)." Included in this calculation should be a consideration of "capital investment and start-up expenses required, the risks to be assumed, and other relevant considerations."
- The terms of transfer should be similar, including the exploitation rights, exclusivity, geographical limitations, duration, grant-back rights, functions or services to be performed by the parties.
- The tested and comparable intangible assets or intellectual property should be in the same stage of development and possess a similar degree of uniqueness.[6]

It is clear that these standards of comparability are high indeed, especially when applied to specific intangible assets or intellectual property.

We also note that there is considerable debate internationally as to the efficacy of depending on comparable transactions for transfer pricing guidance. Most non-U.S. countries have not adopted comparable standards as a primary criterion. The OECD tends to lean toward "transactional profit" methods (i.e., the transactional profit split and transactional net margin methods).

(c) INTANGIBLE ASSETS. The regulations define *intangible* as "an asset that comprises any of the following items and has substantial value independent of the services of any individual."[7] The regulations list six categories of intangible assets:

- Patents, inventions, formulae, processes, designs, patterns, or know-how (this category also could be described as patented and unpatented technology)
- Copyrights and literary, musical, or artistic compositions
- Trademarks, trade names, or brand names
- Franchises, licenses, or contracts
- Methods, programs, systems, procedures, campaigns, surveys, studies, forecasts, estimates, customer lists, or technical data
- Other similar items

For transfer pricing purposes, an item is considered similar to items 1 through 5 "if it derives its value not from its physical attributes but from its intellectual content or other intangible properties.[8]

(d) THE OECD ON INTANGIBLE ASSETS. These paragraphs are abstracted from the OECD Guidelines.[9]

6. Reg. § 1.482-4(c)(2)(iii)(B)(1).
7. Reg. § 1.482-4(b)(1)–(6).
8. Reg. § 1.482-4(b)(6).
9. "OECD Transfer Pricing Guidelines," Chapter 6.

(i) ***Importance of Intangible Property.***

This Chapter discusses special considerations that arise in seeking to establish whether the conditions made or imposed in transactions between associated enterprises involving intangible property reflect arm's-length dealings. Particular attention to intangible property transactions is appropriate because the transactions are often difficult to evaluate for tax purposes.

(ii) ***Intangible Property Defined.***

For the purposes of this Chapter, the term "intangible property" includes rights to use industrial assets such as patents, trademarks, trade names, designs or models, literary and artistic property rights, and intellectual property such as know-how and trade secrets. . . . These intangibles are assets that may have considerable value even though they may have no book value in the company's balance sheet. There also may be considerable risks associated with them (e.g., contract or product liability and environmental damages).

(iii) ***Marketing Intangibles.***

Marketing intangibles include trademarks and trade names that aid in the commercial exploitation of a product or service, customer lists, distribution channels, and unique names, symbols, or pictures that have an important promotional value for the product concerned.

(iv) ***Value of Marketing Intangibles.***

The value of marketing intangibles depends upon many factors, including the reputation and credibility of the trade name or the trademark fostered by the quality of the goods and services provided. . . in the past, the degree of quality control and ongoing research and development, distribution and availability. . . extent and success of the promotional expenditures incurred to [support] the goods or services. . . the value of the market to which the marketing intangibles will provide access. . . .

(v) ***Know-How as a Marketing Intangible.***

Know-how is all the undivulged technical information, whether capable of being patented or not, that is necessary for the industrial reproduction of a product or process, directly and under the same conditions; inasmuch as it is derived from experience, know-how represents what a manufacturer cannot know from a mere examination of the product and mere knowledge of the progress of technique.

Know-how and trade secrets frequently play a significant role in the commercial activities of MNE [multinational enterprise] groups.

The OECD has recognized that know-how can be either a production or marketing intangible asset.

(vi) ***Transferring Intangible Rights.***

A trademark may be sold, licensed, or otherwise transferred by one person to another. Various kinds of license contracts are concluded in practice. A dealer could be allowed to use the trademark without a license agreement in selling products manufactured by the owner of the trademark, but trademark licensing also has become a common practice, particularly in international trade.

The "OECD GRG Transfer Pricing Guidelines" then discuss the analysis of royalty rates and methods by which they can be evaluated against the arm's-length standard.

(vii) ***Arm's-Length Royalties.***

In applying the arm's-length principle to controlled transactions involving intangible property, some special factors affecting comparability. . . should be considered. These factors include the expected profits from the intangible property (possibly determined through a net present value calculation), . . . limitations on the geographic area. . . export restrictions. . . exclusive or nonexclusive character of the rights transferred. . . the capital investment (to construct new plants or to buy special machines). . . the start-up expenses and the development work required in the market. . . the possibility of sublicensing . . . the licensee's distribution network. . . .

(viii) ***Comparability Issues.***

In the sale of goods incorporating intangible property such as a trademark, it may also be possible to use the CUP [comparable uncontrolled price (i.e., the price in a transaction involving the same property between two unrelated parties)] or resale price method . . . when a trademark is involved, the analysis of comparability should consider the value added by the trademark, taking into account consumer acceptability, geographical significance, market shares, sales volume, and other relevant factors.

In cases involving highly valuable intangible property, it may be difficult to find transactions between independent enterprises that are sufficiently close in their transactional features . . . to achieve adequate comparability . . . indeed, transactions between independent enterprises involving highly valuable intangible property are infrequent . . . even where they do exist, neither the taxpayer nor the tax administration may be able to uncover or obtain information about them, due in part to business concerns over secrecy and confidentiality.

20.5 METHODS FOR DETERMINING INTANGIBLE ASSET TRANSFER PRICES

The regulations tell us that the arm's-length consideration for the transfer of intangible assets must be commensurate with the income attributable to the intangible asset, and that it must be determined using *one* of four methods:

- The comparable uncontrolled transaction (CUT) method
- The comparable profits method
- The profit split method
- Unspecified methods[10]

(a) COMPARABLE UNCONTROLLED TRANSACTION METHOD. The CUT method evaluates whether a controlled transaction is arm's-length by reference to a comparable uncontrolled transaction:

> If an uncontrolled transaction involves the transfer of the same intangible under the same, or substantially the same, circumstances . . . , the results . . . [from applying the CUT method] . . . will generally be the most direct and reliable measure of the arm's-length result for the controlled transfer.[11]

We cannot imagine being so fortunate as to discover (and learn all of the necessary facts about!) an intangible asset transaction in the same industry as our subject, involving the same type of asset (e.g., a trade secret), with the same profit potential, terms of transfer, stage of development, and so on.

(b) COMPARABLE PROFITS METHOD. To use this technique for assets, we must compare profit measures of uncontrolled companies that have the same *complement of intangible assets* as the tested party. If we can demonstrate that the profits achieved by the tested party are close to those earned by this comparable company, then the transfer price may have passed the test.

Are we any more likely to discover this situation than in the search for a comparable uncontrolled transaction? We doubt it.

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10. Reg. § 1.482-4(a)(1)–(4).
11. Reg. § 1.482-4(c)(2)(ii).

(c) PROFIT SPLIT METHOD. This method is more difficult but is more realistic than the previous attempts. The essence is this:

- What is the value of the intangible assets and functions that are brought by each party to the transaction?
- What returns are they entitled to, based on their relative risks?

The answers to these two questions will lead one to an appropriate transfer price by the profit split method.

U.S. tax authorities tend to avoid this method like the plague because the answers to these questions depend on both taxpayer and market information (both of which are suspect in their eyes).

Internationally, profit split methods receive much more favor. Japan's National Tax Administration Agency considers this method key, because many transactions involving intangible assets, intellectual property, and the comparable methods are difficult to use appropriately.

(i) Transfer Pricing Reminder. It is essential to recognize that there are very important tax issues attendant to what otherwise might seem to be a straightforward business arrangement. A joint venture is not usually just an investment vehicle. It involves an ongoing relationship between the partners and often establishes a trade relationship between the joint venture and one or more partners. If so, that trade relationship likely will come under transfer pricing scrutiny. The businesspeople negotiating the joint venture must be aware of the requirements, such as the need for documentation and a U.S. agent. They also should consult with tax advisors as to the acceptable methodologies for establishing transfer prices and address them in the joint venture agreement.

Transfer pricing issues should not be a concern in the typical licensing transaction between *unrelated* parties. These are presumed to be arm's length by their very nature. We suggest, however, that those involved in the exploitation of intellectual property be keenly aware of the potential implications that may be hidden in the transactions they are designing. The royalty rate and license terms to an unrelated party may be used by a tax authority as "proof" of an uncontrolled transfer price that could be used to evaluate other intracompany transfer prices. International taxation is a moving target indeed.

(ii) Cost-Sharing Arrangements. A more recent addition to the final section 482 regulation concerns so-called cost-sharing arrangements, in which related parties (with or without the participation of unrelated parties) agree to share the cost of intangible asset development.[12] Because there is the potential to shift costs and benefits across jurisdictional lines in such an arrangement, it comes under the attention of taxing authorities, not only in the United States. The U.S. regulations impose some rather unworkable requirements on the participants of such an arrangement, including the need to predict, at the outset, what the economic benefits of the effort will be and how they will be divided among the participants. The participants are to share costs in the same proportion as the expected outcome. If the actual outcome is different (as it is nearly sure to be), then the participants' expenses can be reallocated by the IRS. This will be an extremely difficult area:

> Regrettably, the 1995 final regulations probably will prove to be as unworkable as the 1992 proposed regulations the new rules supplant. . . .The new rules replace the proposed regulations'

12. Reg. § 1.482-7.

> unworkable ratio test with a new, unworkable ratio test. . . .In the authors' experience, the vast majority of intangible development projects end in failure [or at least substantial redirection], and the regulations' silence on the treatment of the failed project is particularly worrisome.[13]

We mention this section of the transfer pricing regulation because it is very likely that licensing executives will be drawn into the quantifications required by this new section.

20.6 POLITICAL RISK

De la Torre and Neckar describe political risk in terms of an international investor's concern about the potential loss in value of assets.[14] Remembering that value is equal to the present value of the future economic benefits of ownership, this concept comports nicely with the discounted cash flow model that we have been using. That is, any event that impairs the present value of future cash flows (by reducing them, shortening them, or increasing the uncertainty of their collection) reduces value. They also classify political risk in terms of two types of contingency loss. The first is defined as the involuntary loss of control over assets, without compensation. This might include expropriation, nationalization, destruction by civil war, terrorists, and the like. The second classification of loss results from discriminatory actions by the host government, such as price controls, currency or remittance restrictions, tariffs, and the like. De la Torre and Neckar also cite a number of models and references for assessing political risk, and the reader might wish to consult their paper in full.

The term "political risk" could be construed to cover all types of risk if one assumes that a country's government is in control of all aspects of life. A government can alter the tax structure and the monetary and banking system, impose duties, and change tariffs, manufacturing standards, environmental regulations, and nearly every element that might affect doing business there. We will separate some of these elements in our discussion, however. With respect to the involuntary loss of control over assets, as defined above, it would appear to us that the best way to reflect this possibility is in a shortening of the expected economic life of the intellectual property transaction. Frankly, one is rarely forewarned of the conditions that might lead to expropriation, as an example, and those who license into a potential situation of this kind usually have a very risky scenario in mind at the start. The second type of loss, by discriminatory actions of a host government, is much more common, and the types of discrimination can take many forms and, while seemingly benign, can severely impair the economic benefit to an outsider doing business in that country. This is perhaps best reflected by adding an "international factor" to the discount rate utilized in the evaluation if there is any history of this sort of action in the host country. We address this again in the "Investment Risk" section.

De la Torre and Neckar also note that:

- Foreign companies involved in extractive or agricultural industries seem to have been more subject to political risk. Many countries, especially less developed ones, strongly feel that their natural resources should be exploited only for national welfare.

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13. Gordon Smith, Roger D. Lorence, and Paul H. Prentiss, "Why the Costs of Sharing Regulations Are Unworkable," *Transfer Pricing Report* (Washington, DC: Tax Management, March 13, 1996), p. 738.
14. José de la Torre and David H. Neckar, "Forecasting Political Risks for International Operations," in *Handbook of Forecasting*, eds. Spyros Makridakis and Steven C. Wheelerwright (Hoboken NJ: John Wiley & Sons, Inc., 1987).

- High-tech projects seem to be relatively immune from political risk (again in less developed countries) because the reality is that local companies are unprepared to take over and provide their output.
- Heavily differentiated or branded products are again less likely to be disturbed because of the inherent difficulty of substitution.

20.7 NEW MARKETS

The exploitation of intellectual property by means of licensing has a great deal of appeal in the international arena. Generally a license can be negotiated much more quickly and at far less cost than the creation of a joint venture. Joint ventures involve an intermingling of corporate as well as national cultures. We have already discussed the barriers presented by the marriage of corporate cultures, even in the same country.

Another advantage of the licensing strategy is that there is a much different market for intellectual property on an international scale. There is a much wider diversity between the technological advancement of countries than there is likely to be within a single country.

In a client engagement several years ago, we analyzed a classic progression of manufacturing technology. The product comprised several simple parts that were assembled without tools. The product was small, manufactured in large numbers, and the unit cost was about $1.50 originally. Obviously, under these conditions, company management devoted considerable resources to streamlining the assembly process, with the objective (given U.S. wage rates) of reducing human labor in the process, which was in assembly-line fashion, with the product being assembled on a moving belt passing in front of a line of workers, each adding a part or testing the partially complete assembly. The company then developed a semiautomatic assembly on a rotating table where parts were delivered and positioned by machine. Several operations still had to be done manually, however. After a fairly expensive period of development and fine-tuning this machine, costs were reduced to about $0.85 per unit.

Development continued, and the manufacturing process was fully automated, at considerable cost. It was worth the investment, however, because by this time the company had established itself in the market, and so the reduction of manufacturing cost, ultimately to about $0.35 per unit, went straight to the bottom line in profits.

As far as our client was concerned, the know-how connected with the manual and the semiautomatic manufacturing was of no value. We might reexamine that opinion relative to an international market, however. Suppose there was an entrepreneur in another country who was interested in entering this business and had approached our client. Knowing the cost spent in development and the substantial cost savings represented by the fully automatic technology, the price for the current system would be high indeed. If the potential license was from a less developed country, the fully automated technology might not be attractive because of its cost and complex maintenance, but the previous technologies might be very attractive as a way to start in the business, since the cost of labor would not be critical initially, and it would permit testing the market without a backbreaking financial risk.

There are many semiautomatic technologies gathering dust in the engineering departments and boneyards of industry everywhere. The international marketplace opens renewed opportunities that have not existed before. As some readers may be aware, this situation has not been without abuse. Some less developed countries have found it necessary to establish extensive inspection procedures for goods and equipment being imported

in order to prevent the importing of old, outmoded, run-out machines. We are not referring to this type of transaction. We are calling attention to the expanded market that exists for what may be to us second-tier technology, but for others may be a perfect match for their production needs and relative cost structure. This market is not likely to exist for long.

China's modernization of its telecommunications system is an opportunity only for the owners of the very newest technology. There is no benefit in doing anything else but going right to state-of-the-art. Wireless telecommunication technology is especially attractive to less developed countries because it does not require the very capital-intensive "poles and wire" infrastructure.

20.8 REPATRIATION

For the most part, funds can be moved internationally without problems. There can be delays and costs, but the deed can be done. Some techniques include receiving the economic benefit by barter, reinvesting the funds locally (hoping for better days in the future), buying commodities locally and exporting them, or helping partners or licensees earn *your currency* so they will have the wherewithal to pay. The important thing to remember is that, while these techniques work, they introduce costs, delays, and risks that otherwise would not be part of the evaluation equation. These added costs, delays, and risks would have to be reflected in the calculation of the present value of positive cash flows. The reader may refer to the examples given in Chapter 23 calculating the present value of various positive cash flows resulting from licensing. An example of this calculation is shown in Exhibit 23.12.

In the previous discussion, we decided that this option provided the most attractive alternative from the licensor's point of view. The present value of the positive cash flow from royalties is shown to be $309,662. (See Exhibit 20.2.) This present value calculation was made using a half-year convention. That is, we assumed that each year's royalties would be received in midyear. Let us now transplant that license to Russia (or any other country where there might be a problem converting the home-country currency). Let us further assume that the decision has been made that the best way for us to deal with the problem is to purchase a commodity in the licensee's country, using the royalty proceeds in local currency. That commodity will be shipped to our home country and sold. We therefore must reflect the costs to purchase, transport, and sell the commodity. We also must reflect the loss in present value that results from the time delay to accomplish all of this. The result is a sharply lower present value of $197,186. (See Exhibit 20.3.)

In this example, we have estimated the direct costs of the transactions in the form of commissions, duties, insurance, freight, taxes, and sales expense. We have reflected the delay by calculating the present value assuming a 6-month delay in receipt of the funds. We also must recognize that by turning this into a series of buy-sell transactions, we have increased the risk associated with receiving the economic benefit. We are now subject to commodity market risks, shipping problems, additional currency risk, and the like. We therefore have increased the discount rate to 15% from the 12% in the base case. If we planned to sell the commodity in yet a third country and repatriate the funds from there, there might well be an additional layer of direct costs and an added risk factor.

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	775	775	750	750	750	750	750	750	750
Gross Profit	450	475	475	500	500	500	500	500	500	500
Royalty	38	50	50	63	63	63	63	63	63	63
Discount Rate 12.00%										
Present Value of Royalties	35.18	41.28	36.32	39.95	35.16	30.94	27.23	23.96	21.09	18.56
Total Present Value ($)	309,662									

Exhibit 20.2 Royalty Set at One-Half of Cost Savings (with Licensee Enhancement)

	1	2	3	4	5	6	7	8	9	10
Royalty	38	50	50	63	63	63	63	63	63	63
Less:										
Commodity Purchase Exp.	3	4	4	5	5	5	5	5	5	5
Transportation Exp.	1	1	1	1	1	1	1	1	1	1
Commodity Selling Exp.	4	5	5	6	6	6	6	6	6	6
Net Royalty	30	40	40	50	50	50	50	50	50	50
Discount Rate 15.00%										
Present Value of Royalties	25.50	28.90	24.57	26.10	22.19	18.86	16.03	13.62	11.58	9.84
Total Present Value ($)	197,186									

Exhibit 20.3 Royalty Converted to Commodity for Sale in Home Country

20.9 CULTURAL ISSUES

In spite of the best efforts of everyone involved in a joint venture or licensing transaction, cultural and language barriers in the international arena can impede full understanding and contribute to greater risk of failure. During a sojourn in France, Benjamin Franklin was invited to a literary society meeting. The conversation in French was going a bit fast for him and was punctuated by applause. He was uncertain about joining in, and decided to join the applause when a lady of his acquaintance applauded. All seemed to be well until the gathering was over, at which time his grandson told him, "But, Grandpapa, you always applauded, and louder than anyone else, when they praised you."

It is obviously impossible to quantify precisely the additional risk that cultural differences introduce into a transaction, but we cannot ignore the possibilities. We suggest that preparation can take two forms.

- Introduce more lead time in the discounted cash flow calculation to allow for more protracted negotiations.
- Increase the discount rate applied to positive cash flows. Increase it more as the licensee's (or joint venture partners') culture differs from your own. Or increase the administrative costs in the projection (at least by the cost of an interpreter).

20.10 INVESTMENT RISK

By the term "investment risk," we refer to the perception of the investor of the relative risk associated with committing funds to an investment opportunity. In essence, someone who is in the position of exploiting intellectual property is an investor—either on his own if he owns the intellectual property, or in the role of a trustee if he is acting on behalf of shareholders or other owners. The responsibility is the same.

More specifically, we refer to the discount rate to be applied to positive cash flow associated with licensing or joint venturing. For the most part, it is the *positive* cash flows that are affected by international conditions. The negative cash flows—the expenses of the transaction—are going to be there no matter what, and their discount rate will be dictated by the risk of our business in the home country.

All of the other risks we have discussed—accounting standards, tax regulations, political situations, the ability to repatriate funds, and the like—eventually find their way into the way we, as the potential investor, view the risks and rewards of a potential transaction. In the end, it is a subjective process. We are not totally without a framework, however. Standard & Poor's (S&P) Corporation, for one, publishes ratings of various investments, including corporate bonds. These ratings are for the guidance of investors. The highest rating, AAA, is reserved for debt issues of companies whose "capacity to pay interest and repay principal is extremely strong." At the other end of the scale, bonds rated CCC "have a currency identifiable vulnerability to default" and are "dependent upon favorable business, financial, and economic conditions to meet timely payment of interest and repayment of principal." These descriptions are from S&P's *Bond Guide* (see Appendix D) and provide a picture of the two ends of the risk spectrum. At the present time, industrial bonds rated AAA by S&P are priced in the marketplace to yield about 6.17% to maturity. Those rated BBB yield about 7.70%, and those rated CCC yield about 13%. Thus, the difference between a blue chip debt investment and one in some sort of trouble is a bit more than five percentage points.

This is not an absolute yardstick, but refer to Chapters 21 and 23, where we use a discount rate in the calculation of the present value in order to quantify relative uncertainty. In Chapter 23, we decide on an appropriate royalty scheme, and we make some decisions about the present value of future expenses and obligations. We then calculate the net present value of all of the elements of a potential license agreement. If we were to transplant that transaction to an international setting and decide that the risk of realizing the positive cash flows was greater than in our domestic model, it is possible that the transaction would not fly. That is, the present value might be negative, or not high enough to attract us. We are aware of some studies on these difficulties in several countries.

(i) Some Commentary on Rates of Return. Hungary established the State Property Agency (SPA) in 1990 to supervise the privatization process. The SPA regulations require that intangibles such as patents, technology, trademarks, and copyrights be valued in the privatization process. Their value can be recorded for accounting purposes if these assets are purchased.

> Valuation of intangibles is usually acceptable if measured against reasonably quantifiable earnings using discounted cash flow techniques. In practice, this poses considerable difficulty in Hungary because the earnings are not separately identified in the books of the company and accordingly, the appropriate data is not available. An alternative method which is acceptable in certain circumstances is the identification of the costs related to developing a particular product or right and indexing them in a manner similar to plant and machinery. Results should be reviewed for possible factors which may induce overvaluation.[15]

In discussing business valuation, the SPA cites both the price-earnings method and the discounted cash flow method. It is interesting to note the directions relating to rates of return:

> The rate of return to be used as a discount factor can be estimated in various ways. One method is based on the weighted cost of capital of the companies used for comparison purposes. This is calculated, first of all, by determining the proportion of equity and the proportion of debt. . . . The proportion of equity is applied to a general *equity risk premium currently estimated at between 6 and 12 percent*, adjusted by a factor known as the BETA factor. This factor is calculated by stockbrokers on an industry basis to enable a distinction to be made between the rates of return for the different risks and different industries. A *country risk premium, which in the case of Hungary is generally felt to be between 4 and 8 percent*, is added to the weighted average cost of capital.[16]

Business valuation methodologies in Poland include the discounted cash flow analysis:

> The discounted cash flow methods value business as the sum of the present values of all future cash flows (or earnings, dividends) over an infinite time horizon. The rate of return to be used as a discount factor can be based on the weighted cost of capital of the companies used for comparison purposes. The forecasting of future cash flows is difficult in Poland where the political and economic climate is still not completely stable. At this point, it is difficult to make predictions about the evolution of interest rates and tax policies, and little can be said about the future development of special business sectors as regards market trends or the penetration of foreign suppliers.[17]

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15. Michael Birch, "Valuation and Privatisation: Main Aspects," *Valuation and Privatisation OECD* (Paris, France, 1993), p.15.
16. Ibid., p. 20, emphasis added.
17. Eva and Wladyslaw Jermakowicz, "Approaching Business Valuation in the Polish Privatisation Programme," *Valuation and Privatisation OECD*, p. 44.

With respect to the price-earnings method, this comment is offered:

> Finally, the price-earnings method is hardly applicable in a situation where capital markets are only being developed. However, it can be used to a limited degree in the case of foreign investors, if the PE ratio of the investors' home country or an average of several countries is taken and a risk premium is added to reflect the additional risk of investing in an economy in transformation.[18]

In the former German Democratic Republic, accounting was apparently closely regulated and profit and loss accounts were similar to those utilized in the rest of Germany. There was, however, no measurement of equity capital and no reflection of market prices. Therefore, East German enterprises closed their books on June 30, 1990, and carried out an inventory and drew up an opening balance sheet for July 1, 1990; since that time these accounting statements have prevailed.

Generally, as it relates to Central and Eastern Europe, Hervé notes that business valuation is key to the privatization process and provides the following definition:

> A business valuation can be defined as the determination, through prior analysis, of a price for a business that might be paid by an investor. It is based on the future prospects of the enterprise and a rate of return expected by the investor taking into consideration elements such as alternative forms of investment, goodwill, and the economic situation of the country in which the business is located.
>
> The price earnings method is certainly the most common. . . . This method has been largely used for the privatisations of large Western European companies, especially when there are comparative publicly traded firms. . . the difficulty in Central and Eastern Europe is the absence of stock exchanges, and where they do exist, as in Hungary, their lack of development.
>
> The discounted cash flow method is very close to the price earnings method. . . . The cash flows. . . represent the net inflows to be received over a reasonable period of time (*10–15 years seems a usual period*). . . using the Capital Asset Pricing Model, a *country risk premium of 2 to 10 percent should be added.*[19]

There is no cookbook to offer that will make these decisions, although there are a number of commercial sources of international data on investment rates of return. Elsewhere, we discussed the use of investment rates of return in the 30% to 40% range used by venture capitalists. This was to reflect the inherent risk of a new and untested technology. Even this range of rate of return might be applicable to reflect international risk under some circumstances. One must be sensitive to all of the available measures of investment risk and must come to a conclusion about their effect on the transaction being designed.

20.11 LEGAL PROTECTION

There is a wealth of information published about the legal protection (or lack thereof) of intellectual property in various countries of the world. This situation is closely monitored by professional organizations, such as the United States Trademark Association and the Licensing Executives Society. We do not intend to duplicate that coverage. The reader should, however, add the aspect of legal protection to the list of elements to consider in evaluating the economics of a transaction. Typically, we shun those countries that do not adequately protect intellectual property. There may, however, be valid business reasons to license into or form a joint venture with an entity in such a country. Perhaps the technology is moving so fast that the "pirates" will not be able to catch up. Perhaps the key to the success of the product is an ingredient that we can control, and we

18. Alicja Jaruga, "Accounting for Intangibles in Poland," *Valuation and Privatisation OECD*, p. 85.
19. Laurent Hervé, "Issues of Business Valuation," *Valuation and Privatisation OECD*, p. 95, emphasis added.

are free to license the rest. Whatever the reason, we must factor this condition into our evaluation. Most frequently, this should be reflected in a shorter economic life than otherwise, either because of the short life of the technology, or because unrestricted "knock-off artists" will gather the resources to erode the sales of our licensee or joint venture. If we take this calculated risk, the calculation should be to foreshorten the duration of positive cash flow.

20.12 SUMMARY

It is most difficult to quantify the risks of international investment. We can only provide guidelines and a sort of checklist of things to consider. Let us assume that Cougar Club Company is based in Singapore and that Golden Shark Enterprises is located in Germany. Both companies, as well as Zing Golf Corporation, the U.S. contender for license rights, have assured us that they have the necessary manufacturing capacity and distribution channels to ensure worldwide coverage. They seem to be equally competent technically, and are on a par (sorry!) financially. Our decision now must be based on their geographical and political location, and we must evaluate these investment opportunities on that basis, carefully considering the elements we have discussed in this chapter. We will evaluate the specific license provisions in Chapter 23.

CHAPTER 21

RISKS OF EXPLOITATION

21.1 ELEMENTS OF RISK

An investment is the act of reaching into one's pocket for cash and exchanging it for some object or right in the expectation of gain. The gain may be smaller or larger than expected, come earlier or later, or not come at all. Every investment decision, even the decision *not* to invest, is therefore an evaluation of risk. As Mark Twain is reported to have said:

> There are two times in a man's life when he should not speculate: when he can't afford it, and when he can.

Speculation is, however, in the eye of the beholder. One person's speculation is another's "sure thing." That is what makes horse races and, we suspect, business as well. That is why we will concentrate on the risk of business investing. We will ignore a myriad of other investment opportunities. Should I lend my brother-in-law $1,500? Probably not, but that question will have to be answered somewhere else; it will not be dealt with here.

(a) ENTERPRISE RISKS. When one invests in a business enterprise, several forms of risk must be considered. The primary forms are *business risk* and *financial risk*. Additionally, there are the risks associated with changes in *purchasing power* and *interest rates*, and *marketability.*

In the world of business and investment, risk is best quantified by volatility (or the degree of predictability) of income and the probability of default. A classic high-risk investment is taking a quarter from my pocket and inserting it into a slot machine. The volatility of income is extreme—from zero to perhaps $1 million. The probability of default (losing the quarter) is also very high. At the other extreme, using these measures, would be the purchase of a U.S. E Bond. In between are all of the other business investment possibilities, and we will discuss their characteristics.

(b) BUSINESS RISK. A business enterprise does not exist in a vacuum. It has connections with myriad outside entities, such as government, customers, suppliers, employees, and banks. The character of those relationships has a great impact on the risk of the enterprise. Other business elements are important as well.

(i) Size. Generally speaking, the smaller the enterprise, the higher is the risk. A small enterprise has more difficulty weathering the normal up-and-down cycles. It also cannot take advantage of economies of scale, command the best prices for goods and services, or advertise nationally because it cannot assemble a "critical mass" to do so.

Well-known studies by Ibbotson and others have documented the fact that, over an extended term, investors have priced small-company stocks so as to receive a higher return than on large-company stock investments.[1] There are various definitions as to what constitutes "small" and how size should be measured, but the overall trend is clear. There is an obvious message here for those licensing into a small-company situation.

(ii) Geodiversity. A business operating in many locations is one of lower risk than otherwise. The risk of owning a single fast food store is much greater than that of owning several, because the single operation is dependent on a very small (neighborhood) economy or a particular location, either of which can change rapidly.

(iii) Customer Diversity. An enterprise serving a multiplicity of customer types has less risk. All else being equal, the pocket comb business ought to be steadier than making curling irons. Risk is reduced by serving customers in unrelated industries that are not affected by the same economic conditions.

(iv) Product Diversity. A large portfolio of products or a business built on technology that has wide application tends to be less risky. It is unlikely that everything will go poorly (or well) at the same time, making earnings more predictable.

(v) Technology. An enterprise dependent on high technology is more risky. It is faced with keeping its products or services current at an accelerating pace. It is also likely to have heavy competition. The high profitability of high-tech products attracts others into the market.

(vi) Assets. A heavy investment in physical assets tends to increase risk, and if those assets are highly specialized, risk is increased even more. Large physical assets take time to assemble, and the business climate can change while that is going on. Classic examples are electric utilities that constructed nuclear-generating facilities. These plants required massive amounts of money to build, took years to complete, and while this was happening, regulatory, environmental, and technological changes took place, and the demand for power fell. Many of these investments turned traditionally low-risk enterprises into high-risk operations—some into bankrupt ones!

The same can result if the assets are not tangible. Research or development that is going to require heavy investment and that will take a long time before any milestones are reached carries with it the same high risk that, by the time the money is spent, conditions may have changed and the result will no longer be of value.

A small investment in assets, especially general-purpose ones, allows the business much more flexibility to redeploy them if the needs of the business change.

(vii) Environmental. Although it is difficult to imagine a business that is not subject to some environmental concern, those with less potential involvement would have less risk. Environmental standards are changing continually as we discover more about our surroundings and as constituencies shift. We once thought computer monitors and keyboards were pretty innocuous.

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1. *Stocks, Bonds, Bills, and Inflation* (Chicago: Ibbotson Associates, published annually). See also Roger Grabowski and David King, "New Evidence on Size Effects and Rates of Return," *Business Valuation Review* (September 1966).

(viii) Governmental. In general, less involvement with government results in less business risk. One reason is relative cost. Heavy regulation, such as Food and Drug Administration approval for a drug, results in high costs. This is not a political statement but a fact of life. Others can argue about the necessity of regulatory activities. Another result of regulatory involvement is increased development time, which, as we noted, increases risk. Government involvement also results in change. Elected officials of today will likely not be there tomorrow, and those who are may be responding to a different constituency. An enterprise can, therefore, be faced with the challenge of attempting to satisfy a moving regulatory target.

(ix) Inventory. When a business must maintain a large inventory of raw materials and/or finished goods, risk is increased because the enterprise will have more exposure to fluctuations in the marketplace. Falling raw material prices will cause the business to have higher-priced goods than competitors. Falling retail prices can erode profits, and changes in market needs can cause inventory to be unsalable.

(x) Marketing. When a business is built around products or services that require heavy sales and marketing expenditures, it would be more risky than otherwise. Such an enterprise is often in a highly competitive, commodity-like market where wide swings in marketplace needs and desires are possible, or in a situation in which massive sales are necessary to support heavy product research and development (computers or pharmaceuticals).

(xi) Management. Although very difficult to assess, management ability is an important component of business risk. It can be critical in the exploitation of intellectual property, however. Imagine a joint venture between a tire manufacturer and an insurance company to produce and sell toys. Where would the joint venture management come from? Or consider a joint venture with Japanese and British partners whose business cultures are so dissimilar. Would one be eager to license biotechnology into a bank subsidiary? One can hardly expect a successful outcome if an insurmountable obstacle is placed before even very skilled managers.

(c) FINANCIAL RISK. We noted in a previous chapter the fact that an investment in a business enterprise, in the form of common stock, introduces a layer of control between the investor and the property invested in. We noted that in some cases, such as the ownership of a minority stock interest, the risk could be substantially greater. Even with respect to the entire business enterprise, however, there are elements of risk introduced by other financial factors.

(i) Leverage. Leverage is the most commonly referred to element of financial risk. Called "gearing" by the British, this refers to the amount of risk that results from management's choice of capital structure. It should be the objective of management to balance business and financial risks in a complementary fashion. When business risk is great, financial risk should be small, and vice versa.

An appropriate capital structure may, in a sense, be forced on management no matter what its views are. Investors make a judgment as to business risk and simply will not commit capital in a mix that they judge to be improper.

A large amount of debt capital increases the financial risk of the enterprise. In order to support heavy debt prudently, a business must have assured and steady earnings. We liken this to an airplane flying a few feet above the ground. It only takes a slight engine

misfire to crash. This has been vividly illustrated in the recent bankruptcies of large, even multinational, corporations. They took on staggering debt loads, perhaps with the expectation that the value of their real estate developments would continue to rise without end, or perhaps to finance an acquisition, or to turn away an ardent but unwanted suitor. A downturn in the overall economy put them under.

Financial risk may not be a common consideration in the exploitation of intellectual property, but it is a factor to consider. While a joint venture is rarely financed with debt capital, one or another of the partners could be, and could be overleveraged. It could become a factor in the ability of that partner to contribute additional capital to the joint venture or to fulfill other obligations necessary to its success.

The financial stability of a licensee or licensor should be important to both parties. Without this, royalties may not be paid, exploitation may be laggard, infringements may not be challenged, or continued development of the intellectual property may be in jeopardy.

The parties to any form of intellectual property exploitation should examine one another in much the same way that a banker scrutinizes a home equity loan.

(ii) Accounting. Bernstein describes accounting-related risk in terms of an investor relying on accounting information to evaluate a business.[2]

Recently, we have been reminded again and again about accounting-related risk, as an unfortunate series of financial statement discrepancies and manipulation has surfaced. Top managers have lost their jobs or been indicted, and very substantial enterprises have met their demise or have been seriously reorganized in bankruptcy proceedings. One of the world's major accounting firms dissolved with shocking speed.

In intellectual property exploitation, we would expand that to include relying on accounting information supplied by an exploitation partner. A license or joint venture arrangement must be structured in such a way that the participants have confidence in the information they receive. If that confidence cannot be reasonably ensured at the outset, then the venture must be judged as having more risk. This may be more applicable to international transactions because of differing customs and accounting standards. In any locale, however, closely held businesses have considerably more latitude in keeping their books than publicly traded entities.

(iii) Perspective on Financial Risk. To place financial risk measurement in some perspective, we can observe the financial structure of a large group of industrial companies, and also that of some selected industry groups. This information, taken from the Compustat database, can provide some broad benchmarks.[3]

The Standard & Poor's 500 industrial group comprises a broad measure of the financial performance of industrial, retail, and transportation companies. As of their most recent financial data, the composite capital structure of the group was:

Long-term Debt	24%
Common Stock	76%

It is interesting to note that the percentage of common stock from a similar group of companies as we reported it in 1991 in the first edition of this book was 58%. When one looks at industry groups, there begins to be a range, reflecting investors' perceptions of relative business risk. In analyzing Exhibit 21.1, the reader should recognize that sometimes

2. Leopold A. Bernstein, *Financial Statement Analysis* (Homewood, IL: Richard D. Irwin, 1978).
3. Standard & Poor's, Compustat database of financial information, available by subscription.

Industry Sector	Industry Code	% Debt	% Equity
Computer and data processing services	737	6	94
Communications equipment	366	6	94
Drugs	283	7	93
Computer and office equipment	357	9	91
Electronic components and accessories	367	9	91
Chemicals and allied products	28	11	89
Health services	80	16	84
Apparel and other textile products	23	17	83
Food and kindred products	20	18	82
Oil & gas extraction	13	20	80
Fabricated metal products	34	24	76
General merchandise stores	53	26	74
Communications	48	29	71
Tobacco products	21	30	70
Water supply	494	32	68
Primary metal industries	33	36	64
Paper and allied products	26	37	63
Combination utility services	493	52	48

EXHIBIT 21.1 PERSPECTIVE ON FINANCIAL RISK: INDUSTRY BREAKDOWN

capital structure may be forced on management. When earnings fall and losses are incurred, the book value of common equity falls as well. This produces an unexpected, and really uncontrollable, increase in the percentage of debt capital. We leave it to the reader to detect which cases are planned and which are not.

(iv) Purchasing Power Risk. Even if the expected stream of economic benefits from an investment could be determined with absolute certainty, risk would still exist with regard to the purchasing power of the future dollars that are expected to be received. There always exists the risk that inflation will intensify and consume any gains that may be realized from investment performance.

The Consumer Price Index shows that between 1940 and 1949, inflation averaged 5.6%. If this rate could be expected to continue in the future at this same level, then investment planning could include an element in the rate of return requirements to ensure that this amount of inflation was incorporated into the contemplated investment returns. In a sense, the purchasing power risk would be eliminated.

Unfortunately, there are periods within the 43-year span between 1940 and 2002 that provided the economic environment with wide and unanticipated swings of inflation. It is the unanticipated changes that introduce investment risk. The following table provides a sample of the level of inflation during selected time periods:

Selected Inflationary Periods	
Period	**Inflation Rate (%)**
1940–49	5.6
1950–59	2.1
1960–69	2.4
1970–79	7.1

Selected Inflationary Periods	
Period	**Inflation Rate (%)**
1980–89	5.6
1990–99	3.0
2000–02	2.6

Even though inflation has averaged slightly over 4% since World War II, investment rate of return requirements that were based on this average were never quite correct during the selected periods.

Unanticipated events, such as inflation, greatly affect the amount of investment returns that actually are achieved. This represents risk, and a portion of investment rates of return on all types of investment properties must include an element that compensates for this risk component.

(v) Interest Rate Risk. This element of financial risk presents uncertainty similar to purchasing power risk. Alternate forms of investment such as corporate bonds, treasury securities, and municipal debt provide another investment opportunity with which an intellectual property investment must compete. If the future brings with it higher returns that are available from investments of lesser risk, then the value of the intellectual property investment may be diminished.

(vi) Market Risk. A unique and often unkind element of risk is, in large part, associated with "market psychology." Irrespective of any fundamental changes in the expected performance of an investment, market risk reflects the fluctuation in the demand for a specific type of investment. On October 19, 1987, the stock market plunged in value by over 500 points as measured by the Dow Jones Industrial (DJI) Average. There was neither a fundamental change in economic outlooks nor a cataclysmic event such as the declaration of a world war. Yet the value of all investments plunged. When this book was originally written, the DJI Average stood at about the 8,000 level. With little hesitation, this index climbed to the 10,000 level in 1999 and stayed there through May 2000. As the e-commerce bubble burst, the DJI Average quickly plunged back to the 8,000 level and only recently has regained the 10,000 level. While perhaps not as dramatic as the events of October 1987, this market fluctuation has had a serious effect on the lives of individuals and enterprises alike.

An additional component of market risk is the risk associated with investment marketability. An investment for which an active market exists is more valuable, all else being equal, than an investment for which no active market exists.

Although the purchasing power, interest rate, and business risk elements are easy to conceptualize, the marketability risk is a little less obvious. Several studies have been

conducted to identify and measure the discount to investment value that the market places on investments that lack liquidity. This is discussed more fully in the section of Chapter 18 entitled "Market Risk and the Discount for Lack of Marketability." While the studies presented centered on common stock, the same risk element is present for all types of investments, including those in intellectual property.

21.2 RISK AND ROYALTIES

One can, without a formal analysis, intuitively sense the relationship between the amount of royalty and these elements of risk. But for those who feel more comfortable with some numerical support, we offer the following.

Investment risk is directly related to the amount of royalty that a licensee can afford to pay. Investment risk is an important factor that hypothetical licensing partners would consider in an arm's-length negotiation. More risk translates to lower royalties, everything else being equal. Calculations are presented that show how higher investment risk translates into lower royalty rates.

Consider a manufacturer planning to enter a new industrial market using licensed technology. Exhibit 21.2 presents the expected cash flows of the contemplated project. The product will be manufactured and marketed by the licensee. Manufacturing expertise and marketing know-how are assumed to be possessed by the licensee. But the licensee needs an exclusive license of the product technology so that it can capture the market and achieve the sales that are shown in the 10-year forecast.

The starting point of the analysis is to consider the investment value of the project assuming that no royalty must be paid. The cash flows show an initial investment of $3,000 by the licensee for:

- The purchase of capital equipment
- The contributed value of a well-established marketing department
- The contributed value of the company's well-known trademark

The initial investment of $3,000 represents the contribution of value to the new venture by the licensee. A portion of the forecast cash flows is generated by the initial investment of the manufacturer, and a portion of the expected cash flows is from the licensed technology. By showing the $3,000 contribution of the manufacturer, the residual present value of the cash flows is attributed to the licensed technology.

Exhibit 21.2 shows the present value of the new project division by discounting the cash flows, with 0% of sales as a royalty, at a required rate of return of 15%. The present value of the project is $7,957. This shows that not only will the licensee earn 15% on its investment, but it has created excess value. The licensee will earn its required rate of investment return of 15% plus $7,957. But some or all of the excess value should be considered as contributed by the technology and should be paid to the licensor as royalty. How much royalty can the licensee give to the licensor and still make this investment project a good deal?

Year	0	1	2	3	4	5	6	7	8	9	10
Sales		1,000	2,000	4,000	8,000	10,000	12,000	14,000	16,000	17,600	18,480
EBDIT & R		200	400	800	2,000	2,500	3,000	3,500	4,000	4,400	4,620
Depreciation		50	200	300	600	285	285	285	285	285	126
EBIT & R		150	200	500	1,400	2,215	2,715	3,215	3,715	4,115	4,494
Royalty	0.0%	0	0	0	0	0	0	0	0	0	0
EBIT		150	200	500	1,400	2,215	2,715	3,215	3,715	4,115	4,494
Taxes	40.0%	60	80	200	560	886	1,086	1,286	1,486	1,646	1,798
Debt-Free Net Income		90	120	300	840	1,329	1,629	1,929	2,229	2,469	2,696
add: Depreciation		50	200	300	600	285	285	285	285	285	126
less: Working Capital		20	100	200	400	200	200	200	200	160	88
less: Capex		3,000	100	200	400	200	200	200	200	160	126
Net Cash Flow		(2,880)	120	200	640	1,214	1,514	1,814	2,114	2,434	2,608
Discount Rate	15.0%	0.9333	0.8115	0.7057	0.6136	0.5336	0.4640	0.4035	0.3508	0.3051	2.4718
Present Value		(2,688)	97	141	393	648	702	732	742	743	6,448
Total Present Value		7,957									

EXHIBIT 21.2 NEW PROJECT CASH FLOWS

EBDIT & R = Earnings before depreciation, interest, taxes, and royalty payments

EBIT & R = Earnings before interest, taxes, and royalty payments

EBIT = Earnings before interest and taxes

Capex = Capital expenditures

If we insert a 2% royalty into the model, the present value of the cash flows equals $6,955. The licensee has earned the required 15% plus the created excess value of $6,955. At a 4% royalty, the present value equals $5,593. See the following table.

Present Value of New Project Cash Flows Using Different Royalty Rates Discounted at 15%

Royalty Rate (%)	Value Created
0	$7,957
2	$6,955
4	$5,953
6	$4,951
8	$3,949
10	$2,947
12	$1,932
14	$900
16	($141)

At a royalty rate of 16%, the discounted cash flow model shows a present value that turns negative. When the present value is negative, the investment is not earning the 15% required rate of return. Too much royalty is being given to the licensor at this point.

Exhibit 21.3 graphs the different values of the business enterprise for the different royalty rates. The graph shows that a royalty rate of approximately 15.7% can be paid to the licensor and yield a net present value for the cash flows at $0. This level of royalty allows the licensor to earn the 15% required rate of return on the new project investment, but no more. It represents the highest level of royalty that the licensee can afford to pay while still earning the required rate of return. If a royalty rate of something less than 15.7% can be negotiated, all the better—but a royalty rate greater than 15.7% would not allow the licensor to earn a fair return on the investment.

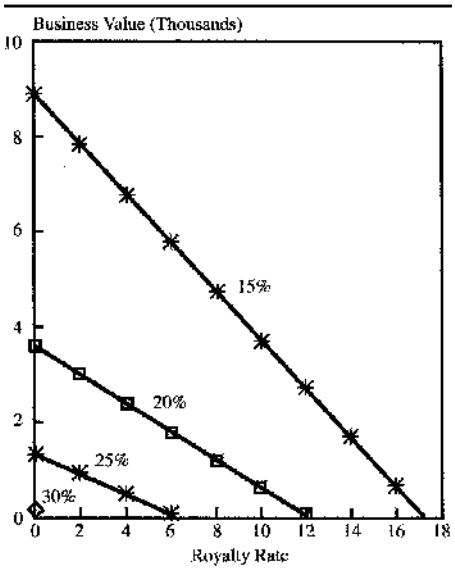

EXHIBIT 21.3 BUSINESS RISK AND ROYALTIES

All of this assumes that 15% is the proper rate of return for the new project investment. A business in a mature industry with a steady market share and relatively predictable profits might be happy with a 15% rate of return from operations within its core business. But new investments into ancillary or new industries represent added investment risks. If the new project is considered riskier than 15%, then a 15.7% royalty rate would have disastrous consequences on the value of the new project enterprise.

Let us look at the present value of cash flows, using the same range of royalty rates but a higher rate of return requirement of 20%.

Present Value of New Project Cash Flows Using Different Royalty Rates Discounted at 20%

Royalty Rate (%)	Value Created
0	$3,436
2	$2,836
4	$2,235
6	$1,635
8	$1,035
10	$ 434
11	$ 0

If the new project reinvestment is actually riskier than 15%, then a royalty rate at 15.7% of sales would yield a negative present value for the licensor. The highest royalty rate that the licensee can afford to pay at the 20% rate of return requirement level is 11%. At this lower royalty, the licensor has earned its required investment return on the higher rate of 20%. If a lower royalty rate can be negotiated, great. But at this higher level of risk perception, a royalty rate of 15.7% is a disaster.

Exhibit 21.3 shows a third line that plots the present value of cash flows for different royalty rates using a rate of return requirement of 25%. The highest amount of royalty the licensor can afford to pay at this higher rate of return requirement is less than 7%. Also shown in Exhibit 21.3 is a very short line that represents the new project investment value discounted at 30%. If no royalties are required, then an excess value of $287 is created. Royalty payments of 2% of sales or more would make the investment a loser. If the new project investment is truly considered to be so risky as to require a 30% rate of return, and if the cash flows accurately reflect the potential for the technology, no more than 2% of sales can be paid as a royalty.

The investment risk of the industry into which the licensed property is being introduced is an important consideration when determining the proper amount of royalty to be paid. When negotiating a royalty rate, the licensor and licensee must consider many different factors. They must agree, or at least independently come to the same conclusions, on:

- Sales potential
- Profit margins
- Up-front investment requirements
- Market penetration time frames

They *also* must understand and agree on the amount of investment risk associated with the new project.

21.3 INTELLECTUAL PROPERTY ECONOMIC LIFE

Economic life could be described as the period during which it is profitable to use an asset. Economic life ends when it is no longer profitable to use an asset (the future benefits are used up), or when it is more profitable to use another asset. This is quite different from the *service life* of an asset, which is the period from its installation to the date of its retirement, *irrespective* of its earning capability along the way.

This topic is also discussed in Chapter 11, but is repeated here because of its importance to licensing.

(a) MEASURING ECONOMIC LIFE.

(i) Legal/Contractual Life. The economic life of tangible assets is commonly not affected by legal or contractual terms. These assets belong to the business, and they remain in place as long as management desires.

Many forms of intellectual property, however, do have a recognized legal or contractual life. These include:

- Patents
- Copyrights
- Trademarks

(b) ECONOMIC LIFE FACTORS.

(i) Patents. The path from patent to product can be tenuous. An example is a patent that protects a process for the efficient production of a chemical compound. That compound may find its way into virtually millions of end-use products. If these products represent a broad spectrum of markets, the patent, based on this consideration alone, ought to be quite valuable, and its economic life ought to be long (perhaps equal to its legal life) because the diversity of products acts as a shield against an overall downturn in sales. If the patent protects the chemical compound itself, it may be even more valuable and long-lived, again because of the potentially broad applications.

Looking through to the economic life of the end product can provide an indication of the high end of the range of economic life for a patent or series of patents that supports it.

Stated another way, the economic life of intellectual property cannot exceed the period during which it or the products it supports find favor in the market.

From this upper range, one should then consider the factors not related to the product marketplace that also can have an effect on economic life. Continuing to use the example of the process patent cited above, these would include:

- Loss of supply or price escalation in a raw material that could render the process uneconomical
- An increase in energy costs that would render the process uneconomical
- Legislation relative to environmental concerns about the use of feedstock, handling of process effluent, or the compound itself
- The possibility of a competitor designing around the protected process
- The development of a superior compound that would replace the existing one in the same markets
- Challenges of patent validity brought by competitors motivated by the profitability of the protected process

The most difficult patents for which to estimate economic life are those involving embryonic technology that may be emerging well ahead of any practical use and those related to faddish consumer products, such as toys. An educated guess may have to do, knowing that the margin for error may be considerable.

(ii) Trade Secrets and Know-How. Most of the patent considerations noted earlier apply here, with the exception that there is no statutory limit to trade secret protection. End-product economic life also applies to trade secrets as an upper limit to the range of economic life. Additional unique considerations include:

- The transferability of the trade secrets or know-how. Another consideration here is the extent to which such information has been reduced to writing or another transferable form. The skills of a writer, musician, test pilot, or surgeon can be extremely valuable know-how, but largely untransferable.
- The care with which the confidentiality of the information is protected.
- The versatility of the know-how enhances its economic life. This is always true in that it can be redeployed if there is a change in the market.

(iii) Trademarks. Conventional wisdom would have us accept the notion that trademark rights have no discernible economic life since they exist as long as they are used, maintained, and not proved to be generic. We have grappled with this idea, primarily because it is difficult to agree with the concept that *any* business assets have a perpetual life.

Trademarks do not suffer from functional obsolescence in the same sense that technology does, but do perhaps from form or style. The passage of time can produce this type of functional obsolescence in a trademark. Trademark owners are continually updating their appearance, using different typefaces and restyled logos. As a business adds brands to a family, or repositions brands or product lines, trademarks may be restyled to create, retain, or strengthen a "family" look.[4]

More typically, however, slogans or words or symbols that are used as subordinates to a primary trademark tend to have shorter lives. This is because many of them are developed in order to respond to a relatively temporary situation.

There are, however, some unique factors that lead to economic obsolescence in trademarks or brands. We view these as subsets of economic obsolescence as it has been previously defined. When trademarks are the focus of an intellectual property license, these factors should be considered by the parties.

(iv) Event Obsolescence. We use the term "event obsolescence" to describe potential trademark value reductions caused by business transactions or events that are outside the course of normal trademark life activities. The product-tampering episode involving Tylenol could have been a life-threatening event for that trademark, had not Johnson & Johnson management reacted in timely and effective fashion.

When trademarks become caught up in corporate transactions or become collateral, they become exposed to additional risk, as Simensky and Bryer note:

> From its status as merely one among other assets bought and sold, intellectual property in certain instances came to dominate transactions as the financial markets began to appreciate the significant value intellectual property represents. Thus, when the Saks chain was sold in a $1.5 billion

4. Elinor and Joe Selame, *The Company Image* (Hoboken NJ: John Wiley & Sons, Inc., 1988). See Chapter 18 for a discussion on changing corporate identity.

> transaction, the real estate value of the stores was estimated to be only $500,000,000. The Saks trademarks were themselves valued at $1 billion. . . . Undoubtedly, this recognition, albeit belated, of the enormous value of intellectual property was heavily influenced by the mergers and acquisitions trend of the 1980s. The assets of potential targets were closely scrutinized to determine whether a company was undervalued by the market (or, a skeptic might add, to determine which assets might be spun off when the acquired company was cannibalized by its acquirers).[5]

A trademark licensee must be aware of the possibility of these corporate events and construct a license so as to protect itself. What would happen, as an example, to a licensee if the trademark owner was acquired by another company that decided to abandon the related product? If the license survived this event, the licensee would lose the advertising and promotion support to the mark and might even suffer some deleterious effect if the new owner's move was viewed with disfavor in the marketplace.

Trademarks can be affected by technological obsolescence. As with genericity, the trademark owner faces a two-edged sword. After striving to have a trademark inextricably linked with a particular product or service so that its purchase is an automatic affair, the owner can only watch helplessly as the trademark goes to oblivion with the technologically obsolete product. Of course, some trademarks are associated with products or services that can slide gracefully from technology to technology and they do the same. Some trademarks are positioned so that they can move across rather wide technology gaps, and these are the ones that seem to live on and on. Trademark versatility is important to longevity.

Consumer products such as foods, beverages, and personal care products are suffering attrition as never before. Bar coding and computer analysis of sales and inventory turnover subjects every store brand to the spotlight. Stores themselves are no longer expanding to accommodate the proliferation of brands. With space at a premium, only the strongest survive. Elliott comments on these "ghost" brands, some of which were overshadowed by new arrivals or by new technologies, or "overlooked when their companies changed focus or changed hands."[6]

Today a trademark *must* have internationality. That is, it must be at home in all the world's languages, because the market is without national boundaries. It also must be in tune with the world's cultures and customs, or at least not in conflict with them.

Previously we described the situation in which the symbiosis of a trademark and technology can lead to the demise of a mark tied to a dying technology. A trademark and technology that are combined in a product or service also can live together with mutual benefit. A strong trademark can bring longevity to the relationship, even when the proprietary aspects of the technology have expired. The classic example is a pharmaceutical product. When the patent for such a product expires, it can be made and sold by anyone. If, however, the product has strong brand equity under a well-known trademark, the expected decline in the sales of the original developer may be significantly less than would otherwise be the case.

(v) Copyrights. According to statute, copyrights have a very long economic life. In our experience, however, copyrighted works enjoy economic benefits for a much shorter period than their legal life, and most often they are not distributed evenly over that shorter life. There is such a variety of copyrighted works that it is impossible to make statements that will apply across the board. Economic life is dependent on the type of work and the manner in which it can be exploited.

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5. Melvin Simensky and Lanning G. Bryer, *The New Role of Intellectual Property in Commercial Transactions* (Hoboken NJ: John Wiley & Sons, Inc., 1994), p. 455.
6. Stuart Elliott, "The Famous Brands on Death Row," *New York Times* (November 7, 1993).

Our experience with copyrights of reference books has indicated that sales reach their height about one to two years after publication and decline thereafter in a pattern similar to that illustrated in Exhibit 21.4.

This is the product life cycle pattern referred to earlier, with a sharper growth period, a short peak, and a gradual decline. A literary work also can remain in relative obscurity for some period, be "discovered," and enjoy a rapid rise to popularity. The same can occur with musical works.

These events are impossible to predict, of course, but a number of considerations have merit in estimating the potential economic life of copyrighted works:

- The breadth of exploitation is important. Cartoon characters, as an example, have been widely exploited in greeting cards, on toys, as dolls, on clothing, and so on. It is common today for a story and characters in a book to be exploited in a wide variety of media as well as ancillary products.
- As with other intellectual property, versatility is very important, broadening the opportunities for exploitation.
- "Timelessness" is important. The motion pictures of Walt Disney are always playing to a new generation of delighted children. *Gone with the Wind* and *Casablanca* are again playing to a new (as well as old) generation of delighted adults. DVDs now offer these works for home viewing—in multiple languages.

(vi) Computer Software. If the software in question is itself a product, then some of these considerations are applicable. One must look through to the end purchaser/user and ask six questions:

1. Is the application somewhat narrow (e.g., an accounting system for a dental practice), or is it broad, such as a spreadsheet or word-processing system? (Versatility and a diverse market again.)
2. Is the system tied to a particular brand of hardware? This is especially important in the personal computer market.

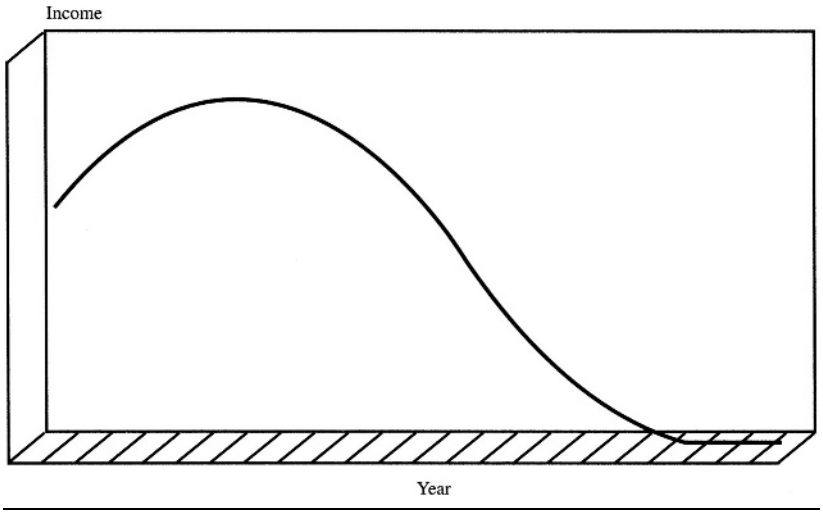

EXHIBIT 21.4 COPYRIGHT VALUE

3. Who is the competition? What is their size and expertise?
4. Have there been generations of this type of software that have been on the market and are gone?
5. What changes are going on in the business of the end users?
6. Is the software dependent on a particular operating system? If so, what is its degree of obsolescence?

For software that is in use within a business and may have been designed especially for it, some of these questions apply, in addition to three others:

1. Are the end users (operating departments within the company, in this case) satisfied with what the software produces?
2. How old is the system? Was it designed for some prior hardware and operating in an emulation mode?
3. Is the software efficient to use in terms of processing speed and effective use of storage and ease of data input?

These questions really are directed at measuring the degree of functional obsolescence in the software. The more functional obsolescence that is present, the shorter is the economic life.

Software for specific, ad hoc projects can have a life as short as 1 year, while "core" tasks can be addressed by software that lasts 10 or 12 years, with very little change.

(vii) Right of Publicity. Can there be any quantifiable economic life associated with the right of publicity? Yes, but it is difficult to measure. First, everyone has the right of publicity, but it has value only in rare cases. Of some assistance in the estimation of economic life is the fact that there must be some economic substance to the right. That is, the right must be exploitable. What are the factors to consider in estimating economic life?

- The expected life span of the personality is a factor. This is not completely limiting, but the economic benefits of exploitation diminish after death.
- The lifestyle of the personality. Very well-known people have become reclusive, thus diminishing, by their own choice, the potential for exploitation.
- The arena in which the personality achieved fame or notoriety may be a factor in its longevity. Careers and recognition periods vary in show business, politics, sports, being involved in a noteworthy event, and even in criminality.

21.4 SUMMARY

In this chapter we examined the risks of intellectual property exploitation and ways to quantify its economic life.

Armed with this understanding, we now turn to specific applications in licensing and joint venture activities.

CHAPTER 22

USE OF THE 25% RULE IN VALUING INTELLECTUAL PROPERTY

Robert Goldscheider, John Jarosz, and Carla Mulhern

22.1 INTRODUCTION

As the importance of intellectual property protection has grown, so has the sophistication of tools used to value it. Discounted cash flow,[1] capitalization of earnings,[2] return on investment,[3] Monte Carlo simulation,[4] and modified Black-Scholes option valuation methods[5] have been of great value. Nonetheless, the fairly simple 25% rule is over 40 years old, and its use continues. Richard Razgaitis has called it the "most famous heuristic, or rule of thumb, for licensing valuation."[6]

The rule suggests that the licensee pay a royalty rate equivalent to 25% of its expected profits for the product that incorporates the intellectual property at issue. The rule has been used primarily in valuing patents, but has been useful (and applied) in copyright, trademark, trade secret, and know-how contexts as well. The rule came into fairly common usage decades ago; times, of course, have changed. Questions have been raised on whether the factual underpinnings for the rule still exist (i.e., whether the rule has much positive strength) such that it can and should continue to be used as a valid pricing tool (i.e., whether the rule has much normative strength).

In this chapter, we will describe the rule, address some of the misconceptions about it, and test its factual underpinnings. To undertake the latter, we have examined the relationship between real-world royalty rates and real-world industry and company profit data. In general, we have found that the rule is a valuable tool (rough as it is), particularly when more complete data on incremental intellectual property benefits are

1. D. J. Neil, "Realistic Valuation of Your IP," *Les Nouvelles* 33, *The Journal of the Licensing Executives Society* (December 1997), p. 182; Stephen A. Degnan, "Using Financial Models to Get Royalty Rates," *Les Nouvelles* 33, *The Journal of the Licensing Executives Society* (June 1998), p. 59; Daniel Burns, "DCF Analyses in Determining Royalty," *Les Nouvelles* 30, *The Journal of the Licensing Executives Society* (September 1995), p. 165; Russell L. Parr and Patrick H. Sullivan, *Technology Licensing: Corporate Strategies for Maximizing Value* (Hoboken, NJ: John Wiley & Sons, 1996), pp. 233–246; Richard Razgaitis, *Early-Stage Technologies: Valuation and Pricing* (Hoboken, NJ: John Wiley & Sons, 1999), pp. 121–158.
2. Robert Reilly and Robert Schweihs, *Valuing Intangible Assets* (New York: McGraw-Hill, 1999), pp. 159–166.
3. Par and Sullivan, *Technology Licensing*, pp. 223–233.
4. V. Walt Bratic et al., "Monte Carlo Analyses Aid Negotiation," *Les Nouvelles* 47, *The Journal of the Licensing Executives Society* (June 1998); Razgaitis, *Early-Stage Technologies*, pp. 160–177.
5. Nir Kossovsky and Alex Arrow, "TRRU™ Metrics: Measuring the Value and Risk of Intangible Assets," *Les Nouvelles* 35, *The Journal of the Licensing Executives Society* (September 2000), p. 139; F. Peter Boer, *The Valuation of Technology: Business and Financial Issues in R&D* (Hoboken, NJ: John Wiley & Sons, 1999), pp. 302–306.
6. Razgaitis, *Early-Stage Technologies*, p. 96.

unavailable. The rule continues to have a fair degree of both "positive" and "normative" strength.

22.2 HISTORY OF THE RULE

According to some sources, the 25% rule was formally developed decades ago by one of the authors: Robert Goldscheider.[7] Goldscheider did, in fact, undertake an empirical study of a series of commercial licenses in the late 1950s.[8] This involved one of his clients, the Swiss subsidiary of a large American company, with 18 licensees around the world, each having an exclusive territory. The term of each of these licenses was for three years, with the expectation of renewals if things continued to go well. Thus, if any licensee "turned sour," it could be replaced promptly. In fact, however, even though all of them faced strong competition, they were either first or second in sales volume, and probably profitability, in their respective markets. These licenses therefore constituted the proverbial win-win situation. In those licenses, the intellectual property rights transferred included a portfolio of valuable patents, a continual flow of know-how, trademarks developed by the licensor, and copyrighted marketing and product description materials. The licensees tended to generate profits of approximately 20% of sales, on which they paid royalties of 5% of sales. Thus, the royalty rates were found to be 25% of the licensee's profits on products embodying the patented technology.[9]

Goldscheider first wrote about the rule in 1971.[10] He noted, however, that it had been utilized in some form by valuation experts prior to that.[11] For example, in 1958, Albert S. Davis, the general counsel of Research Corporation, the pioneer company in licensing university-generated technology, wrote: "If the patents protect the Licensee from competition and appear to be valid, the royalty should represent about 25% of the anticipated profit for the use of the patents."[12]

A form of the rule, however, existed decades before that. In 1938, the Sixth Circuit Court of Appeals, in struggling with the problem of determining a reasonable royalty, heard expert testimony to the effect that "ordinarily royalty rights to the inventor should bear a certain proportion to the profits made by the manufacturer and that the inventor was entitled to a 'proportion ranging from probably ten percent of the net profits to as high as thirty percent,' which should be graduated by the competitive situation."[13] Regardless of its origins and author(s), the concept has aided intellectual property valuators for many years.

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7. See, e.g., Richard S. Toikka, "In Patent Infringement Cases, the 25 Percent Rule Offers a Simpler Way to Calculate Reasonable Royalties. After Kumho Tire, Chances Are the Rule Faces Challenges to Its Daubert Reliability," *Legal Times* (August 16, 1999), p. 34.
8. Robert Goldscheider, "Litigation Backgrounder for Licensing," *Les Nouvelles* 29 (March 1994), p.20, 25; Robert Goldscheider, "Royalties as Measure of Damages," *Les Nouvelles* 31 (September 1996), pp. 115, 119.
9. Robert Goldscheider, *Technology Management: Law/Tactics/Forms* (New York: Clark Boardman, 1991), section 10.04.
10. Robert Goldscheider and James T. Marshall, "The Art of Licensing—From the Consultant's Point of View," *The Law and Business of Licensing* 2 (1980), p. 645.
11. Goldscheider, *Technology Management.*
12. Albert S. Davis, Jr., "Basic Factors to Be Considered in Fixing Royalties," *Patent Licensing*, Practicing Law Institute (1958).
13. *Horvath v. McCord Radiator and Mfg. Co. et al.,* 100 F.2d 326, 335 (6th Cir. 1938).

22.3 EXPLANATION OF THE RULE

In its pure form, the rule is as follows. An estimate is made of the licensee's expected profits for the product that embodies the intellectual property at issue. Those profits are divided by the expected net sales over that same period to arrive at a profit rate. That resulting profit rate, say 16%, then is multiplied by 25% to arrive at a running royalty rate. In this example, the resulting royalty rate would be 4%. Going forward (or calculating backward, in the case of litigation), the 4% royalty rate is applied to net sales to arrive at royalty payments due to the intellectual property owner. The licensee/user receives access to the intellectual property, yet the price (i.e., royalty) it pays still will allow it to generate positive product returns.

The theory underlying this *rule of thumb* is that the licensor and licensee should share in the profitability of products embodying the patented technology. The a priori assumption is that the licensee should retain a majority (e.g., 75%) of the profits because it has undertaken substantial development, operational, and commercialization risks, contributed other technology/intellectual property, and/or brought to bear its own development, operational, and commercialization contributions.

Focus of the rule is placed on the *licensee's* profits because it is the licensee that will be using the intellectual property.[14] The value of intellectual property is, for the most part, dependent on factors specific to the user (e.g., organizational infrastructure).[15] Intellectual property, like any other asset, derives its value from the use to which it will be put.[16]

Focus also is placed on *expected* profits because the license negotiation is meant to cover forthcoming and ongoing use of the intellectual property.[17] It is the expected benefits from use of the intellectual property that will form the basis for the licensee's payment of an access fee. Past, or sunk, costs typically should be ignored because a decision is being made about the future.[18] That is, what going-forward price results in the product being a sound investment? Any product in which the projected marginal benefits exceed the projected marginal costs should be undertaken.

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14. In the reasonable royalty determination in *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, both sides' experts focused on the patent holder's profit rate. The court took exception, noting that defendants' profits were a "more realistic and reliable estimation of profits which were earned to [the plaintiff] by the infringement since they are derived from the actual sale of [the infringing product]." *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cir. 748, 767 (1999). The court noted that a variety of federal courts held the same, citing *Mahurkar v. C. R. Bard., Inc., Davol Inc.,* and *Bard Access System, Inc.,* 79 F.3d 1572, 1580 (Fed. Cir. 1996) (district court did not err in calculating portion of award when it initially used infringer's profit rate); *TWM Manufacturing Co., Inc. v. Dura Corp. and Kidde, Inc.,* 789 F. 2d 895, 899 (Fed. Cir. 1986) (affirming district court's computation of damages based on infringer's profits); *Trans-World Manufacturing Corp. v. Al Nyman & Sons, Inc. and Al-Site Corporation*, 750 F. 2d 1552, 1568 (among factors considered in determining reasonable royalty was the infringer's anticipated profit from the invention's use and evidence of infringer's actual profits probative of anticipated profit).

15. Baruch Lev, "Rethinking Accounting," *Financial Executive Online* (March/April 2002), www.fei.org/maggable/articles/3-4-2002.coverstory.cfm.

16. In some circumstances, the *licensor's* profits may provide some guidance. That is, those profits may, in part, reflect his or her appetite for a license, and those profits may serve as a surrogate for missing or unknown licensee profits.

17. Razgaitis, *Early-Stage Technologies*, p. 108. *Fonar Corporation and Dr. Raymond V. Damadian v. General Electric Company and Drucker & Genuth, MDs, P.C. d/b/a South Shore Imaging Associates*, 107 F. 3d 1543 (Fed. Cir. 1997). *Hanson v. Alpine Valley Ski Area, Inc.,* 718 F. 2d 1075 (Fed. Cir. 1983).

18. Richard Brealey and Stewart C. Myers, *Principles of Corporate Finance*, sixth ed. (New York: McGraw-Hill, 2000), p. 123.

Focus is placed on *long-run* profits because access to intellectual property often will afford the user more than just immediate benefits.[19] Focusing on a single month or single year typically will not properly represent the forthcoming and ongoing benefits of the intellectual property. Often some period of time is needed for a new company or new product to obtain its operational efficiencies and a steady state. Furthermore, in order to evaluate the economic returns to the product properly, up-front investments often need to be amortized over the economic life of a product (not just its starting years).

Finally, the rule places focus on *fully loaded* profits because they measure the (accounting) returns on a product. Gross profits represent the difference between revenues and manufacturing costs. Gross profits, however, do not account for all of the operating expenses associated with product activity. Those costs include marketing and selling, general and administrative, and research and development expenses. Some of those costs are associated directly with product activity; others are common across product lines.

"Fully loaded" profits account for the fact that a variety of nonmanufacturing overhead expenses are undertaken to support the product activity, even though they may not be linked directly to certain volume or activity levels. Such costs often are driven by product activity. Failure to take into account these operating expenses may lead to an overstatement of the returns associated with the sales of a product.

According to Smith and Parr:

> Omission of any of these [overhead] expenses overstates the amount of economic benefits that can be allocated to the intellectual property. In a comparison of two items of intellectual property, the property that generates sales, captures market share, and grows, while using less selling and/or support efforts, is more valuable than the one that requires extensive advertising, sales personnel, and administrative support. The economic benefits generated by the property are most accurately measured after considering these expenses.[20]

According to Parr:

> The operating profit level, after consideration of the nonmanufacturing operating expenses, is a far more accurate determinant of the contribution of the intellectual property. The royalty for specific intellectual property must reflect the industry and economic environment in which the property is used. Some environments are competitive and require a lot of support costs which reduce net profits. Intellectual property that is used in this type of environment is not as valuable as intellectual property in a high-profit environment where fewer support costs are required. A proper royalty must reflect this aspect of the economic environment in which it is to be used. A royalty based on gross profits alone cannot reflect this reality.[21]

Fully loaded profits may refer either to pretax profits or to operating profits. Pretax profits are calculated as revenues minus: (1) cost of goods, (2) nonmanufacturing overhead expenses, and (3) other income and expenses. The historical relationships underlying the 25% rule, however, have in fact been between royalty rates and *operating profits*.[22] The latter is revenues minus: (1) cost of goods sold and (2) nonmanufacturing overhead. Other income and expenses are not subtracted out. In many cases, these two measures of profit are quite similar; in other cases, they are not. Given that the value of intellectual property is independent of the way in which a firm (or project) is financed,[23] from a theoretical point of view, the operating profit margin is the correct measure to use.

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19. Razgaitis, *Early-Stage Technologies*.
20. Gordon V. Smith and Russell L. Parr, *Valuation of Intellectual Property and Intangible Assets*, second ed. (Hoboken, NJ: John Wiley & Sons, Inc., 1994), p. 362.
21. Russell L. Parr, *Intellectual Property Infringement Damages*, second ed. (Hoboken, NJ: John Wiley & Sons, 2000), pp. 170–171.
22. Goldscheider, *Technology Management*, section 10.04; Razgaitis, *Early-Stage Technologies*, p. 103.
23. Brealey and Myers, *Principles of Corporate Finance*, Ch. 2, 6.

Suppose that firm A and firm B each have one piece of identical intellectual property and each manufactures and sells one product that embodies that intellectual property. The only difference between the firms is that firm A is heavily financed by debt and firm B is not. Firm A then would have significant interest expenses to deduct from its operating profits, resulting in pretax profit levels below operating profit levels. Firm B does not have any interest expense to deduct. Thus, on an operating profits basis, firm A and firm B would have equivalent profit margins; but, on a pretax basis, firm B would be considerably more profitable. Application of the 25% rule to operating profits would result in the same royalty rate in the case of firm A and firm B, whereas application of the rule to pretax profits would result in a lower royalty rate for firm A. Since the underlying intellectual property and the products embodying it are identical for both firms, one would expect to obtain the same resulting royalty rate. Thus, application of the rule to operating profits would yield the appropriate results.

22.4 ILLUSTRATION OF THE RULE

Intellectual Property, like any asset, can be (and is) valued using three sets of tools. Often they are referred to as the income approach, the market approach, and the cost approach.[24] The income approach focuses on the returns generated by the user owing to the asset at issue. The market approach focuses on the terms of technology transfers covering comparable assets. The cost approach focuses on the ability (and cost) to develop an alternative asset that generates the same benefits.

The 25% rule is a form of the income approach. It is particularly useful when the intellectual property at issue constitutes a significant portion of product value and/or the incremental benefits of the intellectual property are otherwise difficult to measure.

Intellectual property often is priced based on the enhanced revenues and/or reduced costs that it generates versus the next best alternative.[25] The extent of that excess (or incremental value), holding all else constant, may form the upper bound for the appropriate price.[26]

The 25% rule can be (and is) applied when the licensee reports product line revenue and operating profit data for the product encompassing the intellectual property. It need not be the case that the intellectual property at issue be the only feature driving product value. (In fact, underlying the rule is the understanding that a variety of factors drive such value.) That is why only a portion of the profits—25%—is paid in a license fee. And that is why the appropriate profit split may be much less than 25% of product profit.

The rule also can be (and is) applied when the licensee does not report profits at the operating profit level. (In fact, there are very few instances in which firms report *product* profits at such a level.) As long as product revenues and costs of goods sold are reported (i.e., gross margins are available), the accountant or economist can (and does) allocate common (or nonmanufacturing overhead) costs to the product line in order to derive operating profits. Exhibit 22.1 shows how the rule is applied.

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24. Shannon P. Pratt et al., *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, Third ed. (New York: McGraw-Hill, 1996), pp. 149–285; Shannon P. Pratt et al., *Valuing Small Businesses and Professional Practices*, Second ed. (New York: McGraw-Hill, 1993), pp. 507–524; Smith and Parr, *Valuation of Intellectual Property and Intangible Assets*, pp. 127–136; Reilly and Schweihs, *Valuing Intangible Assets*, pp. 118–203.
25. Paul E. Schaafsma, "An Economic Overview of Patents," *Journal of the Patent Trademark Office Society* 79 (April 1997), pp. 251, 253.
26. Jon Paulsen, "Determining Damages for Infringements," *Les Nouvelles* 32 (June 1997), p. 64.

	No Patent	Revenue-Enhancing Patent	25% Rule
Revenues	$100	$110	
Cost of Sales	$ 40	$ 40	
Gross Margin	$ 60	$ 70	
Operating Expenses	$ 30	$ 30	
Operating Profits	$ 30	$ 40	($40 × 25%)/ $110 = 9.1%

EXHIBIT 22.1 25% RULE ILLUSTRATION—REVENUE SIDE

A patent may enhance or improve product revenues through increased prices (although that may occur with a reduction in volume[27]) or through increased volume. The second column in Exhibit 22.1 illustrates the impact of a revenue-enhancing patent. Applying the 25% rule to the expected operating profits results in a royalty rate of 9.1%.

A patent also may reduce product costs. Exhibit 22.2 illustrates that by applying the 25% rule to such expected operating profits results in a royalty rate of 10%.

Valuators (and courts) that use the 25% rule occasionally *split* the expected or actual cost (i.e., incremental) savings associated with the intellectual property at issue.[28] According to Degnan and Horton's survey of licensing organizations that base a royalty payment on projected cost savings, almost all of them provide for the licensee paying 50% or less of the projected savings.[29] The apparent reasoning is that such incremental benefits should be shared.

Splitting the cost savings by 75/25, however, may not be consistent with the 25% rule. In Exhibit 22.2, the incremental (or additional) cost savings are $10. Splitting that amount ($10) by 25% results in a running royalty rate of 2.5% ($10 × 25%/$100), which is one-sixteenth of the new "product" profits rather than one-quarter. Applying the rule to *incremental* savings (or benefits) results in a running royalty that is lower than that dictated by the 25% rule. It may undercompensate the intellectual property owner. The 25% rule, in its pure sense, should be applied to fully loaded operating profits, not to already computed incremental benefits.

	No Patent	Cost-Reducing Patent	25%
Revenues	$100	$100	
Cost of Sales	$ 40	$ 30	
Gross Margin	$ 60	$ 70	
Operating Expenses	$ 30	$ 30	
Operating Profits	$ 30	$ 40	($40 ×25%)/ $100 =10%

EXHIBIT 22.2 25% RULE ILLUSTRATION—COST SIDE

27. Paul A. Samuelson and William D. Nordhaus, *Economics*, 17th ed. (New York: McGraw-Hill, 2001), p. 47. *Crystal Semiconductor v. Tritech Microelectronics International, Inc.,* 246 F. 3d 1336 (Fed. Cir. 2001).

28. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cir. 748, 764–765 (1999). *Ajinomoto Inc. v. Archer-Daniels-Midland Co.,* No. 95-218-SLR, 1998 U.S. Dist. LEXIS 3833 (D. Del. March 13, 1998). *Tights, Inc. v. Kayser-Roth Corp.,* 442 F. Supp. 159 (M.D.N.C. 1977). *Dow Chemical Co. v. United States*, 226 F. 3d 1334 (Fed. Cir. 2000). Razgaitis, *Early-Stage Technologies*, pp. 117–118.

29. Stephen A. Degnan and Corwin Horton, "A Survey of Licensed Royalties," *Les Nouvelles* 32 (June 1997), pp. 91, 95.

Several courts have (implicitly) recognized the problem of splitting incremental benefits. In *Ajinomoto*, the district court wrote:

> Although the "licensing rule of thumb" dictates that only one-quarter to one-third of the benefit should go to the owner of the technology. . . given [defendant's] relatively low production costs and its belief that the sale of [the product] would increase [convoyed sales], the court concludes that [defendant] would have been willing to share all of the benefit with [plaintiff] and that [plaintiff] would have settled for nothing less.[30]

Furthermore, in *Odetics*, the Federal Circuit wrote that "one expects [an infringer] would pay as much as it would cost to shift to a non-infringing product."[31] And in *Grain Processing*, the Federal Circuit adopted the lower court's reasoning that an infringer "would not have paid more than a 3% royalty rate. The court reasoned that this rate would reflect the cost difference between [infringement and noninfringement]."[32]

To the extent that incremental benefits (i.e., cost savings) already have been calculated, any profit split applied to those may not be consistent with the 25% rule. In theory, the licensee should be willing to accept a royalty that is close to 100% (not 25%) of the cost savings.

22.5 APPLICATION OF THE RULE

The 25% rule is used in actual licensing settings and litigation settings. Over the past three decades, a variety of commentators have noted its widespread use.[33] In their survey of licensing executives published in 1997, Degnan and Horton found that roughly 25% (as a sheer coincidence) of licensing organizations used the 25% rule as a starting point in negotiations.[34] They also found that roughly 50% of the organizations used a "profit-sharing analysis" (of which the 25% rule is a variant) in determining royalties.[35]

A dramatic employment of the rule occurred in the early 1990s in the course of negotiations between two major petrochemical companies, respectively referred to as A and B. A was a leading manufacturer of a basic polymer product (X), with annual sales of over $1 billion. Its process (P-1) required the purchase from B of an intermediate compound (Y) in annual volumes of over $400 million. A owned a patent on its P-1 process to manufacture X, which would expire in seven years.

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30. *Ajinomoto Inc. v. Archer-Daniels-Midland Co.,* at 44, n. 46.
31. *Odetics, Inc. v. Storage Technology Corp.,* 185 F. 3d 1259, 1261 (Fed. Cir. 1999).
32. *Grain Processing Corp. v. American Maize-Products Co.,* 185 F. 3d 1341, 1345 (Fed. Cir. 1999).
33. Macus B. Finnegan and Herbert H. Mintz, "Determination of a Reasonable Royalty in Negotiating a License Agreement: Practical Pricing for Successful Technology Transfer," *Licensing Law and Business Report* 1 (June–July 1978), pp. 1, 19. Lawrence Gilbert, "Establishing a University Program," *The Law and Business of Licensing* 1 (1980), pp. 506.267. Robert Goldscheider and James T. Marshall, "The Art of Licensing—From the Consultants' Point of View," *The Law and Business of Licensing* 2 (1980), p. 645. H. A. Hashbarger, "Maximizing Profits as a Licensee," *The Law and Business of Licensing* 2 (1980), p. 637. Alan C. Rose, "Licensing a 'Package' Lawfully in the Antitrust Climate of 1972," *The Law and Business of Licensing* 1 (1980), p. 267. Yoshio Matsunaga, "Determining Reasonable Royalty Rates," *The Law and Business of Licensing* (December 1983), pp. 216, 218. "The Basics of Licensing: Including International License Negotiating Thesaurus," *Les Nouvelles the Journal of Licensing Executives Society* 13 (1988). Edward P. White, *Licensing: A Strategy for Profits* (KEW Licensing Press 1990), p. 104. Martin S. Landis, "Pricing and Presenting Licensed Technology," *Journal of Proprietary Rights* 3 (August 1991), pp. 18, 20–21. William Marshall Lee, "Determining Reasonable Royalty," *Les Nouvelles, The Journal of the Licensing Executive Society* (September 1992), p. 124. David C. Munsion, "Licensing Technology: A Financial Look at the Negotiational Process, "*JPTOS* (*Journal of the Patent and Trade Mark Office Society*) 78 (January 1996), pp. 31, 42 n. 21. Munsion, "Figuring the Dollars in Negotiations," *Les Nouvelles* 33 (June 1998): 88. Reilly and Schweihs, *Valuing Intangible Assets*, pp. 193–194, 503.
34. Degnan and Horton, "A Survey of Licensed Royalties," p. 92.
35. Ibid.

A developed a new process to make X (P-2) to which it decided to switch all its production of the polymer concerned, essentially for cost reasons, but also because P-2 was more flexible in producing different grades of X. P-2 did not involve the need to purchase Y from B. Rather than simply abandon P-1, however, A decided to offer B the opportunity to become the exclusive worldwide licensee of P-1. The argument was that such a license could be profitable to B because it was a basic producer of Y (which A had been purchasing at a price containing a profit to B), and B thus could manufacture X on a cost-effective basis. Another attraction of such a license would be that it could compensate B for the loss of its sales of Y to A.

B was interested to take such a license to P-1 and offered to pay a 5% running royalty on its sales of polymer made in accordance with P-1. A decided to test the reasonableness of this offer by applying the 25% rule, a good portion of which analysis could employ 20-20 hindsight. A understood the market for X, past and present, and had what it considered to be realistic projections for the future. A had made such a study because it intended to remain in the market for X, utilizing P-2. A also was able to calculate pro forma profitability to B by subtracting B's margin on its sales of Y to A for use in P-1.

This analysis revealed that B should be able to operate as a licensee under A's P-1 patent at an operating profit of 44%. A shared its fully documented analysis with B and asked: "Please tell us if we are wrong." If not, A would expect to receive an 11% royalty based on B's sales of X using A's patented P-1 process, based on the 25% rule, rather than the 5% that was offered.

Following study of A's work product, B (somewhat surprised and reluctantly) agreed with A's conclusion. B accepted these terms because B still would make a 33% operating profit under the license, which was higher than B's normal corporate operating profit rate. Over the remaining life of its P-1 patent, this additional 6% royalty amounted to added profit, in fact, of several hundred million dollars to A.

In *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, the U.S. Court of Claims employed a two-step approach to determining a litigated reasonable royalty.[36] The first step involved an estimation of an initial or "baseline" rate. The second step entailed an adjustment upward or downward depending on the relative bargaining strengths of the two parties with respect to each of the 15 factors described in *Georgia-Pacific Corp. v. United States Plywood Corporation*.[37]

The *Standard Manufacturing* court found the application of the 25% rule to be an appropriate method for determining the baseline royalty rate. And in support of its use of the 25% rule, it cited the considerable practical experience of the defendant's expert, Robert Goldscheider, with the rule.[38] The court also noted that a number of other federal courts had recognized that the 25% rule is a "rule of thumb" typical in the licensing field.[39] For example, the 25% rule has been useful in situations where a party analyzes

36. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cir. 748 (1999 U.S. Claims LEXIS 11).
37. *Georgia-Pacific Corp. v. United States Plywood Corporation*, 318 F. Supp. 1116 (S.D.N.Y. 1970), *modified and aff'd*, 446 F.2d 295 (2d Cir. 1971).
38. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*.
39. *Ajinomoto Inc. v. Archer-Daniels-Midland Co.,* at 052 n. 46. *W. L. Gore and Associates, Inc. v. International Medical Prosthetics Research Associates, Inc.,* 16 USPQ 2d 1241 (D. Ariz. 1990); *Fonar Corporation and Dr. Raymond V. Damadian v. General Electric Company and Drucker & Genuth, MDs, P.C. d/b/a South Shore Imaging Associates. See also* Donald S. Chisum, *Chisum on Patents* (New York: Matthew Bender, 1993, 1997 supp.), 7 § 20-03[4] [iv], 20-188, 20-189. *Fromson v. Western Litho Plate & Supply Co.,* 853 F. 2d 1568 (Fed. Cir. 1988).

its own intellectual property for management or tax reasons, or as part of a merger, acquisition, or divestiture. The rule has been employed as follows:

- The remaining economic life of the property being valued, which may be shorter than the remaining legal life of any patents that may be part of the analysis, is estimated.
- The operating profit rate expected during each of such years is projected, and 25% (or another rate considered appropriate in accordance with the rule) is applied to each of the annual figures.
- A discounted cash flow analysis is performed, using an appropriate discount rate to convert future flows into a current year lump-sum amount.

The rationale for this appraisal methodology is that the plus or minus 25% apportionment is the price of a reasonable royalty that the appraising party would be willing to pay for a license for this property, at that point in time, assuming that it *did not* own it.

The rule, used in litigation or nonlitigation settings, provides a fairly rough tool to be augmented by a more complete royalty analysis. The precise "split" of profits should be adjusted up or down depending on the circumstances of each case and relative bargaining positions of the two parties.[40] If a licensor comes to the bargaining table armed with a relatively strong arsenal of assets, it may be entitled to 25%, or perhaps more, of the pie. Correspondingly, a weak arsenal of assets supports a lower split. In determining the appropriate split of profits, the factors established in the *Georgia-Pacific* case are quite helpful.[41] In fact, many of the courts that have used the rule in litigation have done so in the context of evaluating *Georgia-Pacific* factor 13—"the portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvement added by the infringer."

22.6 JUSTIFICATION FOR THE RULE

Based on historical observations, the rule provides useful guidance for how a licensor and licensee should consider apportioning the benefits flowing from use of the intellectual property. Somewhat untenable (and unrealistic) is guidance that either the licensor or licensee is entitled to all of the returns. No bargain would be reached. Though a 50-50 starting split has a ring of a win-win situation, in fact, the evidence suggests otherwise.

Richard Razgaitis has identified six reasons that a 25/75 (starting) split makes sense.[42]

- "That's the way it is." Numerous licensors and licensees have agreed to a 25/75 split. It is, according to Razgaitis, the industry norm.
- Typically 75% of the work needed to develop and commercialize a product must be done by the licensee.
- "He who has the gold makes the rules." Licensees have considerable leverage because of the numerous investment alternatives open to them.

40. Goldscheider, "Litigation Backgrounder for Licensing."

41. *Georgia-Pacific Corp. v. United States Plywood Corporation*. The court set forth 15 factors that should be considered in determining a reasonable royalty. *See also* Degnan, "Using Financial Models to Get Royalty Rates," pp. 59, 60.

42. Razgaitis, *Early-Stage Technologies*, pp. 99–102.

- A three-times payback ratio is common and can be obtained by a licensee retaining 75% of the return by investing 25%.
- Technology is the first of the four required steps of commercialization. The others are making the product manufacturable, actually manufacturing it, and selling it.
- The ratio of research and development to profits is often in the range of 25 to 33%.

22.7 CRITICISMS OF THE RULE

Despite (or perhaps because of) its widespread use, the 25% rule has been criticized in several ways. First, it has been characterized as a "crude tool" and as "arbitrary." According to Paul Schaafsma:

> A typical "rule of thumb"…is for the licensor to command 25% of the profit. While this…attempts to link the value of the patent to the profitability of commercial exploitation, because it does not relate to the value and degree to which the patent can exclude substitute products and therefore command a patent profit, it is little better than [an] "industry norm."…Patented products add to economic profit the patent profit tied into the ability of the patent to further exclude substitutes….the portion of the total profit can vary greatly even within a given industry. Adding these values together, and multiplying by an arbitrary fraction to derive the value of a patent is an exercise in arbitrary business analysis.[43]

According to Mark Berkman:

> [The 25% rule does] not take into account specific circumstances that will determine the actual value of the patent at issue. No consideration is given to the number or value of economic alternatives or the incremental value of using the patented technology over other viable alternatives.[44]

And Richard Toikka has questioned whether, in litigation contexts, the rule is reliable under *Daubert v. Merrill Dow Pharmaceuticals*[45] and *Kumho Tire Co. v. Carmichael*.[46]

The rule, however, is one of many tools. Ultimate royalty rates often are higher or lower than 25% of fully loaded product profits, depending on a host of quantitative and qualitative factors that can and should affect a negotiation (or litigation). Even critics of the rule have conceded that, despite its "crudeness," it retains "widespread endorsement and use."[47] Part of the reasons for its use is due to its simplicity and part is due to self-fulfilling prophecy. (Because of its simplicity, it has become a norm and, because it is a norm, it is used over and over again.) Moreover, the rule is not intended to be used in isolation. A variety of other tools should be employed in any valuation assignment.

A second criticism is that the rule is "indefinite." That is, should 25% be applied to gross profits, operating profits, or some other measure of profits? According to William Lee:

> The "25% rule" is sometimes a little indeterminate as to whether it refers to 25% of net profit or 25% of gross profit (if you represent the prospective licensor, then of course you apply the 25% against anticipated gross profit; if you represent the prospective licensee, you contend that the 25% applies to net profit!). Note that the indefiniteness as to whether the "25% rule" speaks to net profit or gross profit brings it somewhat in line with the rule of thumb of 1/3 to 1/4 of profit as a reasonable royalty as expressed in [some publications].[48]

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43. Schaafsma, "An Economic Overview of Patents," pp. 251–252.
44. Mark Berkman, "Valuing Intellectual Property Assets for Licensing Transactions," *Licensing Journal* 22 (April 2002), p. 16.
45. 509 U.S. 579 (1993).
46. 526 U.S. 137 (1999).
47. Schaafsma, "An Economic Overview of Patents," p. 252.
48. Russell L. Parr, *Intellectual Property Infringement Damages: A Litigation Support Handbook* (Hoboken, NJ: John Wiley & Sons, 1993), p. 171.

In fact, there is no indefiniteness. The rule is based on historical observations of the relationships between *royalty rates and operating margins*.[49] That is, rates often are 25% of *operating* margins. And it is anticipated operating margins, according to the rule, against which the profit split figure should be applied. Applying it to another level of profits may be valid and useful in certain contexts, but such an application is not grounded in the concepts and facts surrounding the 25% rule.

In a third criticism, some analysts believe that there is no indefiniteness and that, in fact, 25% is meant to be applied to a licensee's *gross* profits.[50] (Gross profits, again, represent the difference between revenues and cost of goods sold. No deduction for nonmanufacturing overhead costs is included.) These analysts criticize that application because gross margin ignores a host of other relevant costs. They have concluded that although the 25% rule is "simple," "popular," and "easy to understand," it "should be avoided."[51] Focusing on gross profits ignores "too many important factors."[52]

This criticism is specious, however, because the 25% rule is an allocation (or splitting) of *operating* profits. Explicit consideration is given to all of the costs, including nonmanufacturing overhead, that are needed to support a product or are driven by the product. The rule is *not* a split of gross profits.

Furthermore, in their survey of licensing executives, Degnan and Horton found that royalty rates tend to be 10 to 15% of *gross profits*.[53] In other words, royalty rates divided by *gross* margin are substantially lower than 25%.

In *P&G Co. v. Paragon Trade Brands*,[54] the court cited testimony that the rule "is not really even useful as a general guide for deriving an appropriate royalty rate."[55] In part because of that, the court wrote that it "will consider the [25%] Rule-of-Thumb analysis in determining the royalty rate, [but] this approach will not receive substantial weight."[56] Nonetheless, in its final royalty analysis, the court did write that "the [25%] 'Rule-of-Thumb' analysis provides an additional confirmation of the reasonableness of a royalty rate of 2.0%."[57]

In another criticism, it has been asserted that the rule is inappropriate to use in those instances in which the intellectual property at issue represents a small fraction of the value residing in a product. The authors are sympathetic to the criticism. However, both the concepts underlying the rule and the empirics supporting it recognize the rule's flexibility. The precise split should be adjusted up or down depending on a host of factors, including the relative contribution of the intellectual property at issue. Relatively minor intellectual property often should (and does) command a split of profits lower than relatively important intellectual property.

A final criticism of the rule is that it provides a rough or imprecise measure of incremental benefits. A complete (and accurate) incremental analysis is preferred. None of the authors disagrees. The rule often is an adjunct to other valuation methods, and it is particularly useful when helpful data on incremental value are unavailable or limited.

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49. Goldscheider, "Litigation Backgrounder for Licensing."
50. Parr, *Intellectual Property Infringement Damages*, (Hoboken, NJ: John Wiley & Sons, 1993) p. 169; Berkman, "Valuing Intellectual Property Assets for Licensing Transactions." Gregory J. Battersby and Charles W. Grimes, *Licensing Royalty Rates* (2002), pp. 4–5.
51. Parr, *Intellectual Property Infringement Damages* (Hoboken, NJ: John Wiley & Sons, 1993).
52. Ibid., pp. 169–171.
53. Degnan and Horton, "A Survey of Licensed Royalties," p. 95.
54. *The Procter & Gamble Company v. Paragon Trade Brands*, 989 F. Supp. 547 (D. Del. 1997).
55. Ibid., 547, 595.
56. Ibid.
57. Ibid., 547, 596. The expert's "rule-of-thumb" analysis obtained a range of 1.975% to 2.6%.

The 25% rule is a starting point to apportioning the profits. William Lee, both a critic and proponent of the rule, has noted:

> In most instances the rule-of-thumb of approximately 1/4 to 1/3 of the licensee's anticipated profit to go to the licensor is a good starting place for negotiations. Whether or not anticipated profit is expressed during negotiations, the effect of royalty on profitability should certainly be in the minds of the negotiators on both sides. My experience, and apparently the experience of others, tends to show that most successful licensing arrangements end with royalty levels in this range. However, like all rules-of-thumb, circumstances alter cases.[58]

22.8 EMPIRICAL TEST OF THE RULE

To test the validity of the 25% rule, we attempted to compare royalty rates from actual licensing transactions with the expected long-run profit margins of the products that embody the subject intellectual property. We were able to gather royalty rate data from thousands of actual licensing transactions.[59] Because of the confidentiality of these licenses, along with a lack of access to expected (or actual) product profit rates, we were unable to undertake a direct comparison of product profit and royalty rates. Therefore, we examined profit data for two surrogates: licensee profits and "successful" licensee profits.

With the first proxy, we examined the profits for those firms in each industry that were involved in licensing transactions. We used those profit rates as a proxy for expected long-run product profits.

With the second proxy, we examined "successful" licensee profits. We defined as "successful" those licensees in the top quartile in their respective industries in terms of profitability. Presumably, these may more accurately reflect the kind of profit rates that are generated by products that embody valuable intellectual property.

For both proxies, we compared median (or middle of the range) industry royalty rates to weighted average profit rates. Although we considered comparing median royalty rates to median profit rates, for some industries, median profit rates differed substantially from weighted average profit rates due, at least in part, to the presence of a significant number of small, start-up firms earning negative profit margins. Given that the negative margins earned by start-ups may not be indicative of expected long-run profits, we examined weighted average profit margins (which gives these negative profit margins relatively less weight).

(a) ROYALTY RATES. To obtain information regarding royalty rates observed in actual licensing transactions, we used information provided by RoyaltySource.com, a searchable database of intellectual property sale and licensing transactions, containing information spanning the late 1980s to the present. From RoyaltySource, we obtained summaries of all available licensing transactions involving 15 industries:

- Automotive
- Chemicals
- Computers
- Consumer Goods
- Electronics

58. Lee, "Determining Reasonable Royalty," p. 2073.

59. We were unable to gather (or evaluate) information from proposed transactions that were never consummated. Presumably, in those instances intellectual property sellers were asking for more than intellectual property buyers were willing to pay. We have no a priori reason to think, however, that exclusion of such "data" biases our results.

- Energy and Environment
- Food
- Health Care Products
- Internet
- Machines/Tools
- Media and Entertainment
- Pharmaceuticals and Biotechnology
- Semiconductors
- Software
- Telecom[60]

These licenses involved a variety of payment terms—lump sum, fee per unit, and running royalties on sales. For ease of comparison, we confined our analysis to the 1,533 licenses that involved running royalties on sales.[61]

Exhibit 22.3 shows, on an industry-by-industry basis, the information we obtained from RoyaltySource. We have reported minimum, maximum, and median royalty rates. The median royalty rate across all industries was 4.5%, although median rates ranged from a low of 2.8% to a high of 8.0%.

Industry	No. of Licenses	Minimum Royalty Rate (%)	Maximum Royalty Rate (%)	Median Royalty Rate (%)
Automotive	35	1.0	15.0	4.0
Chemicals	72	0.5	25.0	3.6
Computers	68	0.2	15.0	4.0
Consumer Goods	90	0.0	17.0	5.0
Electronics	132	0.5	15.0	4.0
Energy & Environment	86	0.5	20.0	5.0
Food	32	0.3	7.0	2.8
Healthcare Products	280	0.1	77.0	4.8
Internet	47	0.3	40.0	7.5
Machines/Tools	84	0.5	25.0	4.5
Media & Entertainment	19	2.0	50.0	8.0
Pharma & Biotech	328	0.1	40.0	5.1
Semiconductors	78	0.0	30.0	3.2
Software	119	0.0	70.0	6.8
Telecom	63	0.4	25.0	4.7
Total	1,533	0.0	77.0	4.5

EXHIBIT 22.3 LICENSED ROYALTY RATES (LATE 1980S–2000)

60. The RoyaltySource database tracks licensing transactions for other industries as well. The industry categories used here were developed by the authors and are somewhat different from the internal classification system used by RoyaltySource.

61. Data available to us from RoyaltySource.com did not allow us to easily convert lump-sum or the per unit royalties into royalties per dollar, which terms were needed for testing our hypothesis. As a result, we excluded those observations from our analysis. We have no a priori reason to think, however, that exclusion of such data biases our results.

Industry	No. of Companies	Weighted Average Operating Margin (%)
Automotive	100	5.0
Chemicals	126	11.1
Computers	459	6.9
Consumer Goods	544	11.0
Electronics	425	8.8
Energy & Environment	767	12.2
Food	240	7.3
Healthcare Products	433	14.8
Internet	781	−13.5
Machines/Tools	174	7.9
Media & Entertainment	360	10.6
Pharma & Biotech	534	16.4
Semiconductors	207	17.4
Software	534	18.8
Telecom	627	14.2
Total	6,309	10.4

EXHIBIT 22.4 INDUSTRY PROFIT RATES (1990–2000)

(b) INDUSTRY PROFITS. We obtained financial information for the 15 industries included in our analysis from Bloomberg. The Bloomberg database provided financial data for the period 1990 through 2000 for 6,309 companies included in the 15 industries under consideration. Exhibit 22.4 reports the average operating profit margin for each of the industries.

(c) LICENSEE PROFITS. Because total industry profits are not a particularly close match to royalty rates covering a limited number of companies, for our first analysis, we examined profitability data for only those companies that were identified as licensees in the licensing transactions database. Exhibit 22.5 reports weighted average operating profit margins for each of the industries.

(d) ROYALTY RATES AND LICENSEE PROFITS. A comparison of royalty rates and licensee profits provides some support for use of the 25% rule as a tool of analysis. Across all 15 industries, the median royalty rate as a percentage of average licensee operating profit margins, as shown in Exhibit 22.6, was 26.7%. Excluding the media and entertainment and Internet industries, the range among the remaining industries varies from 8.5% for semiconductors to 79.7% for the automotive industry.

In spite of the variation across industries, the majority of industries had ratios of royalty rates to licensee profit margins of 21 to 40%. Exhibit 22.7 shows a distribution of the ratios across industries.

(e) SUCCESSFUL LICENSEE PROFITS. We also examined profitability data for "successful licensees." We defined those to be licensees with profit rates in the top quartile for each industry. We used these profit rates as a further-refined surrogate for projected product profit rates.

Industry	No. of Companies	Licensee Weighted Average Operating Margin (%)
Automotive	4	6.3
Chemicals	6	11.6
Computers	20	8.0
Consumer Goods	23	16.2
Electronics	30	8.8
Energy & Environment	14	6.6
Food	6	7.9
Healthcare Products	80	17.8
Internet	14	1.0
Machines/Tools	8	9.4
Media & Entertainment	3	−304.5
Pharma & Biotech	76	25.4
Semiconductors	16	29.3
Software	19	33.2
Telecom	28	14.1
Total	347	15.9

EXHIBIT 22.5 LICENSEE PROFITS (1990–2000)

(f) ROYALTY RATES AND SUCCESSFUL LICENSEE PROFITS. A comparison of royalty rates and successful licensee profits also appears to provide some support for use of the 25% rule. As shown in Exhibit 22.8 across all industries, the median royalty rate as a percentage of average operating profits was 22.6%. Excluding the media and entertainment industry, for which only limited data were available, the ratios range from a low of 7.8% for the semiconductor industry to a high of 48.0% for the Internet industry.

Industry	Median Royalty Rate (%)	Average Operating Profits (%)	Royalty as % of Profit Rate
Automotive	5.0	6.3	79.7
Chemicals	3.0	11.6	25.9
Computers	2.8	8.0	34.4
Consumer Goods	5.0	16.2	30.8
Electronics	4.5	8.8	51.3
Energy & Environment	3.5	6.6	52.9
Food	2.3	7.9	28.7
Healthcare Products	4.0	17.8	22.4
Internet	5.0	1.0	492.6
Machines/Tools	3.4	9.4	35.8
Media & Entertainment	9.0	−304.5*	−3.0
Pharma & Biotech	4.5	24.5	17.7
Semiconductors	2.5	29.3	8.5
Software	7.5	33.2	22.6
Telecom	5.0	14.1	35.5
Total	4.3	15.9	26.7

*Fewer than 5 observations in data set.

EXHIBIT 22.6 ROYALTY RATES AND LICENSEE PROFITS

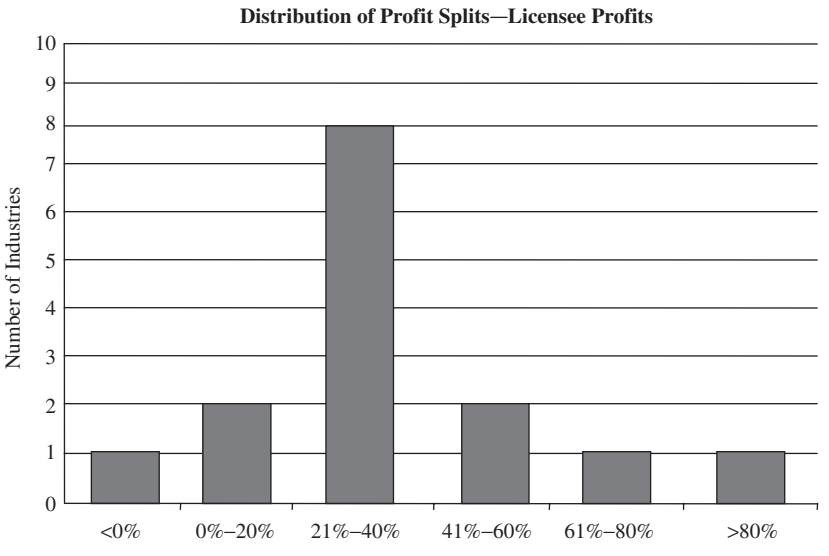

EXHIBIT 22.7 DISTRIBUTION OF PROFIT SPLITS—LICENSEE PROFITS

Exhibit 22.9 reports the ratio distribution across industries and shows that, again, the majority of industries have ratios of royalty rates to successful licensee profit margins in the 21 to 40% range.

	Median Royalty Rate (%)	Average Operating Profit (%)	Royalty as % of Profit Rate
Automotive	5.0	11.3	44.1
Chemicals	3.0	12.0	25.0
Computers	2.8	8.3	33.3
Consumer Goods	5.0	18.4	27.1
Electronics	4.5	13.1	34.3
Energy & Environment	3.5	9.2	38.1
Food	2.3	14.2	15.8
Healthcare Products	4.0	18.5	21.6
Internet	5.0	10.4	48.0
Machines/Tools	3.4	9.6	35.0
Media & Entertainment	9.0	−13.5*	−66.7
Pharma & Biotech	4.5	25.8	17.4
Semiconductors	2.5	31.9	7.8
Software	7.5	25.1	21.4
Telecom	5.0	14.5	34.5
Total	4.3	18.8	22.6

*Fewer than 5 observations in data set.

EXHIBIT 22.8 ROYALTY RATES AND SUCCESSFUL LICENSEE PROFITS

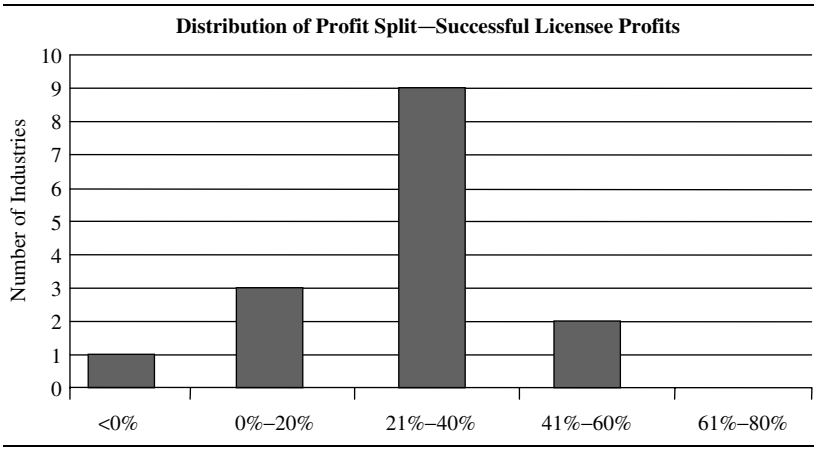

EXHIBIT 22.9 DISTRIBUTION OF PROFIT SPLIT—SUCCESSFUL LICENSEE PROFITS

22.9 CONCLUSIONS

An apportionment of 25% of a licensee's expected profits has become one of many useful pricing tools in intellectual property contexts.[62] And our empirical analysis provides some support for the use of the 25% rule.

A comparison of royalty rates with two proxies for expected long-run product profits (namely, licensee profits and "successful" licensee profits) yields royalty to profit ratios of 27% and 23%, respectively.

Although the data support the rule generally, there is quite a variation in results for specific industries. As this variation makes clear, the rule is best used as one pricing tool and should be considered in conjunction with other (quantitative and qualitative) factors that can and do affect royalty rates.

62. Razgaitis, *Early-Stage Technologies*, p. 118.

CHAPTER 23

LICENSING ECONOMICS AND ROYALTY RATES

An intellectual property license is a contractual agreement between two parties, one of whom has title to the complete bundle of rights to the property and another who has acquired the use of some of those rights. Because the owner has the legal right to prevent the use of the property by others, the license is essentially an agreement by the owner not to prosecute the licensee. It could be called a granting of the right to infringe.

There is an infinite variety of possibilities as to how those rights can be allocated between the parties and as to how compensation will flow from one to the other. Robert Goldscheider, a noted expert in the field, likens the process of designing a license agreement to sitting down at a "mighty Wurlitzer" organ to use the vast array of keys, pedals, and stops to produce the particular music that is agreeable to both licensor and licensee.

We liken a license to a hydroelectric dam. Such a dam impounds a large body of water, which is analogous to the total future economic benefit of exploiting the licensed intellectual property, waiting to be unleashed. The impoundment is released by the dam in a controlled way to, as an example, generate electricity, irrigate crops, or control the river below for recreational purposes. In similar fashion, the license doles out economic benefits to perhaps multiple licensees for perhaps multiple purposes. The license then divides the total economic benefit between the licensor, who may continue to utilize the intellectual property, and perhaps multiple licensees, each to its own purpose.

We would add another analogy from the world of real estate. Nearly everyone, at one time or another, has rented real property, even if only a cabin in the mountains or an apartment at the shore for a two-week vacation. When we have found the suitable property and sit down to execute the lease, the landlord or agent pulls out "Onerous Lease No. 1" from the shelf and pushes it forward for us to sign. If we trouble to read it, as we should, we would find that it puts the entire responsibility of property ownership on us and that the owner is relieved of all obligations, potential liabilities, and possible expenses. We find that we must give one-year's notice before leaving, we must paint the walls and refinish the floors when we vacate, and all of our guests must sign a release absolving the owner of every conceivable liability. Then the negotiation begins. We and the landlord agree to strike out clauses, remove or add a word here and there, perhaps the rent or deposit goes up a bit, but when it is all over, we have an agreement both can live with. This is the licensing process, and no wonder, for what is a license but an agreement to rent property rights in return for some compensation?

Let us, however, think about what is really happening in this process. Our first reaction to Onerous Lease No. 1 is that it requires too much compensation for the rights we are to receive. How do we make that judgment? Our thought process might be:

"I have never seen such stringent requirements before; it's not what other agents (the market) ask for."

"The rent is already at the high end of the range for this apartment at this season. What more do they want?"

"I can't afford to paint the walls and refinish the floor."

"I've never had to sign a release for anyone I visited. This is really strange."

"It doesn't sound as if they really want to rent this property, but it's a really nice place and I'd like to spend my vacation here."

"I can't see any way that I will enjoy staying in this property enough to justify the amount of rent they are asking."

We tend to evaluate the deal in terms of what is *customary* (what others in the market ask for) and in terms of *dollars*. This framework is quite reliable for evaluating real estate transactions, but cannot be applied meaningfully to what is customary in the marketplace for intellectual property. There are too many individual markets, and conditions change too rapidly. This is the reason why we remain cautious about reliance on "market evidence" to guide us in license negotiations. We also would advise the reader against relying too much on what might appear to be "customary" in the marketplace. There is little, if any, homogeneity in intellectual property or among potential licensors and licensees. Therefore, we believe that the idea of a "typical" license or a "customary" royalty rate has no place in the licensing process. We are not discussing used automobiles; we are faced with highly individual, big-ticket decisions, and we do not want to follow someone else's royalty rate footprints into the swamp!

We can, however, present some tools that can be used when it is appropriate to evaluate licenses in terms of dollars.

The underlying theory for this comes from the income approach to valuation. The fair market value of property is defined as the present value of the future benefits of ownership. One way to calculate this amount is to capitalize the present level of income produced by the property, or to discount estimated future streams of income. The ingredients of this calculation are:

- The *duration* of the income
- The *amount and pattern* of income
- The *risk* associated with receiving the income

The licensing process seeks to maximize value for both licensor and licensee. The licensee seeks this in terms of the income from exploitation, the licensor in terms of the income from the license. So the framework of the income approach valuation becomes a model for evaluating licensing transactions, bringing the motivations of licensor and licensee into focus:

	Licensor	Licensee
Duration	Extend the income stream Maximize near-term income Include know-how or other property to extend license beyond patent term	Shorten the royalty payments Delay payment No up-front fees
Amount	Increase royalty payments Front-load the royalty and fee income Obtain grant-backs Avoid indemnifications Encourage sublicensing Be paid for technical assistance	Reduce royalty payments Avoid grant-backs Obtain maximums No payment for technical assistance, show-how Seek exclusivity
Risk	Obtain guarantees, minimums, escrow payments Establish milestones for performance Include audit procedures Avoid indemnifications Make development expenditures the responsibility of licensee License nonexclusively Match territory with licensee's existing business	Obtain indemnities from licensor Put licensor at risk for performance Avoid guarantees Avoid committing to large expenditures Seek exclusivity Seek widest possible territory

23.1 PRICING THE ALTERNATIVES

We previously examined the economics of intellectual property exploitation and touched on the economics of licensing. We learned that the value of a license is:

> To the Licensor:
>
> The present value of the compensation to be received (typically cash payments) less the present value of the costs that might be incurred to administer the agreement, or income forgone by electing not to exploit the intellectual property internally.
>
> To the Licensee:
>
> The present value of the future economic benefits of exploiting the licensed intellectual property less the costs (including payments to the licensor) of doing so.

In every licensing transaction, the parties must decide which tune from the "mighty Wurlitzer" is agreeable. Putting this decision in terms of money, we suggest that, for either party, the one of several licensing alternatives that has the highest present value is the best. This assumes that all of the possible future events have been analyzed carefully.

In the following sections of this chapter, we apply the discounted cash flow technique to specific licensing provisions. We must recognize, however, that the DCF process starts with an estimate of future cash flows, positive and negative, that arise from a myriad of possible events. This is forecasting in its essence.

We often receive the comment that, while our investment analysis techniques make sense theoretically, they are too difficult to apply because one must make forecasts. An example of early-stage biotechnology licensing often is used as an example. This kind of intellectual property is "foundation technology" that ultimately may find its way into countless commercial applications (or none). How can anyone, trying to license this sort

of intellectual property, possibly foresee all of the possibilities? If the licensor is too conservative, he or she "leaves money on the table." If the licensor is too aggressive and optimistic in forecasting, licensees will be driven off. Our answer is this:

- You had better make *some sort* of forecast and take your best shot; otherwise, you are absolutely leaving the outcome to chance. Doing something is better than throwing darts at the "royalty board."
- You can try to negotiate a license with *financial contingencies* so that you will share in good things if they happen, without putting the licensee in concrete shoes if they do not.
- If you do not apply some financial measures, you may not only forgo some "upside" potential, but also incur some hidden liabilities! What could be worse than collecting a 1.5% royalty on what has become for the licensee a highly profitable blockbuster product *and* having to fund the defense of infringement litigation aimed at the licensee?

As difficult as it may be, does it make any business sense not to make an effort to provide oneself with the best information possible for deciding on the deployment of valuable business assets?

There are a whole host of other considerations in the licensing process that often are called to our attention as reasons why an analytical approach is not appropriate. Sometimes there is only one possible licensee for a given intellectual property. One "can analyze this transaction ad infinitum, and you will still have to accept what is offered." We agree. At times, "the licensor (or licensee) is in dire financial need, and time is of the essence." "There are good negotiators and bad." We agree again. All of these comments have merit, and we agree that it does not always make sense to make a detailed analysis, but when it does, we assert that it does not make any business sense to ignore it. Some say, "Licensing is an art form" in an attempt to justify a continuation of the seat-of-the-pants approach. Painting is art as well, but the best painters carefully study light and color, and practice their execution so that they can accurately render their inner art in tangible form. A master craftsman does not ignore the tools available.

What happens in the real world? The "business people" make a deal with a potential licensee/licensor. They take the deal to their legal advisors (inside or outside the organization) to memorialize it. The legal folks see some serious potential pitfalls and suggest some changes. The business folks go back to the drawing board and the potential licensee/licensor. In response to some new ideas, the licensee/licensor has some new ideas. What seemed like a done deal is anything but. At this point, everyone needs some tools to work with, ones that are flexible and can accept the ever-changing parameters and provide some guidance to both sides of the transaction.

When both parties look at the potential transaction, what do they see? The future. In order for either party to move forward, they must have formed some picture of their economic future or the economic future of the business element that will be the core of the transaction.

(a) FORECASTING. There are excellent references on forecasting and tools for doing it, and we will not attempt to reproduce them here. Winston Churchill, responding to a question about desirable qualities in a politician, replied:

> It is the ability to foretell what is going to happen tomorrow, next week, next month, and next year. And to have the ability afterwards to explain why it didn't happen.

Perhaps these are desirable qualities in a licensing executive as well. We will, however, point out some aspects of the process as they relate to forecasting in the licensing process. What might we need to forecast?

(i) Licensor. Cash inflows—which might include up-front payments, milestone payments, or running royalties—in short, all of the permutations of receiving payment for the use of intellectual property rights granted. In the case of running royalties, we will need to make our own estimate of the future royalty base. This is usually net sales to the licensee of products covered by the license, but it also can take a number of forms.

Cash outflows—which might include the expense of continuing research and development, administering and accounting for the license, audits, possible litigation to protect the intellectual property, and costs to indemnify the licensee.

(ii) Licensee. Cash inflows—net income from the sale of products covered by the licensed intellectual property, and net income from synergistic sales of related products. This also is based on forecasts of sales revenue and operating expenses of an ongoing business.

Cash outflows—would include research and development expense, marketing costs to get the licensed intellectual property into products ready for the marketplace, continuing development, expenses connected with future infringement litigation, capital costs of new or additional plant and working capital, and, of course, payments to the licensor.

(iii) Sales Revenue. Forecasting sales revenue seems to be the first and most difficult hurdle in the process, so we will use sales forecasting as the example in this discussion.

It seems to us that forecasts proceed either from the top down or the bottom up. In the top-down approach, one starts with some global information, such as estimates of world population growth, and winnows from that the implication for the situation at hand. The bottom-up approach starts with some known, perhaps historical data, such as the number of customers one has, and extrapolates those data into future revenue dollars.

Top-Down Approach. This ought to be the predominant approach for intellectual property exploitation forecasts since, most of the time, we have little to build on. Hughes describes the elements of top-down sales forecasting:[1]

- *Market Capacity.* This is the number of units of a product or service that the market can absorb. It is the estimated total unfilled need of the market. This estimate can be for a segment of the market.
- *Market Potential.* This converts the market capacity of an industry or segment into sales dollars by introducing unit prices and market strategies.
- *Company Potential.* This is the maximum that a company could sell, at a given price, regardless of its ability to satisfy that estimated market. Consideration must be given to economies of scale, learning ability, transportation, distribution, site selection, technology requirements, and production planning.
- *Company Forecast.* This superimposes on the above company's ability to produce and market.

An advantage of the top-down approach is that it begins with global estimates that are available and usually can be agreed on by negotiating parties. They have third-party disinterest and usually can represent an uncontroversial starting point. Examples are population estimates, demographic data, gross national product estimates, air passenger-miles, railroad revenue ton-miles, units of new home construction, percentage of the population with a given disease, and the like.

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1. G. David Hughes, "Sales Forecasting Requirements," in *The Handbook of Forecasting*, ed. Spyros Makridakis and Steven C. Wheelwright (Hoboken, NJ: John Wiley & Sons, Inc., 1987), Ch. 2.

The difficult part of a sales revenue forecast is making such global forecasts specific to a company or type of intellectual property. One tool is to extrapolate from known data. If, as an example, I am concerned with the potential market for a new sun-protecting skin cosmetic, I can observe from cosmetic industry statistics what percentage of skin care products sold have this characteristic. I then could look to forecasts of skin care product sales as a starting point for the forecast that I need. In this particular case, I might inject an element of judgment and increase the proportion in the future since there is a growing awareness of the effect of the sun on skin. We might learn from government or industry sources, as an example, that: "The skin care industry is introducing new products with better skin protection, particularly against ultraviolet rays that are present all year. Specialty sun care products, with current sales of $400 million, have been increasing at an estimated 7% per year; this trend is expected to continue....Skin care products formulated with sunscreens will become increasingly popular." Every bit of information we can find helps us to progress from the global to the particular.

Another tool we find useful is to reduce a forecast to its least common denominator. As an example, if we are attempting to forecast the sales revenue that could be generated by exploiting the copyright to a cartoon or movie character, we would make individual forecasts for all of the reasonable exploitation possibilities. We would analyze the markets for videos, books, apparel, novelty items, endorsements, sports products, and the like. We feel that a summation of individual forecasts (after an analysis of the individual markets) gives a more precise result than attempting to make one global forecast for all forms of exploitation. This method is especially appealing when the forecast for individual exploitation methods differs, such as when income from the original moving picture is expected to fall rather steeply, while income from ancillary exploitations will decline at a different rate or according to a different pattern. It also appeals when the relative risk of the alternative exploitation possibilities is quite different, and we may want to treat the various cash flows differently in the DCF calculation.

A forecast of product sales becomes a form of an econometric model that expresses the relationship between global data and a specific product or intellectual property. It is very useful to design a sales projection with this in mind and to include all of the individual elements so that they can be changed to test the sensitivity of the result. An example of this is provided in Exhibit 23.1.

One also must be cognizant of where, on the typical product life cycle curve, the subject intellectual property is located. A typical life cycle curve is reproduced as Exhibit 23.2.

One of the ingredients of the sales revenue forecast is price. There is a typical evolution of unit price as well. When a product is introduced, customers are unfamiliar with it and unit sales are low. Manufacturing has not achieved economies of scale. The product often is considered a luxury item. We remember when power steering was introduced. It was expensive and somewhat unreliable. Nevertheless, there were those who purchased it. This is the classic pricing and marketing of a new product.

As a new product moves into mass production, after the encouraging sales to the "gadgeteers," the unit price begins to come down. As maturity is reached, almost everyone who wants the new product has one, and the early buyers may be purchasing replacements. The effects of competition have been felt, profit margins have been squeezed, and many manufacturers have been forced out of the market.

These factors must be considered when making a forecast of sales revenue. Often we are well aware of the quantities of products that we expect to sell over the typical life cycle, but we can overlook the unit price changes associated with those sales.

Since the U.S. population data used as a basis for the sales forecast shown in Exhibit 23.1 are not continuous, we can use trendline techniques to "fill in" the intervening points, so that we have sales revenue for each year in the series. It would appear that the growth is linear. (See Exhibit 23.3.)

	2003	2005	2008	2013	2018	2023
U.S. Population (mill.)	251.4	254.5	260.1	268.3	275.6	282.6
Female (mill.)	138.7	130.2	133	137.1	140.8	144.3
% Users of Cosmetics	52	52	52	52	52	52
Users of Cosmetics (mill.)	72.1	67.7	69.2	71.3	73.2	75.0
% Sun-Sensitive	21	21	21	21	21	21
Sun-Sensitive (mill.)	15.1	14.2	14.5	15.0	15.4	15.8
Avg. Uses per Year	12	15	18	24	30	30
Total Uses (mill.)	181.8	213.3	261.4	359.3	461.3	472.7
Price per Use	$0.03	$0.04	$0.06	$0.06	$0.06	$0.06
Total Market ($)	$5,452,574	$8,530,704	$15,685,488	$21,558,701	$27,675,648	$28,363,608
% Penetration	10	12	15	15	15	15
Sales Revenue ($)	$545,257	$1,023,684	$2,352,823	$3,233,805	$4,151,347	$4,254,541

EXHIBIT 23.1 SALES REVENUE FORECAST

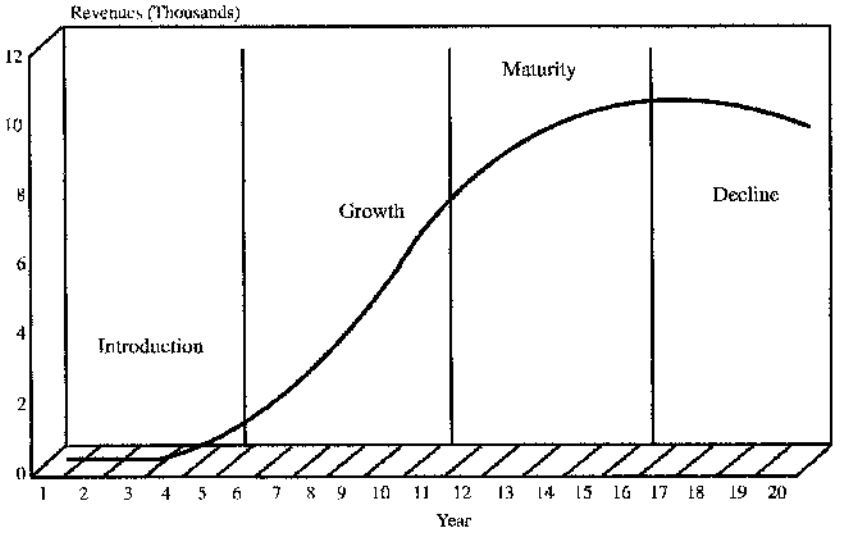

EXHIBIT 23.2 REVENUE FORECASTS: PRODUCT LIFE CYCLE

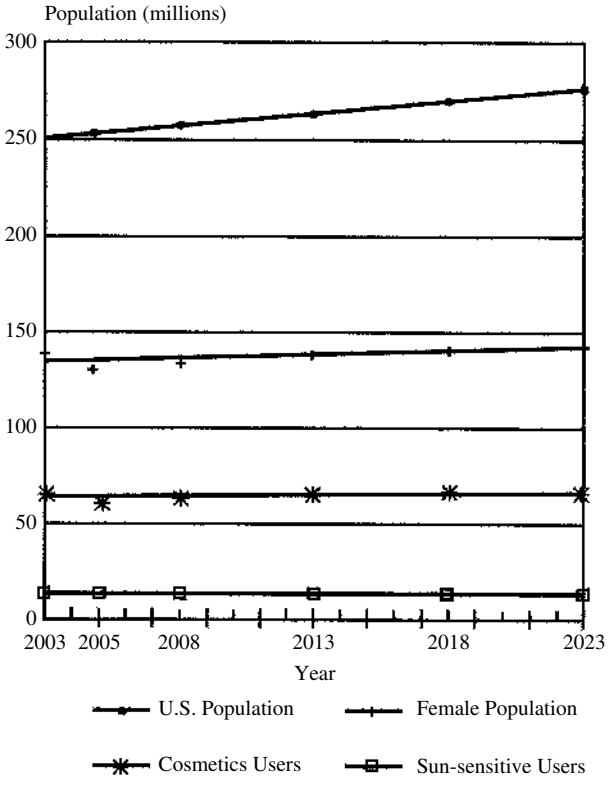

EXHIBIT 23.3 FOUNDATION FOR SALES REVENUE FORECAST

23.2 LICENSING

By using the tools of forecasting and DCF, we can develop a picture of the business opportunity potential of our subject intellectual property. We now will apply those techniques to the evaluation of a license agreement. For the purpose of this discussion, we will assume that we are the *licensor*.

In essence, we will develop a DCF model, but instead of using an income statement as the basis, we will structure it on the basis of the intended license clauses. Our ultimate objective is to estimate the net present value of the whole transaction from our point of view Most of the elements (or clauses) in a license have some economic weight. We will include the effect of all of the possible positive and negative cash flows that could reasonably be expected. This can be illustrated in this way:

	Present Value
License Provision #1	$(25,000)
License Provision #2	50,000
License Provision #3	250,000
License Provision #4	(8,000)
	$267,000

If we can find a way to calculate the probable present value of the essential parts of the contemplated license agreement, then we have a valuable tool with which to evaluate different agreements or to support our license negotiations. Even if we find it necessary to express some of the present values in terms of a range (because it is not possible to be precise), the tool is still very useful.

	Present Value
License Provision #1	$(25,000) – (175,000)
License Provision #2	50,000
License Provision #3	250,000
License Provision #4	(8,000)
	$267,000 – $117,000

If, in this example, we are uncomfortable with the magnitude of the range, or the fact that one of the extremes is negative, then we need to examine Provision #1 and see what we can do to limit its potential liability, or turn to Provision #3 and see if we can improve on the "plus side."

Generally speaking, license provisions have the potential of generating either positive or negative cash flow, but not both. Remembering that for the purpose of this discussion, we are taking the place of the licensor, those provisions that define obligations of the licensor tend to define negative potential cash flows, and those that relate to licensee obligations, positive potential cash flows.

(a) LICENSE PROVISION CHARACTERISTICS. In one way or another, every provision in a license (or even one that is missing) can have an effect on the present value of the deal. That is why care in the process is so important. We are, however, going to define provisions as primary or secondary economic drivers. Primary economic drivers are

those clauses that have a directly measurable effect on present value, such as consideration (royalty). Secondary economic drivers are those that define conditions that, while they are important, are inputs to the primary drivers. As an example, a territory provision puts boundaries on the potential business of the licensee (and therefore royalties), and so its effect on present value can be measured only by reference to other license provisions.

Another way to create a structure within which to examine a license is to separate those primary economic drivers that (from the standpoint of the licensor) have positive cash flow attributes from those that can result in negative cash flows. In the remaining sections of this chapter, we will present a model that provides a framework within which to examine and evaluate these cash flows. Readers should not take the money amounts as benchmarks or guidelines for the transactions they are working with. We have tried to make our cost and royalty estimates reasonable, but these are examples only, and should not be taken as norms.

(b) ROYALTY RATES. We remind the reader that in the discussion that follows, we are not presenting a methodology for determining an appropriate royalty rate, but rather a methodology for evaluating alternative licensing scenarios.

The determination of a royalty rate should be made using return on investment techniques. If one were to evaluate licensing scenarios from the licensee's perspective, returns on complementary assets (i.e., working capital and tangible assets) would have to be considered. The licensee is usually the party who must make these investments in order to exploit the licensed intellectual property, and any analysis of the licensee's position must include these investments in the net cash flows.

In order to simplify what would otherwise be a complex explanation, we have chosen to present these evaluation tools from the standpoint of the licensor who typically is not required to make an investment in either monetary or tangible assets as part of the transaction. The net cash flow realized by the licensor is therefore the product of royalty income and expenses of a current nature.

23.3 PRIMARY ECONOMIC DRIVERS

(a) POSITIVE CASH FLOW PROVISIONS. These provisions primarily are those that define royalties and those concerning grant-backs and sublicensing. The licensor can receive compensation in the form of cash royalty payments or in the form of the value of enhanced technology developed by the licensee that, under the terms of the license, is shared with the licensor. In the first case, it is cash for the bank; in the second, it is akin to principal, which again must be redeployed. In any case, it represents positive cash flow.

As we have noted, there is an infinite number of ways that compensation can be paid and received, but ultimately we must quantify these positive cash flows in their least common denominator, their present value. To illustrate, we will use an example of a present value calculation of several royalty alternatives in a simple situation. Assume, please, that we as licensor have developed a process technology that can save a significant amount of money in the manufacture of a commodity chemical. As the baseline of our analysis, we develop a model representing the economics of the commodity chemical business as it exists for a potential licensee. It is obvious that if we, the licensor, are also in the commodity chemical business, we already know the economics of the industry. If we are not, we will have to do some research to construct this base model using techniques.

We have made a 10-year projection of a simple income statement. Sales revenue is driven by an estimate of product quantity and unit price because we may wish to vary these in later estimates. We are not attempting to mirror the licensee's whole business (which may include other products or lines of business), but to capture the typical economics of the business element in which our technology will be licensed.

In order to keep the model as simple as possible, we have not included estimates of capital additions and working capital changes. The reader will recall that these are ingredients of a complete cash flow model and are nearly always present. Few, if any, business opportunities do not incorporate the necessity for additional tangible assets or additions to working capital. We are simply eliminating these elements in order to illustrate the technique. The base model is as shown in Exhibit 23.4.

At a discount rate of 12%, the present value of this business element is $423,016. For the purpose of this example, we have not included any consideration of inflation.

We then inject our cost-saving technology into this base model. The effect is to change Cost of Goods Sold from $875,000 to $800,000. We then calculate the present value of this new scenario in Exhibit 23.5.

We observe that our cost-saving technology improves the present value of this operation by $253,810 to $676,826. So, if we were to *give* the technology to the owners of this enterprise, we would have enriched them by something more than $250,000. Obviously, this is not the objective of an intellectual property owner. We require compensation for making available some rights to our property. Further calculations will show that the maximum we could expect to receive from the licensee would be a compensation with a present value of $253,810. We illustrate this by introducing a royalty of $0.15/lb into the model, and observe that the present value of the business element to the licensee returns to $423,016, where it was without the technology. (See Exhibit 23.6.)

The present value of this scenario, to the licensor, is seen to be $423,016, which is equivalent to approximately $253,810 after tax. To make this comparison, it is necessary to consider the tax benefit of the royalty payment made by the licensee. Tax considerations are not a part of any of the calculations and examples that follow.

The licensee, however, would have little motivation to enter into an agreement such as that unless he anticipates additional benefits that we have missed. A more likely scenario would be to consider a division of the apparent benefits. Exhibit 23.7 shows the effect of an equal split of the benefits between licensee and licensor.

This reduces the present value of the business to the licensee to $549,921 and provides a royalty stream to the licensor with a present value of $211,508. These calculations all use a running royalty based on product quantity.

If, for some reason (perhaps we require the money or we have doubts about the licensee's commitment), we want a lump-sum royalty on signing the license, we can use the model (on a trial-and-error basis) to determine the appropriate amount. That amount would be $225,000 in order to maintain the same present value. (See Exhibit 23.8.)

If, in negotiations, we have to give up the notion of a 100% lump-sum royalty on signing and the licensee is willing to pay about half that, we again can utilize the model to test different assumptions. No doubt quite a number of results will meet the requirements, but we can show that a $0.04/lb. running royalty and a $125,000 up-front payment will maintain the target present value represented by the 50-50 split of economic benefit. (See Exhibit 23.9.)

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	875	875	875	875	875	875	875	875	875	875
Gross Profit	375	375	375	375	375	375	375	375	375	375
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	125	125	125	125	125	125	125	125	125	125
Taxes	50	50	50	50	50	50	50	50	50	50
Net Income	75	75	75	75	75	75	75	75	75	75
Present Value 12%	70.36	61.91	54.48	47.95	42.19	37.13	32.67	28.75	25.30	22.27

Total Business Present Value ($)	423,016

EXHIBIT 23.4 BASE CASE FOR LICENSEE

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	200	200	200	200	200	200	200	200	200	200
Taxes	80	80	80	80	80	80	80	80	80	80
Net Income	120	120	120	120	120	120	120	120	120	120
Present Value 12%	112.57	99.06	87.17	76.71	67.51	59.41	52.28	46.00	40.48	35.63
Total Business Present Value ($)	676,826									

EXHIBIT 23.5 EFFECT OF TECHNOLOGY TO LICENSEE

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
Royalty	75	75	75	75	75	75	75	75	75	75
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	125	125	125	125	125	125	125	125	125	125
Taxes	50	50	50	50	50	50	50	50	50	50
Net Income	75	75	75	75	75	75	75	75	75	75
Present Value 12%	70.36	61.91	54.48	47.95	42.19	37.13	32.67	28.75	25.30	22.27
Total Business Present Value ($) 423,016										
Present Value of Royalties	70.36	61.91	54.58	47.95	42.19	37.13	32.67	28.75	25.30	22.27
Total Royalty Present Value ($) 423,016										

EXHIBIT 23.6 INTRODUCE $.15/LB. ROYALTY (EQUAL TO ECONOMIC BENEFIT)

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
Royalty	38	38	38	38	38	38	38	38	38	38
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	163	163	163	163	163	163	163	163	163	163
Taxes	65	65	65	65	65	65	65	65	65	65
Net Income	98	98	98	98	98	98	98	98	98	98
Present Value 12%	91.46	80.49	70.83	62.33	54.85	48.27	42.48	37.38	32.89	28.95
Total Business Present Value ($) 549,921										
Present Value of Royalties	35.18	30.96	27.24	23.97	21.10	18.56	16.34	14.38	12.65	11.13
Total Royalty Present Value ($) 211,508										

EXHIBIT 23.7 50–50 ECONOMIC BENEFIT SPLIT TO $.075/LB. ROYALTY

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
Royalty	225	0	0	0	0	0	0	0	0	0
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	(25)	200	200	200	200	200	200	200	200	200
Taxes	(10)	80	80	80	80	80	80	80	80	80
Net Income	(15)	120	120	120	120	120	120	120	120	120
Present Value 12%	–14.07	99.06	87.17	76.71	67.51	59.41	52.28	46.00	40.48	35.63
Total Business Present Value ($) 550,185										
Present Value of Royalties	211.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Royalty Present Value ($) 211,069										

EXHIBIT 23.8 50–50 ECONOMIC BENEFIT SPLIT, LUMP SUM ROYALTY

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
Royalty	125	20	20	20	20	20	20	20	20	20
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	75	180	180	180	180	180	180	180	180	180
Taxes	30	72	72	72	72	72	72	72	72	72
Net Income	45	108	108	108	108	108	108	108	108	108
Present Value 12%	42.21	89.16	78.46	69.04	60.76	53.47	47.05	41.40	36.44	32.06
Total Business Present Value ($) 550,044										
Present Value of Royalties	117.26	16.51	14.53	12.79	11.25	9.90	8.71	7.67	6.75	5.94
Total Royalty Present Value ($) 211,303										

EXHIBIT 23.9 50–50 ECONOMIC BENEFIT SPLIT, LUMP SUM AND RUNNING ROYALTY

In these examples, the royalty base has been the *quantity* of output. We might choose this royalty base for several reasons:

- We forecast price erosion in the commodity chemical market due to new capacity coming online or because the product is in the "September" of its life cycle.
- The licensee is selling internationally, and we do not want to incur currency risk.
- We expect the licensee to achieve other productivity improvements.
- Quantity produced is cheaper and easier to audit.

We may, however, for our own reasons or as a result of negotiation, want to shift to a sales revenue royalty base. Reasons for this might include:

- Increasing demand for the product will enable the licensee to increase price.
- Other, nonlicensed product enhancements will result in price increase.
- Sales revenue is cheaper and easier to audit.

The model allows us to make a shift to net sales as a royalty base. With some experimentation, we discover that a running royalty of 3% of sales will net us the same present value (as licensor) as the 50-50 split of economic benefit. (See Exhibit 23.10.)

Another strategy that can be tested involves lowering the royalty amount so that diffusion of the technology will be greater and more rapid. It is nice to sell 10 items for $2 each, but it is better yet to sell 30 items for $1 each. A lower royalty rate might encourage the licensee to lower the price of the product and increase the market penetration, for his own benefit as well as ours. We can use the model to test out this strategy. If we recast it to a quantity royalty base and estimate increasing sales, we can test whether this structure has merit for us. In Exhibit 23.11, the present value of the royalty stream (on a pretax basis to keep it simple) has dropped to $131,905. On this basis, it appears that this is not an attractive alternative for us. Perhaps a further drop in price would increase the licensee's market share even more. To make that judgment, we would have to have more facts about the size of the market, the competition, and the licensee's capacity to supply a larger share.

Since the licensed technology results in cost savings for the licensee, a logical form of compensation to us would be a percentage of the cost savings. Let us further assume that the licensee will be able to increase the amount of those savings by successful enhancement of the technology. If the royalty is set at an amount equal to one-half of the savings, Exhibit 23.12 results.

With a present value of $309,662, this option looks attractive. We must consider several points, however, before proposing this option. Cost savings can be very difficult to quantify and monitor. There is a myriad of inputs to a chemical process, and isolating the effect of one of them is difficult. The licensee is going to be continually "tinkering" with the process to improve it, and may have to change it to accommodate feedstocks of different quality or to meet new environmental restrictions, and so forth. One option is to establish benchmarks of cost with and without the licensed technology at the outset and convert the difference to a royalty on a quantity base. The risk to us here is whether the licensee may in the future further improve the technology, and we would not share in this "upside."

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	800	800	800	800	800	800	800	800	800
Gross Profit	450	450	450	450	450	450	450	450	450	450
Royalty	38	38	38	38	38	38	38	38	38	38
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	50	50	50	50	50	50	50	50	50	50
Pretax Income	163	163	163	163	163	163	163	163	163	163
Taxes	65	65	65	65	65	65	65	65	65	65
Net Income	98	98	98	98	98	98	98	98	98	98
Present Value 12%	91.46	80.49	70.83	62.33	54.85	48.27	42.48	37.38	32.89	28.95
Total Business Present Value ($) 549,921										
Present Value of Royalties	35.18	30.96	27.24	23.97	21.10	18.56	16.34	14.38	12.65	11.13
Total Royalty Present Value ($) 211,508										

EXHIBIT 23.10 50–50 ECONOMIC BENEFIT SPLIT TO % OF SALES ROYALTY

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	600	720	792	871	958	1,054	1,160	1,276	1,403	1,543
PRICE PER UNIT ($)	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
REVENUE ($ 000's)	1,440	1,728	1,901	2,091	2,300	2,530	2,783	3,061	3,367	3,704
Cost of Goods Sold	960	1,152	1,267	1,394	1,533	1,687	1,855	2,041	2,245	2,469
Gross Profit	480	576	634	697	767	843	928	1,020	1,122	1,235
Royalty	15	18	20	22	24	26	29	32	35	39
SG & A Expense	240	288	317	348	383	422	464	510	561	617
Other Expense	60	72	79	87	96	105	116	128	140	154
Pretax Income	165	198	218	240	264	290	319	351	386	424
Taxes	66	79	87	96	105	116	128	140	154	170
Net Income	99	119	131	144	158	174	191	210	232	255
Present Value 12%	92.87	98.07	94.93	91.89	88.95	86.11	83.35	80.68	78.10	75.60
Total Business Present Value ($) 870,575										
Present Value of Royalties	14.07	14.86	14.38	13.92	13.48	13.05	12.63	12.22	11.83	11.46
Total Royalty Present Value ($) 131,905										

EXHIBIT 23.11 DROP ROYALTY TO $.025/LB., LICENSEE DROPS PRICE AND INCREASES MARKET SHARE

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	500	500	500	500	500	500	500
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Cost of Goods Sold	800	775	775	750	750	750	750	750	750	750
Gross Profit	450	475	475	500	500	500	500	500	500	500
Royalty	38	50	50	63	63	63	63	63	63	63
SG & A Expense	200	200	200	200	200	200	200	200	200	200
Other Expense	75	75	75	75	50	50	50	50	50	50
Pretax Income	138	150	150	163	188	188	188	188	188	188
Taxes	55	60	60	65	75	75	75	75	75	75
Net Income	83	90	90	98	113	113	113	113	113	113
Present Value 12%	77.39	74.30	65.38	62.33	63.29	55.69	49.01	43.13	37.95	33.40
Total Business Present Value ($)	561,874									
Present Value of Royalties	35.18	41.28	36.32	39.95	35.16	30.94	27.23	23.96	21.09	18.56
Total Royalty Present Value ($)	309,662									

EXHIBIT 23.12 ROYALTY SET AT ONE-HALF OF COST SAVINGS

Nearly endless possibilities exist. We can test out the royalty based on cost sharing with the possibility of the licensee dropping the price to increase the market share, and observe that this improves our present value even more. (See Exhibit 23.13.)

These are but a few of the royalty structure possibilities that can be tested with this simple discounted cash flow model. Almost endless permutations of sales forecasts, royalty base, and royalty structure can be quantified. There are, in addition, other positive cash flow license provisions that should be considered.

Grant-back to the licensor of improvements to the technology is another provision with potential for altering the amount of cash flow. Here the effect can take a variety of forms. The grant-back of improvements can extend the economic life of the intellectual property and therefore the strength and duration of the royalty stream. A more likely basis for an estimate of enhanced cash flow would be the likelihood of the licensor being able to grant additional licenses or, if the grant-backs broaden the technology, licenses in additional fields of use. We can utilize a simpler calculation to reflect these potential cash flows. (See Exhibit 23.14.)

A *sublicense* provision can have significant positive cash flow implications. Typically it would cause the licensee to become the licensor's agent, and they would divide the license fees charged to the ultimate licensees. Sublicenses usually provide royalty income to both the original licensor and licensee. An estimate of cash flows from sublicensing begins with a forecast of potential sublicensee sales as a royalty base. To us, as original licensor, the income is a portion of the royalty income that results, less the costs of administration. These costs could be expected to be less than those to administer the original license because one would expect that our licensee would participate, at his own cost, in the process. An example is shown in Exhibit 23.15.

(b) NEGATIVE CASH FLOW PROVISIONS. The remaining provisions commonly found in an intellectual property license agreement have negative cash flow implications. These are very difficult to quantify, since they relate to obligations of the licensor that may be activated only in unusual circumstances. Two situations, however, are fairly straightforward and relate to the cost of administration and providing technical assistance.

Administration, auditing, and *quality control* are, to some extent, part of every license transaction. Even if the licensor makes no attempt to audit the licensee's accounting for the royalty base and royalty payments, these payments represent a receivable to the licensor, and some cost is incurred to enter it in the accounts. At the other extreme, a licensor can experience significant expense with a recalcitrant licensee, especially one in another country where travel expense, culture, accounting practices, and recordkeeping can be barriers. Even under normal circumstances there are professional fees, supplies, and communications expenses, as well as the cost of diverting accounting, manufacturing, and engineering personnel from their regular duties. Then, too, one certainly cannot ignore the cost of creating the license in the first place. This is a cost of doing business, and one should not wait until the license is in place to "start the meter." In fact, if one is making a very precise forecast, some of the early development expenses take place considerably before any positive cash flow from royalties can be expected. There can easily be six months of negotiation before a license is consummated. We have not attempted to introduce this precision into our examples, but it is a real consideration.

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	600	720	864	950	1,045	1,150	1,265	1,391	1,531	1,684
PRICE PER UNIT ($)	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
REVENUE ($ 000's)	1,440	1,728	2,074	2,281	2,509	2,760	3,036	3,340	3,674	4,041
Cost of Goods Sold	960	1,152	1,382	1,521	1,673	1,840	2,024	2,226	2,449	2,694
Gross Profit	480	576	691	760	836	920	1,012	1,113	1,225	1,347
Royalty	45	54	65	71	78	86	95	104	115	126
SG & A Expense	240	288	346	380	418	460	506	557	612	673
Other Expense	60	72	86	95	105	115	126	139	153	168
Pretax Income	135	162	194	214	235	259	285	313	344	379
Taxes	54	65	78	86	94	103	114	125	138	152
Net Income	81	97	117	128	141	155	171	188	207	227
Present Value 12%	75.98	80.24	84.73	82.02	79.40	76.86	74.40	72.02	69.71	67.48
Total Business Present Value ($)	762,840									
Present Value of Royalties	42.21	44.58	47.07	45.57	44.11	42.70	41.33	40.01	38.73	37.49
Total Royalty Present Value ($)	423,800									

EXHIBIT 23.13 ROYALTY ONE-HALF OF COST SAVINGS, LICENSEE DROPS PRICE—INCREASES MARKET SHARE

	1	2	3	4	5	6	7	8	9	10
Positive Cash Flow	0	0	25	25	50	50	50	75	75	75
Negative Cash Flow	0	0	0	0	0	0	0	0	0	0
Net Cash Flow	0	0	25	25	50	50	50	75	75	75
Present Value 20%	0.00	0.00	14.31	11.45	18.32	14.65	11.72	14.07	11.25	9.00

Total Present Value ($) 104,781

EXHIBIT 23.14 GRANTBACK PROVISION

	1	2	3	4	5	6	7	8	9	10
Sublicensee Net Sales	0	125	175	250	350	500	750	750	750	750
Royalty @ 3%	0	3.75	5.25	7.5	10.5	15	22.5	22.5	22.5	22.5
Negative Cash Flow	10	2	2	2	2	2	2	2	2	2
Net Cash Flow	(10)	2	3	6	9	13	21	21	21	21
Present Value 20%	–18.94	1.25	1.86	2.52	3.11	3.81	4.81	3.85	3.08	2.46

Total Present Value ($) 17,800

EXHIBIT 23.15 SUBLICENSE

Another consideration here might be patent administration costs. If the licensee is the primary user of patented technology, a licensor might well wish to recoup patent administration costs in the license fees or royalties. These costs are not trivial. We recently were told by a corporate patent attorney that he estimates the cost to maintain a patent, for its life, in the large markets of the world at $500,000. This includes national maintenance fees, translation costs, and so forth. It does not include the original patent prosecution costs.

In a copyright or trademark licensing agreement, the cost of proper administration can be significant and involve extensive approvals of products and packaging, sample examination, quality control activities, and inspection of manufacturing facilities. The licensor in this case has a considerable stake in ensuring the maintenance of the goodwill embodied in the intellectual property. We are aware of some licensing practitioners who feel that $25,000 per license per year is a realistic rule of thumb for administration expenses. These potential costs (which, for the purpose of our manufacturing technology example, are rather modest) can be reflected in the model as shown in Exhibit 23.16.

Many licenses call for *technical assistance* to be provided by the licensor. In some cases, the license may be for know-how or show-how alone, in which case the efforts required by the licensor may be substantial. In our example, we will assume that the granting of a patent license conveys the intellectual property satisfactorily and that not much in the way of technical support will be needed. We are, however, willing to invest some time with the licensee, since we foresee some future benefits from grant-backs. (See Exhibit 23.17.)

The most troublesome license provisions to quantify are those that require of the licensor some form of indemnification. Understandably, licensees want to be held harmless in the event that the ownership or validity of the licensed intellectual property is challenged or in the event of product liability. Licensors rarely are willing to provide such protection, but some intermediate levels of commitment often are negotiated. To quantify this element, one needs to form an opinion about: (1) the likelihood of the damaging event, and (2) the potential cost. Each of these estimates must be based on subjective judgment, responding to such questions as:

- Is the proposed field of use one in which there is heavy competition and a history of infringement litigation?
- Was the granting of the licensed intellectual property made difficult by nearly conflicting patents, trademarks, and so on?
- Is the license going to place the licensee in a dominant, high-profit business segment that is likely to attract competition (and litigation)?
- Are there large competitors to the licensee who can fund litigation?
- Are there large competitors to the licensee whose competing business is so large that a damage award could be massive?
- Is the licensee's product in an area that is likely to engender product liability claims, based on past experience? Is the licensee going to use the plastic to make football helmets, acoustic tiles, or pipe insulation?

We suggest that one attempt to estimate these eventualities in the form of ranges or optimistic/pessimistic scenarios. Obviously, the most optimistic view is that none of these bad things will happen. The reader will have to judge for him- or herself whether that is a prudent assumption. In the quantification, however, the great uncertainty surrounding the event can be reflected either by introducing an estimate of *probability* into the calculation, or by assuming a *high rate of discount*, as we have done in Exhibit 23.18.

		1	2	3	4	5	6	7	8	9	10
Positive Cash Flow		0	0	0	0	0	0	0	0	0	0
Negative Cash Flow		25	5	5	5	5	5	5	5	5	5
Net Cash Flow		(25)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Present Value	12%	–23.45	–4.13	–3.63	–3.20	–2.81	–2.48	–2.18	–1.92	–1.69	–1.48
Total Present Value ($)	(46,963)										

EXHIBIT 23.16 ADMINISTRATION, AUDITING, AND QUALITY CONTROL

		1	2	3	4	5	6	7	8	9	10
Positive Cash Flow		0	0	0	0	0	0	0	0	0	0
Negative Cash Flow		35	25	10	5	5	5	5	5	5	5
Net Cash Flow		(35)	(25)	(10)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Present Value	12%	–32.83	–20.64	–7.26	–3.20	–2.81	–2.48	–2.18	–1.92	–1.69	–1.48
Total Present Value ($)	(76,486)										

EXHIBIT 23.17 TECHNICAL ASSISTANCE

		1	2	3	4	5
Base Case						
Negative Cash Flow		0	0	100	0	0
Net Cash Flow		0	0	(100)	0	0
Present Value	25%	0.00	0.00	148.71	0.00	0.00
Total Present Value ($)	(48,714)					
Worst Case						
Negative Cash Flow		0	0	1,000	0	0
Net Cash Flow		0	0	(1,000)	0	0
Present Value	25%	0.00	0.00	1487.14	0.00	0.00
Total Present Value ($)	(487,139)					

EXHIBIT 23.18 INDEMNIFICATION

In this calculation, we have made two estimates. One, which we have called the "Base Case," represents a legal "skirmish," settled without damages, and is quantified at $100,000 and estimated to take place in year 3 of the license. Most likely this sort of problem will arise fairly early in the license, unless there will be considerable development time required before the licensee's products get to market and attract attention.

In a second calculation, we estimate more of a full-blown litigation, with a cost of $1 million, again in year 3. To reflect the relative unlikelihood of these events, we have used a discount rate of 25% for both, which substantially reduces their present value. One could use a different rate for each, depending on the judgment of their relative likelihood.

An important strategy that can be applied in these provisions is a "stop-loss" element. This simply sets limits on the monetary participation of the licensor or gives the licensor control over the proceedings so that it has the option of whether to pursue litigation, to settle, and so forth. Insurance also can play a role, although this type of insurance is expensive and can be unavailable as a practical matter. A licensor could, as an example, require the licensee to carry product liability insurance.

23.4 SECONDARY ECONOMIC DRIVERS

Exclusivity is a secondary economic driver relative to the amount of positive cash flow. All things being equal, a licensee ought to be willing to pay more for an exclusive license than for a nonexclusive one. This would be especially true if the licensee:

- Is in a very competitive situation and the licensed intellectual property will provide an instant advantage in the market
- Has, or is willing to build, the capacity to serve the large market that exclusivity will make available
- Has its own intellectual property that complements the licensed intellectual property, and synergistic benefits will result

Generally, if these statements are not true, the licensee may well be indifferent to exclusivity and not willing to pay a premium for it. For more on this subject, we refer the reader to the article by Kleinginna and Shanda.[2] We can, however, use the model developed earlier to test the results of granting exclusivity. In Exhibit 23.19, we determine the level of increased sales necessary to preserve the present value of the 50-50 split of economic benefit illustrated in Exhibit 23.17. If, for whatever reason, the licensee will not agree to a royalty of $0.075/lb for an exclusive license, and if we can agree on a royalty of $0.0375/lb for nonexclusive rights, 1,000,000 lb of product will need to be sold in order for us to preserve the present value of about $211,000. If this licensee can produce only 500,000 lb annually, we will have to locate another licensee to make up the difference or search for another licensee who will pay the premium for exclusivity.

A "most favored nations" (MFN) provision also can have an effect on positive cash flow. If we anticipate granting a series of licenses (say, to manufacturers in various parts of the world), it is not unreasonable to assume that royalties may be negotiated downward over time. If compensation is one of the terms covered by an MFN provision, then there will be an erosion of cash flow unless quantities increase to compensate. An example is shown in Exhibit 23.20.

In this case, volume must increase from 500,000 lb annually to 1,250,000 in order to compensate for a royalty erosion from $0.075/lb to $0.03/lb during the 10-year period.

Additional License Provisions

Grant of License

Definitions

Field of Use

Territorial Rights

Currency Exchange

Taxation

Dispute Resolution

Guarantees/Warranties

Assignability

Bankruptcy

These are but some of the license provisions that are in common use. They are secondary economic drivers in that they can strengthen and buttress those provisions directly affecting the economics of the deal. Carefully crafted, they can have the effect of reducing the risk of the licensor. They must be considered carefully in the quantification for their effect on the discount rates utilized, as an example. By categorizing them as "secondary," we are not at all implying that they are unimportant. A critical omission here can cause the whole license to crash and burn. They are secondary because their economic effect is measured in the quantification related to other clauses.

2. Mark Kleinginna and Lawrence Shanda, "Making the Exclusivity Decision," *Les Nouvelles*, Licensing Executives Society (USA–Canada), Alexandria, VA, December 1991.

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Cost of Goods Sold	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Gross Profit	900	900	900	900	900	900	900	900	900	900
Royalty	38	38	38	38	38	38	38	38	38	38
SG & A Expense	400	400	400	400	400	400	400	400	400	400
Other Expense	100	100	100	100	100	100	100	100	100	100
Pretax Income	363	363	363	363	363	363	363	363	363	363
Taxes	145	145	145	145	145	145	145	145	145	145
Net Income	218	218	218	218	218	218	218	218	218	218
Present Value 12%	204.03	179.55	158.00	139.04	122.36	107.67	94.75	83.38	73.38	64.57
Total Business Present Value ($)	1,226,747									
Present Value of Royalties	35.18	30.96	27.24	23.97	21.10	18.56	16.34	14.38	12.65	11.13
Total Royalty Present Value ($)	211,508									

EXHIBIT 23.19 ROYALTY $.0375/LB. (NONEXCLUSIVE)

	1	2	3	4	5	6	7	8	9	10
QUANTITY (lbs. 000's)	500	500	500	750	750	940	940	1250	1250	1250
PRICE PER UNIT ($)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
REVENUE ($ 000's)	1,250	1,250	1,250	1,875	1,875	2,350	2,350	3,125	3,125	3,125
Cost of Goods Sold	800	800	800	1,200	1,200	1,504	1,504	2,000	2,000	2,000
Gross Profit	450	450	450	675	675	846	846	1,125	1,125	1,125
Royalty	38	38	38	38	38	38	38	38	38	38
SG & A Expense	200	200	200	300	300	376	376	500	500	500
Other Expense	50	50	50	75	75	94	94	125	125	125
Pretax Income	163	163	163	263	263	338	338	463	463	463
Taxes	65	65	65	105	105	135	135	185	185	185
Net Income	98	98	98	158	158	203	203	278	278	278
Present Value 12%	91.46	80.49	70.83	100.69	88.60	100.52	88.45	106.39	93.62	82.39
Total Business Present Value ($)	903,430									
Present Value of Royalties	35.18	30.96	27.24	23.97	21.10	18.61	16.38	14.38	12.65	11.13
Total Royalty Present Value ($)	211,601									

EXHIBIT 23.20 ROYALTY EROSION FROM "MOST FAVORED NATION"

23.5 EVALUATING THE NET PRESENT VALUE

To this point, we have concentrated on quantifying individual license provisions. In order to know where we are, it is necessary to integrate these valuations into a single conclusion. We suggest doing that by restating the individual discounted cash flow calculations into one in the form of a license. One therefore goes back and extracts from the DCFs the calculation of present value, year by year. We do so, utilizing the data from previous figures in Exhibit 23.21.

We now can observe the collective effect of the individual judgments made. The net present value (NPV) is $260,081, using the base case of the indemnification provision. If the worst case were used, the total NPV would be negative. We now are in a position to evaluate whether this license transaction, if it were structured as we have done, is an acceptable one.

We have adopted, as a royalty scheme, that shown in Exhibit 23.12, with royalty set at one-half of cost savings, with the assumption that further cost saving will be achieved by the efforts of the licensee, and by us, through technical assistance. Of the total positive present value ($432,000) forecast in Exhibit 23.21, the present value of royalties represents about 75%.

Of the total positive present value of $432,000, approximately 25%, or $104,000, is attributed to the present value of grant-backs. Without this present value, the total present value would be significantly less—perhaps to the point where we would not wish to consummate the transaction as structured here. We can, however, take some comfort in the fact that we utilized a discount factor of 20% in the calculation of the grant-backs' present value, making the estimate of this contribution more conservative. We might, however, wish to take a second look at our assumptions since this element of present value is so important in the total.

We also should take a second look at the indemnification provision and present value. Perhaps some stop-loss element might make this more palatable. Remember, we used a discount rate of 25% on this element. When the element is a potential *expense*, the use of a high discount rate ends up being aggressive in terms of the total. It has the effect of minimizing a potential cost.

If all of the individual provision elements are linked in the model (probably by using a computer), then changes to individual provisions can result in instant change in the total for decision-making use.

23.6 SUMMARY

Is a model such as this going to reduce the licensing process to a laptop computer exercise? Will we someday negotiate a license by simply saying, "Let my computer talk to your computer"? We cannot envision that ever happening. An intellectual property license represents a "marriage" of sorts between two (or more) entities, each represented by a number of individuals who bring to the negotiating table their own peculiarities, their respective corporate (and national) cultures, and a host of economic strategies and objectives. We do not see that being reduced to a computer program, although perhaps we should not be too positive. (After all, they are designing robots to do surgery!)

	1	2	3	4	5	6	7	8	9	10
Positive Cash Flows					Present Value ($000's)					
Present Value of Royalties	35	41	36	40	35	31	27	24	21	19
Sublicense	(9)	1	2	3	3	4	5	4	3	2
Grantback Provision	0	0	14	11	18	15	12	14	11	9
	26	43	52	54	57	49	44	42	35	30
Negative Cash Flows										
Administration, etc.	(23)	(4)	(4)	(3)	(3)	(2)	(2)	(2)	(2)	(1)
Technical Assistance	(33)	(21)	(7)	(3)	(3)	(2)	(2)	(2)	(2)	(1)
Indemnification	0	0	(49)	0	0	0	0	0	0	0
	(56)	(25)	(60)	(6)	(6)	(5)	(4)	(4)	(3)	(3)
Net Present Value	(30)	18	(7)	48	51	44	39	38	32	27
Total Present Value ($) 260,081										

EXHIBIT 23.21 LICENSE SUMMARY

What we have attempted to present is a tool or, more importantly, a systematic way of looking at the value or costs associated with particular license provisions. It can serve both to organize our thought process relative to the economic implications of what we are doing in the licensing process and to help apply return on investment principles to that process. Many of the features of this system can be, and deserve to be, further refined. Certainly the skills involved in forecasting are much more highly developed than we have presented. Also, there are available much more sophisticated methods for reflecting[3] the probabilities of future events, such as decision trees, Monte Carlo, and real option techniques. It is, however, a start.

3. There are two excellent sources of information regarding these techniques, both authored by Richard Razgaitis: *Valuation and Pricing of Technology-Based Intellectual Property* and *Deal Making Using Real Options and Monte Carlo Analysis*, both published by John Wiley & Sons, Inc., 2003.

CHAPTER 24

DETERMINING A ROYALTY RATE—AN EXAMPLE

This chapter presents a comprehensive analysis for deriving a royalty rate. A hypothetical case is postulated based on past consulting assignments we have completed. The purpose of this chapter is to present an example of how the methods discussed in previous chapters can be implemented to establish a royalty rate range for use in licensing negotiations. The example presented is for illustrative purposes only.

In this example, we are assuming that a hypothetical company, Phazor Medical, Inc., owns a patented technology that has been commercialized into a medical product. The company wishes to focus its efforts on other products and has decided to license the technology to a third party.

24.1 DESCRIPTION OF THE PATENTED DERMAPULSE INVENTION

The intellectual property central to this analysis is a patented technology, called *Pulsing Transdermal Drug Delivery System*. The patent covers a drug delivery system that transdermally introduces medical therapies into the bloodstream. The system makes use of microwave technology and eliminates the traditional practice of using injection needles that puncture skin and blood vein walls. The system covered by the patent has been commercialized in a gun-shaped device marketed under the trademark DermaPulse. The product includes a vial of the medical therapy to be introduced into a patient (in powder form) loaded into a chamber of the gun-shaped device similar to a cartridge loaded into a single-shot gun. The transfer surface of the system is a flat circle of fine stainless steel mesh. The mesh surface is pressed against a patient's skin; via low-level microwave pulses, the molecules of the skin surface and vein walls are "excited" into rapid motion. The excited state of the skin and vein wall molecules causes expansion of the free space between molecules. When sufficient free space between skin and vein wall molecules is determined by a laser-based measuring device, the powder form of the medical therapy is forced past the skin and vein wall molecules via a pulse of compressed oxygen. The compressed oxygen propels the medicine in between the excited skin and vein wall molecules, but is prevented from entering the patient by a barrier located within the gun device. The microwave-induced separation of molecules and pulse action require only milliseconds to complete. At the end of the procedure, the molecules of the skin and vein walls resume their preexcited state, but not before the medicine has been forced into the vein. Patients experience a subtle feeling of tingling during the procedure and are left with a slight bruise, which disappears within an hour of the procedure. The microwave pulses used to excite the skin and vein walls also serve to automatically sterilize the unit

during and after the procedure. Thus, the device is immediately ready for reuse with the loading of another cartridge. The DermaPulse presents these advantages and benefits:

- Elimination of the need to dispose of contaminated needles associated with traditional drug delivery systems
- Elimination of the need to puncture patient skin and vein walls, making the device especially beneficial for hemophiliacs who often develop chronic wounds from needle injections
- Improved dosage measurement
- Elimination of the steps needed to create a solution form of the medicine
- Lessened chance of contamination associated with needle injections of solutions
- Elimination of the contamination potential associated with erroneous use of used needles
- Enhanced productivity of personnel involved with large-scale immunization programs, due to the rapid rate at which the device can be used
- Reduced waste because the prefilled cartridge can be restocked if a procedure is cancelled or delayed
- Prelabeling of cartridges that eliminates possibility of incorrect dose
- Greater safety by eliminating the use of glass syringes
- Improved shelf life of the medicines, because they are maintained in powder form

The DermaPulse device faces established competition from the traditional syringes used at hospital pharmacies and doctors' offices. Additionally, the DermaPulse has volume limitations; only 10cc (solution equivalent) of powdered medication can be delivered. Further competition is provided by continued efforts in the healthcare industry to develop unique drug delivery methods, including transdermal patches, oral delivery, and mucus membrane delivery. Profit potential from commercialization also is constrained by the competitive nature of the medical industry.

24.2 FINANCIAL REVIEW

Information provided by Phazor shows that earnings from commercialization of the DermaPulse patented process were $42 million (before income taxes) for the year ending December 31, 2003, on $105 million of net sales. This represents a profit margin of 40%. After-tax earnings were reported as $25.2 million, representing a profit margin of 24%. Invested capital associated with the fixed and monetary assets used to commercialize this product line was reported at $126 million. Return on invested capital was 20%. This financial performance is slightly better than that attained by the product division in which the subject intellectual property is grouped. Pretax profit margins for the December 31, 2003, year-end for the total Phazor Basic Products Division (PBP Division) equaled 36%. After-tax margins equaled 21.6%.

24.3 INTELLECTUAL PROPERTY ECONOMIC CONTRIBUTION

Our first step is to isolate the expected economic contribution attributed to the subject intellectual property. Isolating the stream of economic benefits that are derived from intellectual property is key to deriving a fair royalty rate for use in licensing arrangements. The required analysis allocates the anticipated economic benefits from the overall

business enterprise to the asset categories that are employed in the generation of these benefits. Earnings derived from operations must be of an amount, on a consistent basis, to yield a fair rate of return over the term of the investment in the intellectual property as well as the complementary monetary and fixed assets used to commercialize the intellectual property.

In allocating earnings to intellectual property, a fair return first must be allocated to nonintellectual property assets. The allocation must address two important factors:

1. The relative amount of each asset category involved in the business
2. The appropriate rate of return to associate with each asset category

As previously discussed in this book, business enterprises consist of monetary assets, tangible assets, intangible assets, and intellectual property. Economic benefits are generated from the integrated employment of these complementary assets—namely, net profits. Each asset contributes. Based on the relative importance of each asset category and the risk associated with each asset category, the aggregate income of the enterprise can be allocated to its components. The composition of a typical business enterprise is shown here:

Business Enterprise = Monetary Assets + Tangible Assets + Intangible Assets + Intellectual Property

Composition of a business enterprise is basically:

- *Monetary assets*, in the form of net working capital (current assets less current liabilities)
- *Tangible assets*, as represented by buildings and machinery
- *Intangible assets*, such as trained workforce, technical drawings, distribution networks, and customer relationships
- *Intellectual property*, such as the DermaPulse device patents

Each of these asset categories contributes to the overall achievement of earnings. Before it is possible to allocate the enterprise earnings, we first must determine an appropriate rate of return to associate with each of the component parts. Starting with the rate of return requirement for the overall business enterprise, an assignment of rates of return for each asset category can be estimated. The derivation of a fair royalty rate for the subject device is accomplished by an allocation of total company investment returns among the asset categories previously shown.

(a) RATE OF RETURN ANALYSIS. The value of businesses and business assets generally reflects the present worth of the future economic benefits derived from ownership. A fundamental consideration therefore is quantification of the risk and return trade-off; higher risk demands greater returns. Throughout this chapter, a discount rate will be an important factor. The discount rate reflects the appropriate rate of return demanded from similar investments with respect to business risk, purchasing power risk, interest rate risk, economic risk, and industry risk.

As a starting point in this analysis, yields and interest rates are reviewed for alternate forms of investment having varying risk levels.

Ranked from lowest to highest risk, we can see in Exhibit 24.1 that, as the perception of risk increases, the rate of return that investors require from investments increases. Treasury securities are considered among the safest investments in the world because of the creditworthiness and backing of the U.S. government. These investments are nearly risk-free, as assurance regarding the amount and timing of investment returns and principal is

Type of Investment	Yield (%)
Treasury Bill—3 Months	1.17
Treasury Bill—1 Year	1.36
Treasury Securities—Long Term	5.07
Corporate Bonds—Rate Aaa	6.17
Corporate Bonds—Rate Baa	7.35

EXHIBIT 24.1 SELECTED INVESTMENT RATES OF RETURN

Source: U.S. Financial Data, Federal Reserve Bank of St. Louis, January 2003.

great. Higher yields are provided on corporate bonds, as these issues carry greater risk. Debt securities generally possess superior rights over equity investments and often are secured by specific property. Equity investment returns therefore must reflect the additional risks over those of secured debtors. Equity investments are not risk-free and are not secured by asset collateral. Consequently, equity investments must provide higher rates of return.

Indicators of an appropriate equity return are derived from an analysis of equity returns provided by investments in companies affected to a similar degree by the same business, purchasing power, interest rate, and economic and industry risks. Indications of proper equity rates of return are developed from application of the dividend growth model and Capital Asset Pricing Model. The Capital Asset Pricing Model (CAPM) attempts to describe the way prices of individual securities are determined in efficient markets. Conceptually, the CAPM states that the expected rate of return on a security is determined as a risk-free rate of return, plus a risk premium. The amount of risk premium reflects the additional risks associated with possible loss of investment and variabilities in the amount and timing of profits.

The subject intellectual property has been successfully commercialized. It has captured an initial level of the market and has proven to be profitable. Since the technology has advanced well beyond the research stages of development, venture capital rates of return ranging between 30% and 50% are considered inappropriate for this analysis.

The CAPM quantifies equity rates of return by focusing on the amount of investment return that an investment in the subject business enterprise should provide above and beyond the rate of return provided by an investment in risk-free investments such as U.S. government securities. The CAPM is presented as:

$$R_e = R_f + B(R_m - R_f)$$

where

R_e = The equity rate of return

R_f = The risk-free rate of return

R_m = The rate of return provided by the overall market portfolio of investments

B = Beta, a measure of the volatility for a specific investment relative to the market portfolio

The beta component, B, of the model represents a measure of an investment's volatility relative to the broad stock market. Presented in Exhibit 24.2 are betas for selected stocks of companies that engage in commercializing medical products. These betas serve as a proxy for an equity investment in the Phazor Basic Products Division.

Company	Beta
Becton Dickinson Co.	0.23
Biolase Technology, Inc.	0.51
CONMED Corp.	0.55
Owens & Minor, Inc.	0.35
Styker Corp.	0.88
Average	0.504

EXHIBIT 24.2 SELECTED MEDICAL PRODUCT COMPANIES

A review of Ibbotson Associates' annual report about expected market returns provided an indication that companies comprising the smallest New York Stock Exchange stocks are forecast to earn a return of 9% over the risk-free rate ($R_m - R_f$). Application of the CAPM suggests that an appropriate discount rate for use as an equity rate of return requirement is 9.5%, as calculated here:

$$\begin{aligned} R_e &= (R_f + B(R_m - R_f)) \\ &= (5.0 + (0.50)(9.0)) \\ &= (9.50) \end{aligned}$$

(b) RATE OF RETURN REQUIREMENTS FROM THE INTEGRATED PORTFOLIO OF BUSINESS ASSETS. Corporate investments typically must pass hurdle rates to be considered viable opportunities. Because debt and equity funds are used to finance these investments, the return that is provided must be sufficient to satisfy the interest due on the debt and also provide a fair rate of return on the equity funds. The hurdle rate must be the weighted average cost of capital (WACOC) in order to earn a fair rate of return on invested capital. The cost to the company of the invested capital equals the rate of return that the investors expect to receive, less any tax benefits that the company enjoys, such as the deductibility of interest expenses on debt.

Invested capital is defined as the summation of the fair market value of equity funds and debt obligations. The capital structure of the company might be a complex collection of bonds, notes, subordinated debentures, common stock, warrants, and preferred stock. Nonetheless, the total fair market value of the debt obligations and the various equity capital components represents the total invested capital of the business enterprise. These are the funds that were used to obtain the complementary assets of the business, including land, buildings, machinery, truck fleets, office equipment, patented technology, and net working capital.

The WACOC for Phazor Medical and potential licensees is an important factor. The WACOC is based on the market value of equity and the value of long-term debt. It represents the minimum amount of investment return that should be considered as acceptable from operating the business. When the costs of these capital components are weighted by their percentage of the total capital structure, a WACOC for healthcare companies is 8.50%. The WACOC reflects the required rate of return demanded by both debt and equity holders weighted by an industry-indicated debt-to-equity ratio and reflecting the tax deductibility of interest costs.

Capital Component	(%)	Required Return (%)	Required After-Tax Return	Weighted
Equity	80	9.5	9.5	7.60
Debt	20	7.5	4.5[1]	0.90
Weighted Average Cost of Capital				8.50

[1] Assumes income tax rate of 40%.

The determination of a royalty rate for a license agreement should be of such a level as to provide an amount that represents a fair rate of return on the value of the investment in the intellectual property with respect to the amount of investment risk accepted. The earnings that are attributed to intellectual property must consider any enhanced earnings that are enjoyed by the business and also must consider the amount invested in the complementary assets of net working capital, tangible assets, and complementary intangible assets.

The royalty must consider at least these five factors:

- Investment rates of return available from alternative forms of investment possessing comparable elements of risk
- The value of the intellectual property that is the subject of the licensing
- The amount of complementary monetary, tangible, and intangible assets required to commercialize the intellectual property
- The relative investment risk associated with the complementary monetary, tangible, and intangible assets
- The investment risk associated with the intellectual property introduced by factors such as advancing and competing technology, industry economics, governmental regulations, and others

The economic contribution from the Phazor patent can be estimated from an allocation of the total operating income of the enterprise. Based on the value of the different assets used in the business and the relative investment risk associated with each, the intellectual property contributions can be isolated. Allocation of the operating income derived from the DermaPulse product begins with allocating the total value of the product line business enterprise among the different asset categories. Estimating the value of the total business enterprise is the first step.

(c) DERMAPULSE PRODUCT LINE ENTERPRISE VALUE. The value of the business enterprise equals the aggregate value of equity and debt. The equity value can be estimated from application of a price/earnings (P/E) multiple to the most recent net income of the DermaPulse business enterprise. (Other methods are available for defining the value of the enterprise, but the application of a PE multiple was chosen as best for this case.) The net income of the product was reported at $25.2 million. Application of a PE multiple of 8, reflecting both prospects for growth and the risks of rapid technological obsolescence, provides an indication of $201.6 million for the equity of the DermaPulse business. The value of the debt can be estimated by an allocation of the total debt of Phazor Medical, Inc., among the fixed assets of the company when the debt is attributable to asset financing. Debt value for the DermaPulse business enterprise equals $50.4 million. The total value of invested capital in the DermaPulse business is $252 million.

The values for net working capital and fixed assets are based on the amounts associated with each asset category for the DermaPulse business. The net working capital can be derived directly from the Phazor Basic Products Division balance sheet. The value of the fixed assets also may be derived from the balance sheet after ensuring that the balance sheet depreciation corresponds with fair market value depreciation. The value of fixed assets can be determined by engaging a real estate and machinery expert. In many cases, an averaging of the original cost and net book value provides a reasonable approximation of the fair market value of the fixed assets. In the case of DermaPulse, the fixed assets have been estimated to have a value of $100 million.

The value of all intangible assets and intellectual property is estimated as the difference between the value of the enterprise and the values determined for the net working capital and fixed assets. When the $26 million for net working capital and the $100 million for fixed assets is subtracted from the $252 million value for the DermaPulse enterprise, the remaining amount of $126 million equals the value of all intangible assets and intellectual property, including the DermaPulse patent.

Allocation of the value of the DermaPulse enterprise among the asset categories of the business is:

DermaPulse Business Enterprise

Net working capital	$26 million
Fixed assets	$100 million
Intangible assets & intellectual property	$126 million
Total	$252 million

The next step in the derivation of a royalty is allocation of the operating income among the asset category values just determined.

(d) APPROPRIATE RETURN ON MONETARY ASSETS. The monetary assets of the business are its net working capital. This is the total of current assets minus current liabilities. Current assets consist of accounts receivable, inventories, cash, and short-term security investments. Offsetting this total are the current liabilities of the business, such as accounts payable, accrued salaries, and accrued expenses.

Working capital is considered to be the most liquid asset of a business. Receivables usually are collected within 60 days, and inventories sometimes are turned over in 90 days. The cash component is immediately available, and security holdings can be converted to cash with a telephone call to the firm's broker. Further evidence of liquidity is the use of accounts receivable and/or inventories as collateral for loans. In addition, accounts receivable can be sold for immediate cash to factoring companies at a discount of the book value.

Given the relative liquidity of working capital, the amount of investment risk is inherently low in comparison to that of the other asset categories. An appropriate rate of return to be associated with the working capital component of the business enterprise typically is lower than the overall WACOC. A surrogate rate of return can be used to estimate a proper amount to associate with the working capital: that which is available from investment in short-term securities of low risk levels.

(e) APPROPRIATE RETURN ON TANGIBLE ASSETS. Tangible or fixed assets of the business consist of production machinery, warehouse equipment, transportation fleet, office buildings, office equipment, leasehold improvements, and manufacturing plants. Although

these assets are not as liquid as working capital, they still possess some elements of marketability. Often they can be sold to other companies or used for alternate commercial purposes. This marketability allows a partial return of the investment in fixed assets of the business should the business fail.

Another aspect of relative risk reduction relates to the strategic redeployment of fixed assets. Assets that can be redirected for use elsewhere in a corporation have a degree of versatility that still can allow an economic contribution to be derived from their employment, even if it is not from the originally intended purpose.

Although these assets are riskier than working capital investments, they possess favorable characteristics that must be considered in the weighted average cost of capital allocation. An indication of the rate of return that is contributed by these assets can be pegged at about the interest rate at which commercial banks make loans, using the fixed assets as collateral. Use of these rates must be adjusted, however, to reflect the equity risk position of the owners, which is slightly riskier than that of lenders.

An alternative fixed asset investment for a company could be capital leasing of fixed assets to other manufacturers, where it would earn a return commensurate with the risk of collateralized lending. When an operating business is chosen as the investment vehicle, then, at a minimum, the collateralized lending rate of return must be earned on the fixed assets that are used.

(f) APPROPRIATE RETURN ON INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY. Intangible assets and intellectual property are considered the riskiest asset components of the overall business enterprise. Trademarks can become out of sync with the attitudes of society, and patents can be made obsolete by the advancing technology of competitors. These assets may have little, if any, liquidity and poor versatility for redeployment elsewhere in the business. This increases their risk. Customized computer software that is installed and running on a company's computer may have very little liquidation value if the company fails. The investment in a trained workforce may be altogether lost, and the value of distribution networks is directly related to the success of the business. A higher rate of return on these assets therefore is required. Since the overall return on the business is established as the WACOC and since reasonable returns for the monetary and tangible assets can be estimated, we are in a position to derive an appropriate rate of return to be earned by the intangible assets and intellectual property. Exhibit 24.3 shows the derivation of the appropriate amount of return to associate with the broad category of intangible assets and intellectual property.

The overall weighted average rate of return previously derived, as 11%, is allocated to each asset category based on the relative values derived for the different asset categories. Using the rates of return deemed appropriate for net working capital and fixed assets as inputs to the schedule, the appropriate amount of return for intangible assets and intellectual property can be derived. The allocated rates weight to 11.1%. Based on the weighting of asset category values, the returns can be allocated as a percent of total returns. Exhibit 24.3 shows that 5.6% of operating income can be associated with earning an investment return from net working capital. Also shown is that 35.8% of operating profit is associated with earning an investment return on fixed assets. The remaining amount of return, 58.6%, is associated with intangible assets and intellectual property. When these amounts are expressed as a percent of the $105 million of DermaPulse revenues, Exhibit 24.3 shows that 23.5% of revenues are derived from the combined investment in intangible assets and intellectual property. The final question centers on this: How much of the 23.5% is associated with the DermaPulse patent?

Asset Category	Amount	Percent	Required Return (%)	Weighted Required Return (%)	Allocated Weighted Return (%)	Allocation of Profits	Allocated Profits as a % of Revenues
Net Working Capital	26	10.3	2.50	0.26	3.03	1.27	1
Fixed Assets	100	39.7	7.00	2.78	32.68	13.72	13
Total Other Assets	0	0.0	0.00	0.00	0.00	—	0
IA & IP	126	50.0	10.93	5.47	64.29	27.00	26
Invested Capital	252	100.0%		8.50%	100.00%	42.00	0.40

EXHIBIT 24.3 ALLOCATION OF REQUIRED RATE OF RETURN AMONG THE BUSINESS ENTERPRISE ASSETS

DermaPulse Annual Revenues	$	105
Operating Income	$	42

REQUIRED RATE OF RETURN AMONG BUSINESS ENTERPRISE ASSETS

(g) ALLOCATION OF RETURNS TO THE DERMAPULSE PATENT. Before a royalty rate conclusion can be reached for the subject patent, we first must identify the amount of income, as a percent of sales, that is earned in this segment of the healthcare industry from the possession of intangible assets and intellectual property. This has been accomplished by studying the financial success of several companies that operate in the healthcare industry using intellectual property. By performing an allocation of investment returns among the asset categories of the companies listed here, we can fine-tune the amounts that should be associated with the subject patented technology. The selected companies are:

BECTON, DICKINSON AND COMPANY

Manufactures and sells a broad line of supplies, devices, and systems used by healthcare professionals, medical research institutions, and the general public

BIOLASE TECHNOLOGY, INC.

Designs, develops, manufactures, and markets laser-based systems for use in dental and medical applications

CONMED CORP.

Develops, manufactures, and supplies a broad range of medical instruments and systems used in orthopedics, general surgery, and other medical procedures

OWENS & MINOR, INC.

A distributor of national name-brand medical/surgical supplies, serving hospitals, integrated healthcare systems, and group purchasing organizations, with distribution centers located throughout the United States

STRYKER CORPORATION

Develops, manufactures, and markets specialty surgical and medical products, including orthopedic implants, powered surgical instruments, endoscopic systems, and patient care and handling equipment

Becton, Dickinson, Biolase Technology, CONMED Corp., and Stryker Corp. are companies that possess intangible assets and intellectual property, such as trademarks, customer relationships, established practices and procedures, trained workforces, and patented technology. Owens & Minor, Inc. is a distributor. Distributors sell products manufactured by others, yet they still possess intangible assets consisting of trademarks, customer relationships, established practices and procedures, and trained workforces. Distributors generally have all of the same intangible assets *except for patented technology.*

The analysis presented in Exhibit 24.4 was conducted for each of the medical products just described. For each company, total operating income was allocated among the

Company	Excess Return (%)
Becton, Dickinson	10.8
Biolase Technology	7.3
CONMED	13.2
Owens & Minor	1.5
Stryker	18.9
Average	10.3
Average*	12.6

*Without Owens & Minor.

EXHIBIT 24.4 SELECTED MEDICAL PRODUCT COMPANIES—EXCESS INTANGIBLE RETURNS AS A PERCENT OF REVENUES

different asset categories in order to isolate an amount, expressed as a percent of sales, attributable to the intangible assets and intellectual property. The amounts are expressed as a percent of revenues for each company in Exhibit 24.4. After accounting for fair rates of return on net working capital and fixed assets, any excess amounts that remain are attributed to the combined contributions of intangible assets and intellectual property.

The excess return for Owens & Minor is contrasted with the excess return associated with the other companies. The proprietary intellectual property of Becton, Dickinson, Biolase, CONMED, and Stryker includes patents and well-established brand names, as well as the typical intangible assets of a company. These keystone items of intellectual property allow these companies to easily earn a fair return on their basic assets of working capital and fixed assets. A significant amount of additional return also is generated by Stryker, represented in the amount of 18.9% of sales. The majority of this excess return is attributed to the existence of proprietary patents and brand names, but is also delivered by the existence of basic intangible assets. Our analysis of Becton, Dickinson shows that an excess return in the amount of 10.8% of sales reflects the absence of keystone drug patents but the existence of intangible assets and other forms of intellectual property, possibly medical device, design, and process patents.

Owens & Minor is a distributor that possesses intangible assets but lacks patented technology. The excess return for Owens & Minor is 1.5% of sales. This level of excess returns is substantially lower than those attained by the other companies that possess proprietary intangible assets.

The intangible assets of Owens & Minor, primarily engaged in distribution, provide less than 1.5% of revenues as profits. This profit margin is the amount earned by the company in excess of profits attributed to the monetary and fixed assets of the company. This profit margin can serve as a proxy for the return that Phazor Basic Products Division earns from the intangible assets associated with the DermaPulse product line. Because Phazor earns 26% of sales from the combined intangible assets and intellectual property, if 1.5% of sales is considered to represent the contribution of the intangible assets, then 24.5% can be attributed to the intellectual property represented by the DermaPulse patent. Thus, the investment rate of return analysis indicates a fair market royalty in excess of 20% of sales.

(h) DIFFERENTIAL PROFIT ANALYSIS. Differential analysis is a calculation in which the profits derived from use of infringed technology are subtracted from the profits that would be expected without access to the technology. The difference is attributed to the infringed technology and is considered by some as an indication of a royalty. In the DermaPulse case, the operating profit margin for the product is known to equal 40% of sales. The next step is determination of a normal industry profit.

Exhibit 24.5 presents operating profit margins for the selected medical companies. Average profits for some or all of these companies might serve as a normal industry profit. These healthy profit margins are considered to result from the patented technology used by these companies. The average profits for the group (without Owens & Minor) represent an average operating profit margin of 15.3%. If this profit margin is considered as a normal industry profit, then the differential analysis indicates a royalty for the DermaPulse patent of 24.7% of sales.

The distribution company, Owens & Minor, shows significantly lower profit margins, averaging 2% for the period reviewed. If this profit margin level is considered as a normal industry profit, then the differential analysis indicates a royalty for the DermaPulse patent of 38% of sales.

Company	Profit Margin (%)
Becton, Dickinson	16.7
Biolase Technology	7.3
CONMED	17.8
Owens & Minor	2.0
Stryker	19.2
Average	12.6
Average*	15.3

*Without Owens & Minor.

EXHIBIT 24.5 SELECTED MEDICAL PRODUCT COMPANIES—OPERATING PROFIT MARGINS, PERCENT OF REVENUES

Without further details about specific profit margins for nonproprietary products of Becton, Dickinson, Biolase, CONMED, and Stryker, it is difficult to conclude that their average profit margin is an industry norm. The distribution company clearly lacks patented technology, but its indicated royalty rate of 38% is much higher than the rates typically negotiated.

Although this analysis cannot independently lead us to a conclusion, it provides strong support for the other approaches that indicate high royalty rates for the DermaPulse technology.

24.4 ANALYSIS OF SPECIFIC MARKET TRANSACTIONS

Indications of reasonable royalties sometimes can be derived from market transactions, but extremely careful analysis is required. The amount at which independent parties licensed similar intellectual property sometimes can provide an indication for a reasonable royalty. Until recently, a large part of establishing licensing royalties has been the analysis of royalty rates contained in licenses of similar intellectual property that were negotiated between unrelated parties. Market transactions considered useful for deriving reasonable royalties are usually between unrelated parties when intellectual property is the focal point of the deal.

Transactions most often cited as useful indications for reasonable royalties are license agreements that disclose the compensation terms for other licenses involving the intellectual property being studied. In this case, Phazor has not licensed the subject technology to unrelated parties. As an alternative, an analysis of licensing transactions involving similar intellectual property often is relied on for deriving reasonable royalties. Presented here is royalty rate information associated with the medical supplies industries. Information that is more comparable to the subject patented process was not available.

As part of our analysis, we considered the amounts paid between independent third parties for licenses that involve different types of medical products and devices. Presented in this part of our report is a summary of third-party licensing transactions for which monetary terms have been disclosed.

(a) LICENSING TRANSACTIONS.

(i) Autotransfusion Products. Surgidyne, Inc. entered into a license agreement with V. Meuller, a division of Baxter Healthcare Corporation, providing the V. Meuller division with exclusive worldwide marketing rights for its autotransfusion products. Autotransfusion

involves capturing and reinfusing the patient's own blood during or after a surgical procedure. The licensed system, which Surgidyne has adapted for its wound suction system, employs a battery-powered vacuum controller with disposable collection and reinfusion products. The products will be sold under V. Meuller's trademark, Jackson-Pratt. Under the license agreement, V. Meuller will purchase the products from Surgidyne and pay a 20% royalty on sales of the autotransfusion products up to $2 million, after which the royalty will drop to 5%.

Surgidyne, Inc. recently reported that it has received its first order for the battery-powered vacuum controllers and disposable products that are used in postoperative drainage and transfusion. The initial order received by the company was $244,000.

(ii) Cancer Imaging Products. An operating unit of Montedison, SpA announced that it has reached an agreement to license the cancer imaging products of Immunomedics. Montedison will sell the products that are to be manufactured by Immunomedics, which include in vivo imaging products for colorectal, breast, and lung cancers, B-cell lymphoma, and some types of leukemia, liver, and germ cell centers. Immunomedics ultimately may receive $22 million from the agreement. A $5 million up-front license fee has been paid. The cancer imaging products utilized the radioisotope technetium attached to a fragmented antibody. Under the terms of the agreement, Immunomedics will receive royalties on the sale of licensed products and transfer payments on products manufactured for Montedison. Immunomedics is a biopharmaceutical company applying innovative technology in antibody selection and modification to the development of products for the protection and treatment of cancer and infectious diseases. Integral to these products are highly specific antibodies designed to deliver radioisotopes, chemotherapeutic agents, or toxins to tumors and sites of infection.

(iii) Diagnostic Test Kits. Disease Detection International (DDI) and Meridian Diagnostics, Inc., have entered into a license agreement, on a nonexclusive basis, that will allow Meridian Diagnostics to market, sell, and manufacture six rapid diagnostic test kits that have received Food and Drug Administration premarket approval. The test kits include Disease Detection International's rapid test for pregnancy, strep throat, toxoplasma rubella, cytomegalovirus, herpes simplex I, and herpes simplex II. The license also calls for Meridian to have a worldwide and exclusive license to market, sell, and manufacture tests that utilize disease detection technology developed by either company separately or in joint research and development.

DDI received $110,000 in connection with the signing of the agreement and $100,000 as an advance against royalties. In addition, the license agreement provides that DDI can receive up to another $100,000 in advances against royalties. The license agreement calls for DDI to receive 6% of royalties on the sales of all the covered products sold by Meridian. In addition, Meridian will have a 20% interest in the rapid test product of disease detection that detects antibodies of the HIV virus.

(iv) Mamotest Needle Item. Fischer Imaging Corporation has signed an agreement with ABB Tekniska Rontgencentralen (TRC), a Swedish company, that will expand Fischer's marketing rights of its mamotest needle biopsy system to include Europe and all other international markets. Under the agreement, Fischer will assume all worldwide marketing rights, distribution agreements, trademarks, and patents. TRC will permanently cease production of its version of its stereotactic needle breast biopsy system. Fischer will pay TRC a fixed payment of approximately $500,000 over three years, which will replace a royalty

on unit sales. The mamotest continues to gain support in the medical community as a less invasive alternative to surgical biopsy of a nonpalpable breast lesion. Fischer Imaging Corporation designs, manufactures, and markets specialty and general-purpose x-ray imaging systems for the diagnosis and treatment of breast cancer and heart and vascular disease. The company's newest product lines are directed toward medical specialities in which minimally invasive surgical techniques are replacing open surgical procedures.

(v) Microorganism Filters. A patented device (Patent No. 4,829,005, Mog Patent) that filters microorganisms from body fluids was purchased from Human Medical Laboratories, Inc., by Future Medical Technologies International. Future Medical has made an advanced cash payment of $372,000 and 150,000 shares of unregistered common stock. Human Medical will also receive a 3% royalty based upon net sales for the lifetime of the patent, with a cap of $5 million.

(vi) Water-Jel Products Technology. Trilling Medical Technologies, Inc., announced that it has entered into a strategic long-term license agreement with a consumer health division of Pfizer for the introduction of Water-Jel products to consumer markets in the United States and Canada. The agreement is expected to establish a firm relationship between the two companies for the next 20 years, possibly beyond. In a new report, Peter Cohen, president of Trilling Medical Technologies, stated, "If sales of burn dressings and other products, which utilize Trilling's technology, average $50 million per year, then Trilling will reap $50 million in royalties under the pact over the next 20 years." This translates to a royalty rate of 5% on sales.

The costs associated with manufacturing and marketing the Water-Jel products will be the responsibility of Pfizer. Pfizer, Inc. is currently producing Water-Jel sterile burn dressings at its Parsippany, New Jersey, plant and is conducting test marketing in several major cities in the United States.

The new license supersedes the company's existing October 1988 agreement with Pfizer and substantially upgrades the relationship between the two companies. Under terms of the new license, Pfizer will pay Trilling 5% royalties on net sales of Water-Jel sterile burn dressings for 10 years after the product is commercially introduced. Trilling will also receive royalties of 5% of net sales for each new product that Pfizer commercially introduces that utilizes Trilling's technology. Pfizer also will pay Trilling a 2% royalty of net sales on each new product that Pfizer introduces that uses any of the nine Trilling licensed trademarks. The 2% royalty will be due to Trilling even on products not associated with the licensed proprietary technology.

Trilling also licensed Pfizer to manufacture and market a line of Water-Jel fire blankets designed for consumer use in the United States and Canada. The license would expire if Pfizer failed to commercially introduce the fire blanket within the licensed territory by 1994. Pfizer would pay Trilling 5% of net sales for a 10-year period beginning with a commercial introduction. This license agreement ultimately was terminated when an unrelated third party claimed ownership rights to the Water-Jel technologies' patents.

(vii) Diagnostic Product. Corvas International, Inc. reached an agreement to grant a division of Johnson & Johnson (J & J) worldwide rights to manufacture and distribute a Corvas product for diagnostic use in determining the blood-clotting ability of a patient. The company said that the agreement completes a relationship initiated in January 1991.

Corvas said it will produce the recombinant human tissue factor for J & J in return for licensing fees, manufacturing income, and product royalties, which were expected to total at least $1.5 million through 1995. The Corvas recombinant tissue factor is a pure human material that overcomes the problems associated with traditional materials used in blood-clotting tests. The tests, which comprise a $50 million worldwide market, are performed to determine the status of a blood-clotting system in a patient before, during, and after surgery. The systems also are used to monitor anticoagulant therapy in heart attack and stroke patients.

(viii) Cytology Device. Hailey Energy Corporation has signed a letter of intent with Langdon Medical Corporation to acquire rights to Langdon's cytology device. This marks the first venture outside of the energy industry for Hailey. The company said it will pay Langdon $300,000, plus a 10% royalty on retail sales for manufacturing and marketing rights. The cytology device is a system designed to extract cells from an organ of the human body through a scope commonly used to view the organ, in a process often referred to as a colonoscopy, laparoscopy, or cystoscopy. The new system should allow the early detection of cancerous transitional cells. In many cases it could reduce the costs of biopsy procedures. The system can be used in an office setting where scopes are used for examination and does not require the patient to be under anesthesia during the collection of cells. Hailey is interested in acquiring the manufacturing and marketing rights in order to diversify into the medical products industry, which it believes shows greater promise for revenues and earnings.

(ix) Denture Spray. Dento-Med Industries, Inc. signed an exclusive worldwide licensing agreement with CCA Industries that will allow CCA to market and distribute Dento-Med's denture freshener, a new type of product for people who wear dental prostheses. CCA is a manufacturer, marketer, and international distributor of more than 50 brand-name health and beauty aids, including oral hygiene products. The company sells to mass merchandisers and major drugstore chains. The license agreement is for an initial term of 18 months and is perpetually renewable. Dento-Med will receive royalties equal to 5% of all net sales of the product.

Dento-Med's product is a moisturizing spray applied to the inside of dentures before they are placed in the mouth. The product is not a denture cleanser or adhesive but a denture freshener. This is a new product category for wearers of dental prostheses.

The medical product licenses studied indicate royalty rates between 3% and 10%.

Based on our analysis of market transactions, a royalty rate on net sales at the high end of the indicated range is a reasonable expectation: 7% to 10%.

(b) UP-FRONT LICENSE FEES. Up-front license fees are very difficult to quantify through an investment rate of return analysis. Although they represent a total portion of the licensing compensation package, the trade-off between up-front fees and ongoing royalty rates is a matter of industry practice and negotiation abilities. To provide guidance as to an amount that might be reasonable for the intellectual property that is the subject of this chapter, we have expanded our review of market transaction information to include those involving biotechnology and pharmaceutical intellectual property.

The following bullet points summarize the up-front fees associated with market transactions. This information was obtained from *Royalty Rates for Pharmaceuticals & Biotechnology*, Fifth Edition, edited by Russell L. Parr and published by IPRA, Inc. of

Yardley, PA (2003). This summary is followed by the pharmaceutical and biotechnology transactions for which up-front licensing fees were disclosed.

- Immunomedics received a $5 million up-front license fee from Montedison, SpA for a license regarding cancer imaging products.
- Meridian Diagnostics, Inc. licensed the technology to manufacture six rapid detection test kits for various indications. The company paid $110,000 in connection with signing the license agreement and received another $100,000 as an advance against royalties. The license agreement also indicated that there was a contingency whereby an additional $100,000 could be received as an advance against royalties.
- Future Medical Technologies International paid an up-front license fee of $372,000 plus shares of stock for a patented device that filters microorganisms.
- Hailey Energy Corporation entered into a license agreement, regarding a cytology device, involving an up-front license fee of $300,000.
- Lucky, Ltd. licensed the technology for cephalosporin compound, an antibody compound, to Glaxo Holdings. Glaxo paid a license fee of $10 billion *won* as an up-front license fee. At the time of the transaction, one *won* equaled .0013947 U.S. dollars.
- An option to license a patented dosage regime for oral contraceptives was granted by Gynex, Inc., to the Organon Group, a subsidiary of Akzo. The option allows Organon 1 year to conduct studies to determine the efficacy of the regime. After the studies are completed, the option may be exercised for a one-time payment of $157,000. An additional milestone payment is required pending successful development of a product. The milestone payment is $275,000 for U.S. rights and $500,000 for foreign market rights. At the time of Food and Drug Administration approval, another milestone payment of $250,000 is required, at which time ongoing royalties are expected to be paid. The market potential for this product is expected to be at least $150 million.
- American Biogenic Sciences, Inc., granted Medeva, Plc a 2-year option to acquire a license for the worldwide rights to a hepatitis A vaccine. If the option is exercised, Medeva will pay $2.5 million plus ongoing royalties that can range as high as 15% on sales in excess of $50 million. In addition, Medeva has agreed to purchase 200,000 shares of newly issued stock from American Biogenic Sciences for an aggregate amount of $1.5 million. The worldwide market for hepatitis A vaccine is estimated at approximately $300 million per year.
- Scherring Corporation entered into a license agreement to develop a long-acting form of a genetically engineered anticancer and antiviral agent, using a proprietary protein-based drug delivery technology belonging to Enzon, Inc. Under the agreement, Enzon will receive milestone payments totaling approximately $6 million plus royalties that were undisclosed.
- Advanced Polymer Systems, Inc. granted a license to Orthopharmaceutical for the use of retinoid-based products. A license fee of $2 million was involved in the transaction. In addition, Johnson & Johnson, parent company of Orthopharmaceutical, purchased $4 million of the newly issued shares of Advanced Polymer common stock. The amount of royalty associated with this transaction was not disclosed.

- Immunogen granted a license for the sale of one of its products (a cancer drug) to Roussell Uclaf for exclusive sales in Europe. Immunogen will receive a $5 million license fee plus undisclosed royalties.
- Merck & Company exercised its right under a research collaboration and license agreement to extend its options involving vaccines that are developed against five specific infectious diseases, in return for the payment to Vical, Inc. of $1.25 million.

The information summarized in this chapter section leads to the conclusion that drugs in biotechnology command impressive licensing fees in the low seven-figure range. The information also indicates that licenses involving nondrug technology involve licensing fees in the low six figures: $100,000 to $300,000. We believe from this information that an up-front license fee between $200,000 and $500,000 would be most appropriate for the technology analyzed in this chapter.

24.5 CONCLUSION

A fair royalty rate to be paid for licensing the subject intellectual property is indicated by the highlighted market transactions at approximately 7% to 10%. Another indication came from the investment rate of return analysis, indicating a reasonable royalty of over 20%. The advantages and benefits of the DermaPulse patent previously outlined in this chapter call for more weight to be given to the indicated royalty provided by the investment rate of return method. At the same time, the licensing industry is stubborn when called on to depart from the royalties indicated by the market approach. Therefore, we conclude that a license negotiation involving the DermaPulse patent would be expected to be completed at a royalty ranging between 10% and 15%. We also conclude that a lump-sum license fee is a reasonable expectation from a negotiation involving the subject patent, and should range between $200,000 and $500,000.

CHAPTER 25

DEALING WITH EARLY-STAGE INTELLECTUAL PROPERTY

In Chapter 23, we made a detailed presentation of the discounted cash flow (DCF) methodology for evaluating license transactions. In other writings, we have advocated use of the DCF technique for estimating the value of intellectual property. It is our belief that this methodology, reflecting as it does the reality of business decision making, is the proper foundation for such analysis. We have continually emphasized its use because many in the intellectual property field have been unaware of its efficacy.

The examples presented have presumed (1) the existence of fairly well-developed intellectual property and (2) that its prospects for exploitation are reasonably clear. Thus, we have been able to develop reasonable forecasts of the costs of development and the potential revenues from exploitation.

What of the situation in which the development costs are not so clear and in which we may know little about the potential for exploitation? Is the same methodology appropriate, and if so, to what extent? This chapter addresses these questions.

A number of conditions can cause uncertainty about the potential for, and quantification of, profitable intellectual property exploitation:

- The intellectual property is in the conceptual stage of development.
- Commercialization of the intellectual property is in doubt. This may be because methods to develop the property fully are not available or because the process is perceived to be so difficult that success is unlikely.
- The potential for commercialization may be unclear because acceptance of the resulting product in the marketplace is difficult to predict.
- Commercialization of the intellectual property may have to wait for the development of complementary intellectual property, materials, or technology.
- The intellectual property is of a "building block" nature for which ultimate uses can only be conjectured.
- The intellectual property may be a new "test" for the presence of other conditions or materials, but not be a product in itself.
- The development cost may be perceived to be unusually high or the development period very long, casting doubt on the viability of the conceptual intellectual property.

Examples of this situation are common in biotechnology, where the development of a breakthrough process or active compound is only one of many tasks that must be completed before commercialization can begin. Other examples might include a software algorithm that can be used in many different applications or, as an example, the technology associated with producing a material that melts when exposed to light. It is fairly obvious that there are likely uses for such technologies, but the full extent of their potential may be very difficult to determine with any reasonable precision.

Other examples are materials or processes that can be reproduced only in the very controlled conditions of the laboratory or at extremely high cost. This technology might be very attractive, but one senses intuitively that there is a long way from this stage of development to any form of commercialization. Along with that intuition comes a realization that the path, however long it may turn out to be, will be a costly one to follow.

There are also circumstances in which the uncertainty is caused by an inability to discern a method of exploitation. Ansel Adams produced art-quality photographs with a very distinctive "look." He spent hours in the field and in the darkroom developing and exploiting his special know-how. He could exploit this intellectual property through the sale of his own works and ultimately (to a limited extent) through teaching, but there was no way to achieve a rapid or wide dissemination of this intellectual property, had he chosen to do so. There are many forms of intellectual property like this, for which the technology transfer process is very difficult and the exploitation (and value) of such intellectual property may be constrained by this factor.

Exhibit 25.1 illustrates the essential steps in the exploitation of technology. These steps are grouped under three headings: Technology Analysis ("What do we have to sell?"),

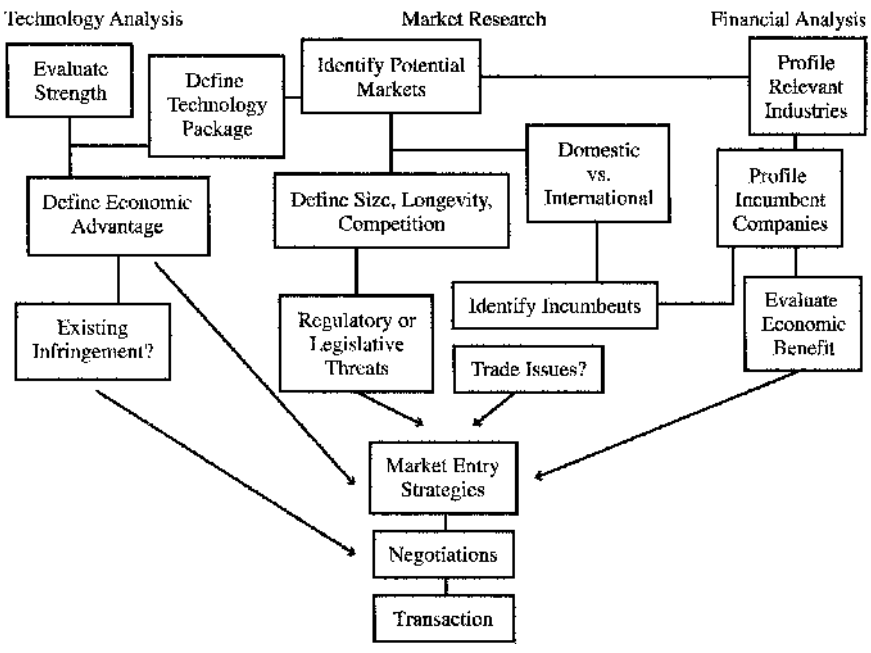

EXHIBIT 25.1 TECHNOLOGY EXPLOITATION

Market Research ("Who are we going to sell it to?"), and Financial Analysis ("What should we get for it?"). As to embryonic technology, the most difficult questions center around evaluating the strength of the technology, defining the technology package available for exploitation, and identifying potential markets. We also note in this diagram the exploitation strategy of identifying possible infringers as a prelude to licensing negotiations.

25.1 EARLY-STAGE TECHNOLOGY

In spite of this uncertainty, there are those who must make licensing and valuation decisions at an early stage in the development of intellectual property. As an example, universities, research institutions, and governmental units are not in the business of commercializing intellectual property, yet are key agencies in its development. Their role has been to develop the intellectual property conceptually and bring it to reality in the laboratory. It then must be handed off to someone who can carry it further along the development track or all the way to commercialization.

Quite naturally, these early-stage developers want to be compensated for their work and to share in the benefits of future commercialization. That mandates that the handing-off be a business transaction involving some quid pro quo. Often the compensation to the early-stage developer is not in the form of cash, but rather in the form of future consulting services, cooperative or sponsored research, materials, use of facilities, or other services. Whatever its form, however, the transaction is an exchange of early-stage intellectual property for money or services, and both sides attempt to make that exchange equitable. That brings about the need for some tools of measurement.

Some developers of intellectual property, such as industry research institutes or governmental units, may not look to the achievement of maximum profits but rather to rapid dissemination as their goal in intellectual property exploitation. Their focus is on the economics of the business that will be the ultimate user of the technology, and their goal will be to devise an exploitation scheme that will complement the business financially. Other intellectual property developers may have such a backlog of intellectual property under development that their primary goal is to get the intellectual property into the hands of responsible exploiters as rapidly as possible, without undue attention to maximizing profitability. The teams of scientists/inventors that constitute such organizations want to see results, after all. The tools we are discussing are useful in these circumstances as well.

Early-stage intellectual property can take many forms, such as:

- A plot outline that could be developed into a screenplay, script, or book
- A drawing and concept for a cartoon character
- A logo, name, or phrase that could be associated with a product as a trademark (Because of our trademark laws, the product usually comes first and the protection for a name follows.)
- A retail concept that could be developed into a franchise
- A "character" concept that could be adopted by an actor or other media personality
- A concept, formula, or process that could lead to some form of patented or unpatented technology

To streamline our discussion, we will refer to early-stage intellectual property as early-stage technology, but the reader must keep in mind that the principles discussed apply equally to any form of early-stage intellectual property.

25.2 DEVELOPMENT COSTS

The most obvious characteristic of early-stage or embryonic technology is its need for further development. The very use of the term "embryonic" calls to mind the stages of human development. As infants we arrive in the world with limitless potential (direction unknown) and require much care. As we progress through childhood, youth, and adolescence, our personalities and abilities become more focused and apparent. During this time, as most parents would affirm, large amounts of time and money are required to provide education and the other seemingly necessary accouterments of young adulthood. At this stage of our lives, we produce very little in the way of commercial output and require much in the way of input. During the process, however, it becomes ever more clear what we are "going to be when we grow up." At some point we become "commercialized," that is, the world is willing to pay something for our skills and services, whatever they turn out to be, and we become self-sufficient. As we develop, it becomes a bit easier to foresee our ultimate role in life. If one's task is to seek those with a particular skill set, the job certainly becomes easier as this development occurs.

Those who are involved in the licensing of early-stage technology tell us that they do not have the advantage of this development history and that their job is analogous to attempting to determine whether an infant will have the inclination and ability to become a centerfielder, while at the same time having to negotiate a contract with a major league ball club! When we use the "embryonic" terminology, we are going back even further in the process and making the task even more difficult.

When we apply this analogy to early-stage technology, we usually have a situation in which the intellectual property:

- Has a wide spectrum of exploitation potential.
- Has undetectable specific exploitation possibilities.
- Will require extensive further development before exploitation prospects become clear. This process typically requires much time and money, which must be provided by someone who can tolerate the uncertainty of the investment. Expenditures for research in early-stage technology can be like putting quarters in a slot machine.

Exhibit 25.2 illustrates a number of characteristics of early-stage technology relative to the development process. Along the bottom of that figure we describe the spectrum of intellectual property development, from Concept to Commercialization. We then present other aspects of developing technology, describing its characteristics, relative to the stage of development.

We further describe these stages in this way:

- *Conceptual Stage.* This is the "gleam in the eye" setting that stages the development of the basic technology. Development expenses and timetable are largely unquantifiable, and the potential uses of the concept are only hinted at. The owner's attention is on technology development, not markets.
- *Basic Research.* In this stage, the concept may be brought to laboratory reality and the technology begins to take shape. There may be hints as to commercial possibilities. Based on this limited experience, the development costs may begin to be quantifiable. Fields of application will be quite broad. The original developer may be seeking additional financing or another entity to continue the development.

Contingencies Renegotiation Clauses Less Precise		Royalty Abatements Royalty Incentives Nonexclusive		ROYALTY TERMS			Exclusive Specific Fields of Use		Firm Terms Known Royalty Base Up-Front Fees
Entrepreneur Taxes (Gov't R&D) Foundation Academic Funding		Venture Capital		SOURCE OF CAPITAL			Corporate Equity Financing		Bank Debt Public Equity Market
University Foundation Government Entrepreneur Seed Capital		University Corporation Joint Venture		Joint Venture OWNER CHARACTERISTICS			Corporation		Corporation
Services Consulting Sponsored Research Materials		Grant Backs Research Grants Equity Options		FORM OF TRANSFER PAYMENT			Cash Royalties		Cash Royalties Up-Front Fees
Very High		Quite High		INVESTMENT RISK			Moderate		Equal to Business and Financial Risk of Product Line
Unknown		Market Clarity Emerging		REVENUE POTENTIAL			Market and Pricing Becoming Clear		Capable of Being Closely Estimated
Difficult to Estimate		Can Be Approximated		DEVELOPMENT COST AND TIME			Can Be Reasonably Estimated		Known
Difficult Time-Consuming		Limited		INTERNATIONAL EXPLOITATION			More Common		Unlimited Possibilities
Low				VALUE CONFIDENCE					High
Concept	Refined Concept	Basic Research	Applied Research	Targeted Development	Prototype		Pilot Plant	Early Acceptance	Commercialization

EXHIBIT 25.2 INDUSTRY TECHNOLOGY CYCLE

- *Applied Research.* As development continues, attention is turned to markets and the potential exploitation of the technology. These considerations may begin to shape the development process. There is still a broad range of possibilities for intellectual property application. The total cost of development can be estimated.
- *Targeted Development.* At this stage, applications are taking shape and the development expenditures are directed at specific goals along a known path. Total development cost and timetable are fairly well known, and the revenue estimates can be made based on the emerging targets. There may be some early market testing. Fields of application are narrowing and potential licensees are identified.
- *Prototype/Pilot Plant.* In this stage, the technology moves from the laboratory to early-stage production tests. There may be several sizes of pilot plant development if the technology is aimed at high-volume production processes or products. Some revenue may be generated, but it is usually in the nature of an unexpected bonus. Future development expenditures can be estimated more precisely. Estimates can be made of future manufacturing costs, and the economics of the intellectual property in a full production setting can be estimated reliably. Market testing may be fairly extensive at this stage.

  Additional financing usually is required, and this may trigger a change from venture capital to permanent, corporate exploitation (deep pockets are needed).
- *Early Acceptance/Commercialization.* In these final development stages, the intellectual property products begin to establish a track record and a market position. Ancillary intellectual property may develop as well (a trademark for the new product). Applications for the intellectual property are well defined and extensions may be contemplated. Development costs are largely ended, manufacturing costs are known, and the economics of the intellectual property are established. The economic life of the intellectual property can be reliably predicted.

As an example, the bicycle might have begun when someone imagined the concept of human locomotion using a wheel. The possibilities would be unknown, but the potential of being able to travel faster than walking would have seemed attractive and worthy of further research. Basic research might have revealed the gyroscopic effect of a spinning wheel, would have addressed the proper size for such a wheel, given the size of a human and the condition of roads, and so forth. Applied research might have addressed the development of a "fork" to mount the wheel, seating for the rider, methods for steering and stopping, and probably would have revealed the desirability of two wheels rather than one.

After building a prototype, development would address improvements in materials, construction, gears, brakes, tires, and the like. It might have become apparent, at this point, that commercialization was blocked because some constituent, such as suitable tire material, was not available, or available only at great cost. Assuming no such impediment was discovered, however, a successful introduction in the marketplace would establish the bicycle technology in a product. A growing market and the creation and development of a trademark could establish a market identity that could ultimately transcend the technology.

We must remember that at each stage in the development of the bicycle there was licensable intellectual property. The characteristics of the license transaction at each development stage, however, would have changed markedly as the development progressed. We illustrate those changes in Exhibit 25.2.

25.3 RISK

The process of intellectual property development illustrated in Exhibit 25.2 can be thought of as an amelioration of risk. At every step along the way, the risk inherent in a transaction is reduced. Risk is not eliminated, however. If one licensed the bicycle technology after it was established successfully in the market, there would still be risks that cycling might be found to be injurious to one's health, bicycles might be legislated off the roads, might become unfashionable, and so forth. The business and financial risks associated with a line of products would still exist, but they would not be compounded by the uncertainties of the intellectual property development process, as they would when making a deal at the concept stage.

We have discussed the relationship of risk and investment rates of return at several places in the main text, and Appendix A provides a lengthy explanation. We can intuitively sense the change in risk during the development process as unknowns are eliminated. Exhibit 25.3 illustrates that change as it pertains to the required investment rate of return. That return starts high at the beginning of the development process and drops as

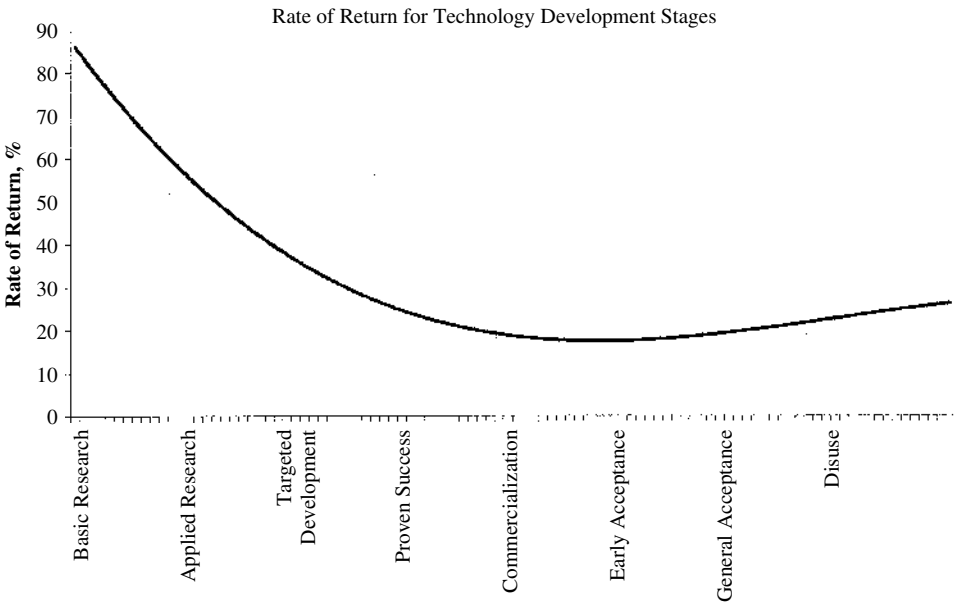

EXHIBIT 25.3 DEVELOPMENT OF TECHNOLOGY

progress is made. The return requirement moves upward again as the intellectual property nears the end of its economic life, because an investor at that point is facing stiff competition in the marketplace, and product profitability could disappear at any moment.

The change in risk during the development process also is greatly affected by the *form* of that process. If we are able to proceed with meaningful development in small increments, risk is reduced. That is, if we can achieve small, intermediate goals with relatively small expenditures of time and money, the process is much more financially palatable. It is like crossing a river by wading across a shallow area. During the crossing we have many options—we can stop, turn back, go faster, go slower—all without jeopardizing our safety. And we have a constant measurement of our progress.

If, in contrast, we must commit large amounts of time and/or money to particular tasks within the development process, the risk becomes greater. This is crossing the river by leaping the chasm above it. We are committed to putting all of our energy and daring into the jump, there is no turning back, no chance (or need) to measure progress, and there are only two possible outcomes.

These conditions greatly affect the nature of a licensing transaction, especially if it takes place during the early-stage development wherein the licensee takes on the development responsibility.

25.4 TIME

Similarly, the shorter the duration of the development process, the less the risk. From a financing standpoint, this is true because the decision to commit funds is based on known economic conditions. A long development period will see conditions change—perhaps for the better, but perhaps also for the worse. This time factor is especially important in high-technology development, because the competitive situation and the marketplace can change dramatically during the development process—again, perhaps for the better or perhaps for the worse.

This consideration of time is exemplified by the form of financing typically available for developing technology. There is a "short-term" mentality in the U.S. corporate world that seeks the fastest possible path from concept to marketplace or from investment to profits. Corporate leaders blame this on investors (primarily common stockholders), but whatever the cause, this attitude makes early-stage technology unattractive to corporate investment. Corporate licensors, buyers, or joint venturers like to see clearly the light at the end of the development tunnel before committing funds. They therefore tend to be late-stage investors. This is not true in every case—there are some very successful early-stage corporate investment programs—but it is a general tendency.

Banks also tend to be late-stage investors, but for a different reason. They are willing to invest long term, but they are very uncomfortable investing at a stage when there will be nothing tangible if failure occurs. The concept of collateral is an ingrained custom, and since there usually is no unrelated collateral available (a university is not likely to pledge a lecture hall in order to obtain research funding!), the early-stage technology is by itself not very satisfying. Banks therefore also tend to be late-stage financiers.

25.5 THE DCF MECHANISM

Present value concepts are the foundation of the DCF technique. They were illustrated by two tables that have been combined in Exhibit 25.4.

	Year 1	Year 2	Year 3
Cash Inflow	$1,000	$1,200	$900
Cash Outflow	500	1,400	600
Net Cash Flow	$ 500	$-200	$300
Net Cash Flow	$ 500	$-200	$300
Discount Factor	0.928	0.800	0.689
Present Values	$ 464	$-160	$207
Sum of Present Values = $511			

EXHIBIT 25.4 NET CASH FLOWS

This exhibit shows estimates of cash inflow and outflow and also shows the calculation of the net cash flow and the present value of the net cash flow as $511. It is easy to see that the present value would vary considerably if either the *magnitude* or the *timing* of cash inflows or outflows were changed. Therefore, if we use this technique in a situation in which we are unable to predict potential revenues or development expenses with reasonable accuracy, this tool changes from a scalpel to an ax. The ax still can be useful—we simply must recognize its limitations.

Another concept that must be understood is that this technique requires three inputs: inflows, outflows, and a discount rate. From these three, the fourth element, the present value, is calculated. We can, however, make the technique useful while knowing any three of the four elements.

If, as an example, we decide that a project must have a present value of at least $500, and we have judged 15% to be a reasonable reflection of the project's risk, and we are fairly confident about what the project will cost (cash outflows), then we can estimate the level of sales revenue (cash inflows) necessary to accomplish this. We then can make an independent judgment about whether that level of sales is reasonable, given expected market share, total size of the market, and so forth. By varying the inputs (as to their size and timing), we can test both the sensitivity of the result and its reasonableness.

25.6 USING DISCOUNTED CASH FLOW (DCF) AS A MEASURING TOOL

For a more complex example, we provide Exhibit 25.5, which is a longer projection modeled after a technology development situation. There is a period of 3 years during which the only cash flow is negative, representing development expense. In the fourth year, the largest expense is incurred (possibly for the prototype or pilot plant, or to mount a marketing campaign), and a small amount of revenue is realized. From that point, revenue increases to a stable level and cash outflows (now represented by cost of goods and operating expenses) also stabilize. This base information also is presented in graph form as Exhibit 25.6.

In Exhibit 25.7, we add a calculation of the present value of the net cash flows, using a discount rate of 10%. The present values are negative during the first 4 years and turn positive thereafter. The sum of the negative and positive net cash flows is $904, indicating the value of the project if all happens according to plan. This is shown in graph form as Exhibit 25.8.

We can utilize this model to test various development scenarios and to demonstrate its use as a tool to quantify the technology economics at different stages in its development.

	YEAR									
	1	2	3	4	5	6	7	8	9	10
Cash Inflow	0	0	0	250	1,000	2,000	2,500	3,000	3,000	3,000
Cash Outflow	200	500	800	2,000	500	1,000	1,250	1,500	1,500	1,500
Net Cash Flow	(200)	(500)	(800)	(1,750)	500	1,000	1,250	1,500	1,500	1,500

EXHIBIT 25.5 EARLY-STAGE TECHNOLOGY DEVELOPMENT—FORECAST OF NET CASH FLOWS

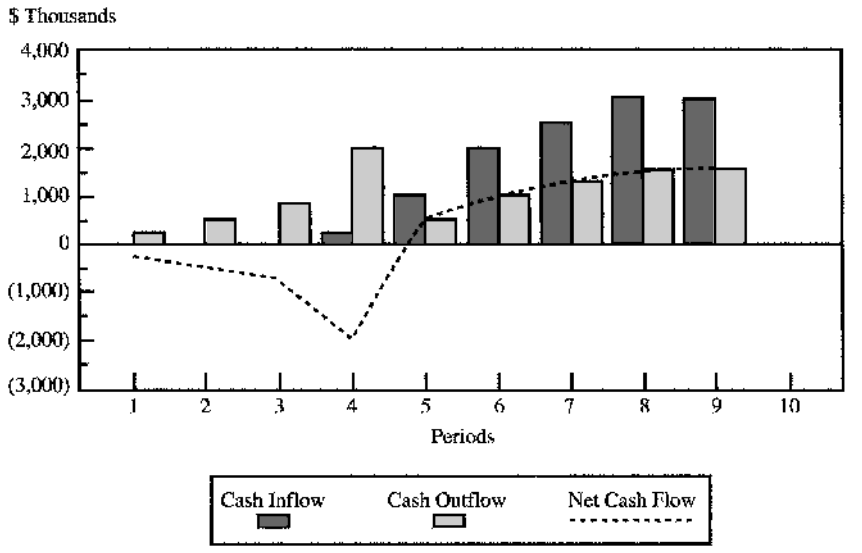

EXHIBIT 25.6 EARLY-STAGE TECHNOLOGY DEVELOPMENT—FORECAST OF NET CASH FLOWS

An intellectual property owner, joint venture partner, or licensor can use this technique to put him- or herself in the position of a buyer or licensee and evaluate the economics of the portion of the development that will take place after the contemplated transaction.

(a) SENSITIVITY. One fairly obvious permutation of the model is to input *ranges* of cash inflows and outflows and test the sensitivity of the present value result.

A persistent negative present value casts severe doubt on the viability of early-stage intellectual property.

One also can vary the *timing* of the inflows and outflows to reflect possible delays in the development process or delays in the attainment of a market position. It also could reflect the result of market actions of competitors or difficulties in obtaining financing for continuation of the project. By this process one can estimate how important it is to complete significant tasks in the development process. It may be that one particularly costly development step becomes a make-or-break point if delayed.

One also may measure the sensitivity of the development process at the *outer ranges of reasonable expectation*. As an example, if one discovers that the project is viable only at a stable sales level of $5,000, and the total market is estimated at $5,500, then there is a strong indication about the risk of the early-stage intellectual property.

(b) HIGH RISK. There is a somewhat frustrating aspect to the model as it pertains to introducing high-risk rates of return. It is common, in DCF analysis, to reflect the overall risk of a projection in the discount rate used. Obviously, early-stage intellectual property is risky at the early stages, and so a high discount rate would seem mandatory.

If, as an example, we use a discount rate of 20% (which is not particularly high by venture capital standards), the present value result turns negative and requires a significant magnitude of cash inflows to make it positive. This is because the projected cash inflows after the intellectual property is commercialized must be very large to counterbalance the present value of the development outflows, due to the rapid deterioration of

	YEAR									
	1	2	3	4	5	6	7	8	9	10
Cash Inflow	0	0	0	250	1,000	2,000	2,500	3,000	3,000	3,000
Cash Outflow	200	500	800	2,000	500	1,000	1,250	1,500	1,500	1,500
Net Cash Flow	(200)	(500)	(800)	(1,750)	500	1,000	1,250	1,500	1,500	1,500
Discount Rate = 10% Present Values	(190)	(427)	(615)	(1,210)	311	560	630	681	613	551
Sum of Present Values	904									

EXHIBIT 25.7 EARLY-STAGE TECHNOLOGY DEVELOPMENT—FORECAST OF NET CASH FLOW USING 10% DISCOUNT RATE

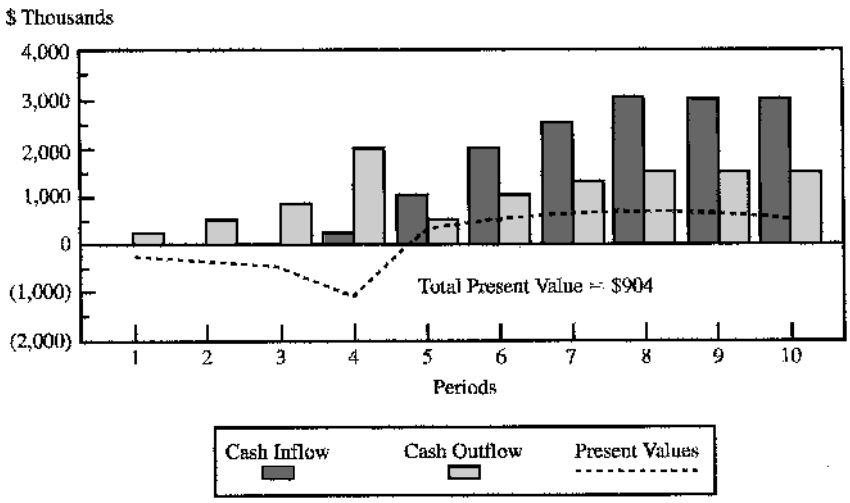

EXHIBIT 25.8 EARLY-STAGE TECHNOLOGY DEVELOPMENT—CALCULATION OF PRESENT VALUE AT 10%

present value over time at high discount rates. This is demonstrated in Exhibit 25.9, which is illustrated by the graph in Exhibit 25.10. The same net cash flow used in Exhibit 25.5 has a present value of $-340 if we change the discount rate from 10 to 20%.

When the development process is perceived to be of especially high risk, one must look very closely at the probability of future cash inflows. Very conservative revenue estimates will not carry the day (with respect to project viability). This is why academic, governmental, or eleemosynary institutions are engaged in very early-stage technology. Their purpose, and rightly so, is to pursue concepts that are academically attractive, without the impediment created by a need to prove a positive present value. At some time during the process (when deep pockets are needed), however, that requirement will be present.

(c) TESTING FOR OBJECTIVES. As noted earlier, this technique can be used to examine the results of attaining certain specified objectives. Assume, for example, that a university, government, or other research institution owns intellectual property that it has developed and wishes to sell it or license it to another entity for continued development and ultimate commercialization. Further assume that this institution wishes only to recoup its to-date development expense, which is $375,000. Is it realistic to expect that the transferee will be willing to pay that amount? What level of positive net cash flows is necessary for that willingness to exist? Is $375,000 too much of a bargain? Is $375,000 simply unattainable, given the likely circumstances?

The cash flow model can provide some insight. Exhibit 25.11 is a projection whose present value is $372,000. (We are assuming for this example that the expenditures occurred before year 1.) It assumes a discount rate of 18% (because that is how we think the transferee will judge the risk); notice that cash inflows at the stable point must reach a level of $4.8 million. We now must judge whether that level of sales revenue is reasonable. If it is, then we can expect to make a deal for our $375,000 objective. Of course, the deal may be an outright sale, a license with royalties, royalties with an up-front payment, or equity in a joint venture. We will have to make some more DCF calculations to see whether the deal offered has a present value of $375,000.

	YEAR									
	1	2	3	4	5	6	7	8	9	10
Cash Inflow	0	0	0	250	1,000	2,000	2,500	3,000	3,000	3,000
Cash Outflow	200	500	800	2,000	500	1,000	1,250	1,500	1,500	1,500
Net Cash Flow	(200)	(500)	(800)	(1,750)	500	1,000	1,250	1,500	1,500	1,500
Discount Rate = 20% Present Values	(179)	(358)	(458)	(801)	183	293	293	281	225	180
Sum of Present Values	(340)									

EXHIBIT 25.9 EARLY-STAGE TECHNOLOGY DEVELOPMENT—CALCULATION OF PRESENT VALUE AT 20%

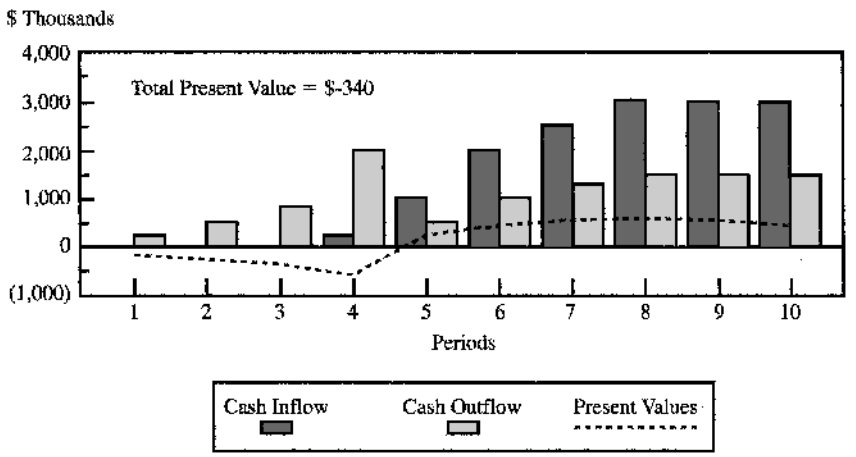

EXHIBIT 25.10 EARLY-STAGE TECHNOLOGY DEVELOPMENT—CALCULATION OF PRESENT VALUE AT 20%

In another situation, we are being asked by the owner of early-stage technology to invest in its development. We are a corporation and we use a 14% "hurdle rate" to evaluate projects. We can use the model (Exhibit 25.12) to analyze this opportunity. Using our hurdle rate as the discount rate, we can estimate the level of sales revenue that we would have to achieve to break even. We then can analyze this level of sales to obtain comfort as to whether it is attainable (or exceedable, which is more important to the person making the decision).

(d) JOINT VENTURING. Joint venture or venture capital exploitation presents different elements from a sale or licensing situation. Investing (in a significant amount) in a fledgling enterprise, or joint venturing under the same conditions, is more like a marriage. The parties to the transaction do not simply transact a piece of business and then go their separate ways.

In this case, the parties may well make their own DCF analyses of the opportunity, but also will add a substantial subjective ingredient. That part of the recipe concerns compatibility (of the parties), track record (previous successful development of intellectual property), and stability ("Will they hang in there when the going gets tough?"). These are very important considerations and can be difficult to fold into a financial analysis. At times, a "gut feeling" is the linchpin of a deal.

(e) DCF OPPORTUNITIES. There is a large range of opportunity for DCF analysis relative to intellectual property exploitation. From the prototype/pilot plant stage to full commercialization, the use of DCF clearly is demanded. We strongly suggest that DCF can be very useful in the earlier stages as well.

We observe a temptation, in the early stages when forecasts look a bit murky, to fall back immediately on industry norms ("What do other people pay?"), rules of thumb ("Let's split the profit 50-50"), wild-card negotiation ("Ask for $1 million up front and 5% royalty and see what happens"), and guessing ("Set up the dart board").

When all else fails, these are expedients that can be used—and at times *must* be used. We urge you, however, not to fall back on them too rapidly. Do you feel any less comfortable with some pretty flaky estimates in a DCF than you do pulling a rule of thumb out of the air?

	YEAR									
	1	2	3	4	5	6	7	8	9	10
Cash Inflow	0	0	0	350	1,000	2,000	2,500	4,800	4,800	4,800
Cash Outflow	200	500	800	2,000	500	1,000	1,250	2,400	2,400	2,400
Net Cash Flow	(200)	(500)	(800)	(1,650)	500	1,000	1,250	2,400	2,400	2,400
Discount Rate = 18% Present Values	(181)	(371)	(487)	(824)	205	336	344	542	444	364
Sum of Present Values	372									

EXHIBIT 25.11 TESTING FOR OBJECTIVES

	YEAR									
	1	2	3	4	5	6	7	8	9	10
Cash Inflow	0	0	0	180	1,000	2,000	2,500	2,500	2,500	2,500
Cash Outflow	200	500	800	2,000	500	1,000	1,250	1,250	1,250	1,250
Net Cash Flow	(200)	(500)	(800)	(1,820)	500	1,000	1,250	1,250	1,250	1,250
Discount Rate = 14% Present Values	(185)	(399)	(549)	(1,074)	254	436	469	403	347	298
Sum of Present Values	1									

EXHIBIT 25.12 EARLY-STAGE TECHNOLOGY DEVELOPMENT—CALCULATION OF PRESENT VALUE AT 14%

(f) DCF ALTERNATIVES. There are other permutations of the DCF technique for executing the income approach. We refer to them as "alternative" techniques, but in large measure these are embellishments of the basis DCF approach rather than new and different techniques.[1]

One can easily understand, especially in the case of embryonic technology, that the financial outcome of exploitation is filled with uncertainty. In a single DCF calculation, one really can account only for that uncertainty in the selection of the discount rate. Often the use of a high discount rate (reflecting considerable uncertainty) will result in a negative present value, indicating that the project should not be embarked on. This is especially likely in the case where there are considerable expenditures to be made in the commercialization process and when the realization of sales revenues and profits is significantly delayed.

As an example, there could exist a situation in which there are identifiable milestones in the development process that, if missed, could cause the exploitation to end (or change direction), significantly reducing the negative present value indication. On the other side of the coin, it may be that reaching some early milestones successfully might significantly accelerate the receipt of sales revenues and profits. As a practical matter, it is impossible to reflect the outcomes of a premature abandonment of the project or unexpected success in a single DCF calculation. Practitioners typically consider these outcomes by making several DCF calculations reflecting different scenarios. Each scenario is assigned a probability, which enables one to combine the present value indications of the various scenarios into a single view.

The Monte Carlo analysis tool carries this concept forward. As Razgaitis observes: "Monte Carlo provides a...powerful means of characterizing such possible future outcomes and interpreting the present value of all such possible outcomes."[2] The Monte Carlo tool is available in personal computer software. Although it does not solve the problem of uncertainty, it provides a valuable tool for understanding and quantifying it.

Valuation practitioners have noted a similarity between the financial characteristics of early-stage patents and technology and so-called call options related to common stock. That is, the owner of a patent or proprietary technology has a right to receive future economic benefits that may or may not ever materialize. In addition, it is likely that the owner of such intellectual property will have to invest money to complete the development and commercialize the asset. This is similar to owning an option related to common stock, in that the owner may have to invest further (purchase the shares). This is in spite of the uncertainty of realizing some future value from increasing stock price. This similarity led some valuation practitioners to utilize the Black-Scholes option pricing formula for early-stage patents and proprietary technology. This use often is referred to as employing a "real options" technique to distinguish it from the use of the pure Black-Scholes formula for stock options. The calculations are complex, but, as with the Monte Carlo technique, a variety of sources provide this technique for personal computers.

At their core, both the Monte Carlo and real options techniques are permutations of the basic DCF methodology. In order to value intellectual property or intangible assets by an income approach, we must calculate the present value of the future economic benefit of ownership. There is a myriad of techniques available by which to analyze and estimate the various inputs that are required in this process.

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1. See also the discussion in Chapter 15.
2. Richard Razgaitis, *Deal Making: Using Real Options and Monte Carlo Analysis* (Hoboken, N.J.: John Wiley & Sons, Inc., 2003), p. 64.

CHAPTER 26

TRADEMARK LICENSING

Trademark licensing is a challenging subject, as is the question of fair royalties for such a transaction. What is a fair price to pay for rights in property that is itself difficult to describe and understand and in which the rights themselves are bound only by the creativity of licensor and licensee?

Trademark royalty rates may be an essential input to the licensing process and also are used as a surrogate for the income attributable to a trademark in a valuation. The development of a trademark royalty rate can involve a complex analysis, as illustrated in Exhibit 26.1.

26.1 TRADEMARK ROYALTIES

A royalty is a payment for the use of intellectual property. We pay *rent* for the use of real property (land and improvements), we make *lease payments* for the use of automobiles or equipment, and we pay a *royalty* for the use of intellectual property. Trademark licenses can have characteristics different from those of technology or patent licenses. The owner of a trademark often retains the primary rights, and the licensee receives narrowly defined rights for its use. Both licensor and licensee may use the trademark simultaneously, but not in the same market (i.e., on the same type of product or service, or in the same geography). Please note that we use the term "rights" in the economic sense, not a legal one.

We are concerned here with the allocation of the future economic benefit of a trademark between owner and licensee.

(a) BUNDLE OF RIGHTS THEORY. Because of the uniqueness that may exist in trademark licenses, that is, the coexistence of usage by both licensor and licensee, we must be very careful to analyze the income streams that are associated with these shared and unshared rights. As background, we discuss some underlying property theories. The basic concepts of property ownership were developed relative to real estate, or real property. The bundle of rights theory refers to the concept that ownership of real property is embodied in a number of separate privileges. These include the right to occupy it and use it; the right to sell, merge, donate, mortgage, or bequeath it; and the right to transfer by contract some of the benefits for a period of time.

We can compare the ownership of intellectual property with a bundle of sticks wherein each stick represents a distinct and separate right or privilege of ownership. This concept is illustrated graphically in Exhibit 26.2. As the illustration shows, some rights of ownership can be transferred, as for example in a lease that grants to another party the right to occupy and use the property for a certain period of time. Valuation theory tells us that the value of the property is represented by adding together the *values* of the rights of the lessee and

Note: Certain sections of this chapter as well as some exhibits have been excerpted from Gordon V. Smith, *Trademark Valuation* (Hoboken, NJ: John Wiley & Sons, Inc., 1997).

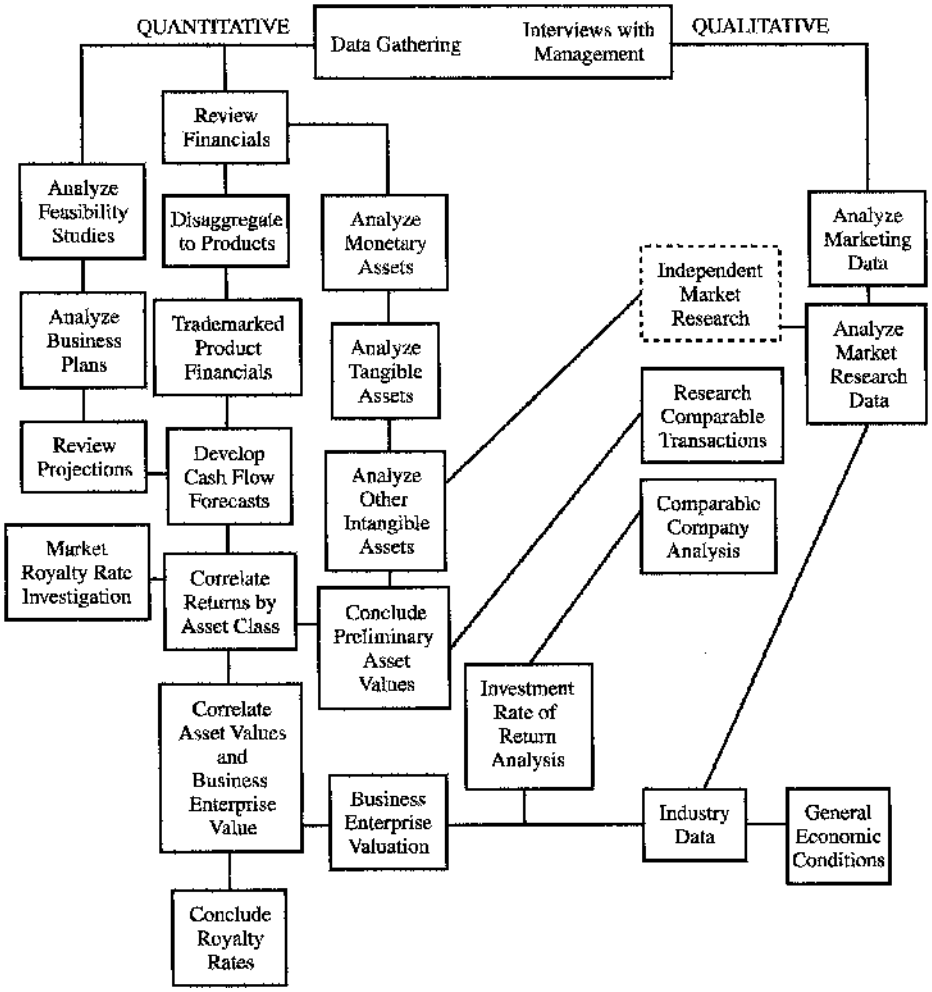

EXHIBIT 26.1 TRADEMARK ROYALTY RATE DEVELOPMENT

the lessor. In other words, all of the rights of ownership are represented by those of the two parties, but they can be divided among the parties in an infinite number of ways. In the same way, we will see that the total income produced is the sum of that produced by the exploitations of both licensor and licensee, and the terms of the license can divide the total income in many ways. This is an important consideration in licensing.

The economic division of the rights bundle (and total income) sometimes can be inadvertent. A poor understanding of the market or rent escalation clauses can result in an unintentional allocation of the rights of building ownership. Incautious licensing can result in the same inequity. As noted, there are endless permutations to the lessor-lessee relationship. These would include (using the real estate example) consideration of:

- Rights to sublease
- Lessor right to move or consolidate tenants

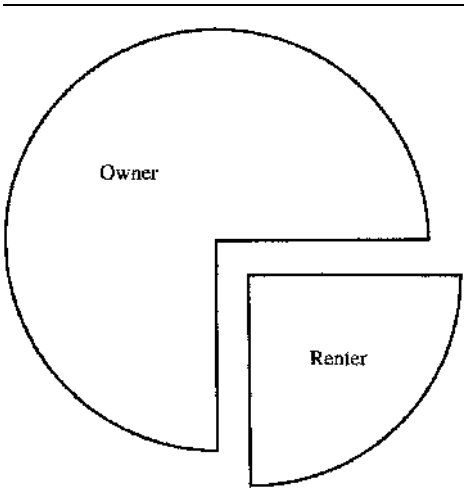

EXHIBIT 26.2 BUNDLE OF RIGHTS THEORY

- Purchase options
- Renewal options
- Allowances for improvements
- Escalation of rent
- Use restrictions
- Payment of utilities, operating expenses, and taxes

All of these factors can affect an economic analysis of the relative value of the rights in real property transferred by the lessor to the lessee. One can almost substitute the words "licensor" and "licensee" for "lessor" and "lessee" in this example so as to immediately put the same facts into an intellectual property licensing situation.

(b) LICENSING. In a license, the owner of a trademark transfers some of the total bundle of rights to another (the licensee). The licensee pays for those rights by means of a royalty. (See Exhibit 26.3.) One easily can see that if we add the licensor's rights (those retained by the owner) to those of the licensee, we would have a representation of all of the rights of ownership or, as in Exhibit 26.3, all of the pieces of the pie. If we added the *value* of the licensor's rights to those of the licensee, we would capture all of the trademark's value. If we add all income streams together, we have a representation of all of the income that the intellectual property can produce from these exploitations. This is an important concept. We cannot really understand a royalty payment without understanding the transaction (license) that gives rise to it.

(i) Licensing and Valuation. In an earlier chapter we noted the similarity between a valuation by an income approach and a royalty rate analysis. If, as an example, we use an income approach to value a trademark that has been licensed, we must capitalize both the income realized from the *licensor's* (owner's) exploitation of the mark and the income

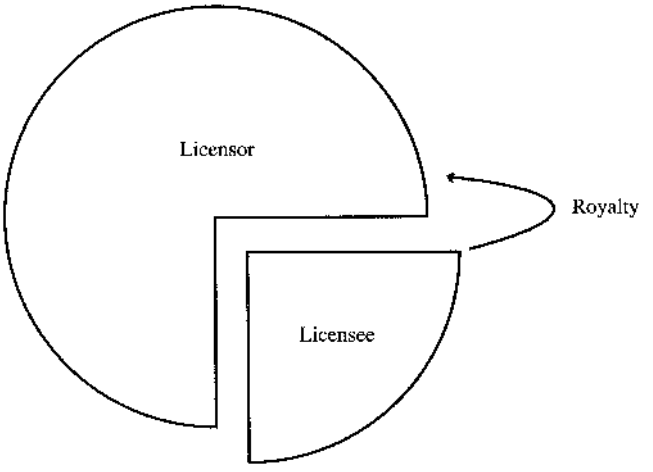

EXHIBIT 26.3 LICENSING TRANSACTION

attributable to the trademark from the *licensee's* exploitation. This latter is not necessarily the amount of royalty being paid by the licensee and, in fact, would rarely be. Why is this? The licensee normally would not be willing to hand over to the licensor all of the income generated by the use of the mark. The licensee enters into the transaction in order to realize some economic benefit and so must keep some of the income attributable to the mark. As a result, the licensing transaction may appear as shown in Exhibit 26.4, with the relative width of the arrows representative of the amount of income flowing.

The value of *all of the rights* in the trademark would be obtained by capitalizing the income streams A and B. What is the income C that is the royalty payment? It is only a *portion* of income B, and a capitalization of it would be representative of the value of the *license contract* to the owner. If our task were to value the *owner's rights* in the trademark, we would capitalize income streams A and C. If we were to value the *licensee's rights* in the trademark, we would capitalize income stream B less the royalty expense C. It is apparent that there can be some overlap here, and before proceeding one must carefully define both the asset to be valued and the income associated with that asset.

The relationships can be expressed mathematically:

$$V_t = V_o + V_l$$

where:

$V_t =$ the total value of all trademark rights

$V_o =$ the value of the owner's trademark rights

$V_l =$ *the value of the licensee's trademark rights*

$$V_o = \frac{I_o + I_r}{C} \quad \frac{I_l - E_r}{C} \quad I_r = E_r$$

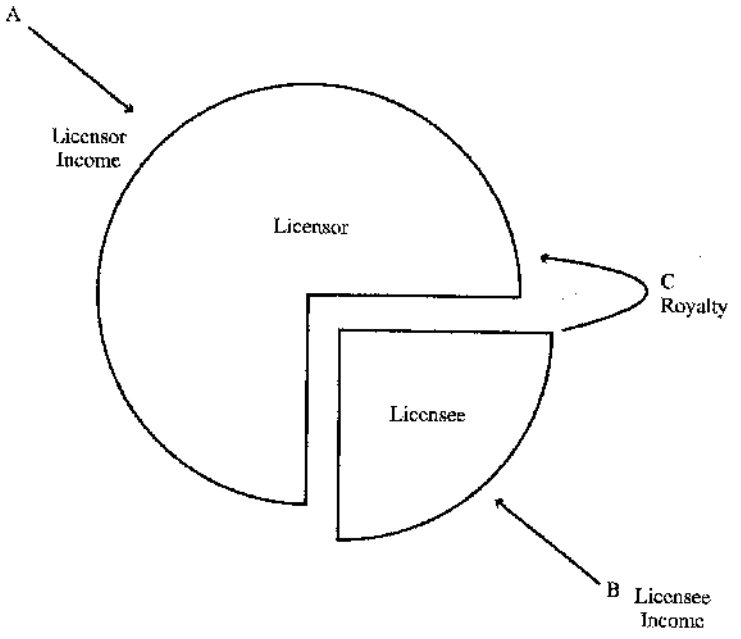

EXHIBIT 26.4 INCOME FLOW IN A LICENSING TRANSACTION

where:

I_o = owner's income attributable to the trademark

I_r = owner's royalty income

I_l = licensee's income attributable to the trademark

E_r = licensee's royalty expense

C = a capitalization rate

If the expressions for V_o and V_l are substituted in the first equation and the result is reduced:

$$V_t = \frac{I_o + I_l}{C}$$

From this we can observe the relationship between the owner's and licensee's income streams that we noted above.

The situation could be even more complicated if the trademark owner did not directly exploit it, but instead licensed it to others, with perhaps even master licensees and sublicensees, as in the case of a franchise. There would be many income streams to consider, depending on the specific rights being valued.

(ii) Licensing Can Create Another Asset. As an added complexity, the reader is reminded of a previous discussion concerning leasehold interests. Leasehold interests (in real estate) are created when the lessee obtains rights whose value exceeds that which would be indicated by a capitalization of the rental payment. Stated another way, if the *contract rent* is less than the *economic rent*, a leasehold interest is created.

The very same thing can happen in a licensing situation. Suppose, as an example, a trademark owner licensed essentially all of the rights of ownership, such as in the form of a worldwide exclusive, long-term license to a third party. In addition, the trademark owner did not intend to exploit the mark itself. The essence of this transaction is that the trademark owner has transferred essentially all of the exploitation rights to another. A restatement of Exhibit 26.3 in this case would be illustrated in Exhibit 26.5. Since the licensee has nearly all of the rights, the licensor has no income except the royalty from the subsidiary.

We know from our previous analyses that a licensee is willing to enter into a transaction only if it can cover its expenses of doing business and earn a reasonable return on the investment required. This means that the licensee needs to retain some of the economic benefit of the licensed trademark. The licensee's full economic benefit of the trademark is not paid over to the owner in royalties. If the license is, as an example, nonexclusive, or the owner intends to exploit the mark itself, then there is an even greater difference between the trademark's total economic benefit and the royalty. Most royalties are payments for *partial* rights. That is, they are contract rents for specific rights, not economic rent for the whole bundle of rights.

The same thing happens in our example. If the licensee obtains essentially all of the rights in return for a bargain royalty, the licensee now has an advantageous contract—a newly existent intangible asset. In Exhibit 26.5, this is illustrated by the shaded sector of the licensee's portion of the whole. If the royalty being paid is the same as when the licensee was receiving about one-quarter of the rights, then the remainder of the licensee's sector represents the additional interest the licensee receives free. If we put this in terms of our previous analyses, the licensee will enjoy excess earnings because he or she has all of the trademark rights but is paying only for partial rights.

If the royalty in this case is set on the basis of an investment/rate of return analysis (rather than "market" royalty rates), it likely would be higher because the licensor, having little assets and risk, would be entitled to retain a much smaller portion of the economic benefit.

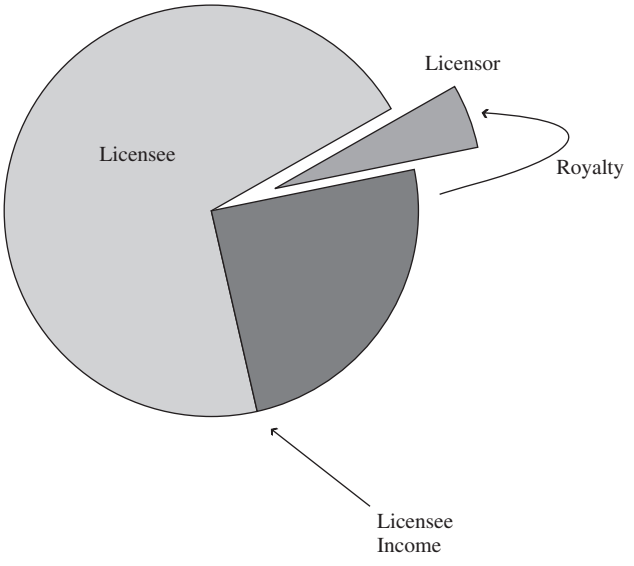

EXHIBIT 26.5 LICENSE OF ESSENTIALLY ALL RIGHTS

Setting the royalty on the basis of such an analysis of investment and return will align the rights and the royalty properly. As an alternative, if the royalty rate is set on the basis of exclusive, long-term licenses that better reflect the transfer of substantial exploitation rights, the situation would likewise be a more realistic match of rights and payment.

Remembering that the total value in this situation is the value to the licensor plus the value to the licensee, we need to capitalize the excess earnings of both parties in order to reflect the entire value of the trademark. The essential point is that we must be sensitive to the economic nature of a licensing transaction in order to address the royalty question properly.

(iii) Franchising. Another complicating element would be present if the trademark owner were exploiting it by means of franchising. In a typical franchise, the franchisee is licensing more rights than those of a trademark alone. There may be recipes, menus, modes of preparation, the use of proprietary machinery or computer software, training materials, and the like. If one is attempting to use franchise fees as some type of surrogate for trademark royalty rates, one can understand the need to disaggregate these individual benefits—a task that could be difficult.

(iv) Royalty Economics. The underlying economics of trademark royalties are the same as those presented in Chapter 23. There are, however, some unique aspects of trademark licensing that cause us to describe the process in different terms and with different emphasis. The economic benefit of a trademark license is often quite different from that of technology.

We can come to an opinion of an arm's-length royalty in one of two ways:

1. We can estimate it by analyzing the economics of a supposed licensing transaction between the parties.
2. We can use some other similar licensing transaction as a surrogate.

The basic economic elements of a licensing transaction are not complex. We have hedged that statement by the use of the word "basic," because under certain circumstances the licensing process can become very complex. One can imagine the complexities introduced in the licensing process if one of the parties is financially unstable, in another country, or dealing in foreign currency, or if the license concerns embryonic or fledgling products or services. Absent these sorts of conditions, the economics are straightforward: The economics controlling a licensing transaction are those of the licensee's business.

This fact often is overlooked in the licensing process, even by those experienced in the field. We point it out because it clearly points to the necessity of analyzing the licensee's business or, at the very least, examining the future economic benefit that licensing a trademark can bring. That economic benefit is what must be divided between licensor and licensee; it sets the boundaries of the playing field.

Having stated that, we also observe that in some cases this is a rule that holds only in part. A very strong trademark—one that can command a premium in the marketplace even on goods or services for which it was not originally intended—can break the rules. When the reader is next in an airport, we suggest an observation of the gift shop. There will be various items carrying an image of the city or state in which the airport is located. Coffee mugs, paperweights, and shot glasses will be decorated with images of Chicago, Texas, or wherever. There also will be the same merchandise carrying the logos of the

local professional or college sports teams or well-known local attractions. These are priced significantly higher, in our experience. This is a case in which the economics of the coffee mug business do not control the licensing transaction. The licensor's trademark can drive the price above what would be dictated by the typical merchandise economics. Instead, the price is controlled by the market: What is someone willing to pay for a mug with his or her alma mater or favorite team's logo on it? With the application of a powerful trademark, the licensee's economics are changed.

26.2 ROYALTY QUANTIFICATION

In this section, we present some analytical techniques for estimating trademark royalty rates. These methods follow the principles discussed relative to technology licensing; however, the economic benefits are measured differently.

(a) ANALYTICAL TECHNIQUES. Assume that we are a marketer of ballpoint pens. We designed our pen some time ago, had it manufactured to our specifications, and sell it in the northeast United States. We have a registered trademark, PEN, and have built a nice business by calling on distributors and retailers in the region. We would like to go national with our product but lack the capital for the extensive advertising campaign that would be necessary to support such a move.

We are aware of a large, multinational company that manufactures and sells pencils and erasers under its well-known PENCIL trademark. It agrees to license to us the use of the PENCIL trademark on our pens, which will greatly facilitate our national rollout. It asks for a royalty of 10% of net sales. Is that a fair price? We need to analyze the economics of our business before answering.

To illustrate, we will start with PEN's income statement, given in Exhibit 26.6. We have added a column to the typical dollar data to show the income statement on a percentage basis. We can observe that our bottom line, or net income, is 10.2% of net sales. Would a 10% royalty wipe out profits? No, because royalty expense is a deduction for income tax purposes, and so we must reflect the payment of a royalty in the model in order to discern its impact, as shown in Exhibit 26.7.

		Percent
Sales, less returns and allowances	$373,500	100.0
Less cost of goods sold	195,000	52.2
Gross margin	178,500	47.8
Less selling, general and administrative expenses	74,700	20.0
Net operating income	103,800	27.8
Other income or expense	(32,000)	−8.6
Net income before income taxes	71,800	19.2
Less state and federal income taxes	28,720	7.7
Net income before extraordinary items	43,080	11.5
Extraordinary items of income or expense	(5,000)	−1.3
Net income	$ 38,080	10.2

EXHIBIT 26.6 PEN INCOME STATEMENT FOR FISCAL YEAR ENDING DECEMBER 31, 2004

		Percent
Sales, less returns and allowances	$373,500	100.0
Less cost of goods sold	195,000	52.2
Gross margin	178,500	47.8
Less selling, general and administrative expenses	74,700	20.0
TRADEMARK ROYALTY 10%	37,350	10.0
Net operating income	66,450	17.8
Other income or expense	(32,000)	−8.6
Net income before income taxes	34,450	9.2
Less state and federal income taxes	13,780	3.7
Net income before extraordinary items	20,670	5.5
Extraordinary items of income or expense	(5,000)	−1.3
Net income	$ 15,670	4.2

EXHIBIT 26.7 PEN INCOME STATEMENT FOR FISCAL YEAR ENDING DECEMBER 31, 2004

The model now tells us that net income would be reduced from 10.2% to 4.2%, or by about 60%. This calculation does not provide an easy answer about whether this is a fair deal for us. Dividing the economic benefit of intellectual property between licensor and licensee is one of the knottiest problems there is, but at least now we have some facts on which to base our decision.

This is a very simplified model for analysis, and there are some additional considerations:

- Becoming a PENCIL licensee and entering the national market ought to bring in many times the sales revenue and net income (in terms of dollars) that we now receive.
- We will, however, need to make an additional investment in our business to maintain a larger inventory, among other things.
- The risk of our business will be increased because we will have to place larger orders with our suppliers that we will be committed to buy even if sales do not materialize as planned.
- The risk of our business may be decreased because we will be selling to a larger base of customers.
- In contrast, we ought to be able to negotiate a lower price for PENS and share in the economies of scale enjoyed by our suppliers. This would increase the rate of our profitability.
- Perhaps PENCIL products sell at higher prices than competitors' and we could recoup some of the royalty by increasing the price of our product.

In any particular situation, there might be other elements to consider as well, but all of them would be factors affecting the *economics of the licensee's business*. There is a range within which negotiations are likely to take place. We have cited the difficulty of dividing the economic benefit between licensor and licensee, and that range may define the range of negotiation, but that undertaking cannot begin until the economic benefit is defined.

(i) Discounted Cash Flow Model. In our opinion, the best analysis model for this purpose is constructed around the discounted cash flow model that was described in Chapter 24. The model is used to describe the licensee's business (or the business segment or product line into which the trademark will be licensed) and permits the input of all the economic factors that might affect business for the licensee. In Exhibit 26.8, we can utilize this discounted cash flow model as a starting point.

In this model, we have calculated the value of the licensee's business enterprise, or the value of the licensee's business segment or product line into which the subject trademark will be licensed. This Step 1 calculation is the business-as-usual scenario, excluding the potential effect of the trademark on the business. In this model, sales grow at 4% annually, other expenses generally keep pace with sales, and net income remains at about 10% during the five-year projection period. We have estimated the amounts of net working capital and tangible assets during the period so that we can calculate the net cash flow that we expect to be produced by the enterprise.

The model calculates the present value of the annual cash flow for 2004 through 2009 and adds to that the present value of the value of the business in the year 2009 (a capitalization of that year's income at a discount rate of 13% less 4% inflation, or 9%). The value of the business on this basis is $741,888.

In the next step, we reflect in the model the anticipated effect of licensing the trademark, shown in Exhibit 26.9. Sales revenues have increased and the cost of goods sold has declined because of economies of scale in manufacture. No other changes have been made, in order to clarify the model's use. In fact, any of the effects discussed above—including changes in working capital or tangible asset requirements, increased risk of the business, or the possibility of premium pricing—could be incorporated into the model. With just the elements noted, the value of this business increases to $892,592.

The question we are trying to answer concerns how much royalty the business could pay to achieve these anticipated benefits. We can answer that by inserting a royalty into the model. Adding a royalty expense will reduce the value of the business. If it reduces the value of the business beyond what it was before the presumed license, it is a royalty that the licensee would not accept. If it reduces the value of the business by only a minor amount, then it is a royalty that the licensor is not likely to accept. We can observe in Exhibit 26.10 that a 4% royalty rate produces royalty expense that reduces the business value to $735,198, or about what it was previously.

A 4% royalty rate therefore represents the highest rate that a licensor could expect to receive or that a licensee would be willing to pay. The concept employed here is one of subtraction. We are, in essence, merely adding an additional calculation that relates the income attributable to the trademark to the amount of sales revenue in order to express the income in terms of a percentage royalty on net sales, as can be seen in Exhibit 26.11.

The foremost benefits of this cash flow model are that it is based on investment return principles that drive all business decisions and that it facilitates the evaluation of various scenarios. It allows one to change the forecast economic conditions of the licensee's business and to identify the factors that are influential in the royalty rate decision.

(b) ALLOCATION OF INCOME TECHNIQUE. Previously we have discussed techniques for allocating income among business enterprise assets as a method for estimating royalties. These techniques are equally applicable to trademarks. What is required is to relate the income attributable to the subject trademark to the net sales revenue of the business that produced the income. Before we can do so, however, we must allocate the business

INCOME STATEMENT	2004		2005		2006		2007		2008		2009	
Sales, less returns and allowances	373,500	100.0%	388,440	100.0%	403,978	100.0%	420,137	100.0%	436,942	100.0%	454,420	100.0%
Less cost of goods sold	205,000	54.9%	213,200	54.9%	221,728	54.9%	230,597	54.9%	239,821	54.9%	249,414	54.9%
Gross margin	168,500	45.1%	175,240	45.1%	182,250	45.1%	189,540	45.1%	197,121	45.1%	205,006	45.1%
Less selling, general and administrative expenses	74,700	20.0%	77,688	20.0%	80,796	20.0%	84,027	20.0%	87,388	20.0%	90,884	20.0%
Net operating income	93,800	25.1%	97,552	25.1%	101,454	25.1%	105,512	25.1%	109,733	25.1%	114,122	25.1%
Other income or expense	(32,000)	–8.6%	(32,640)	–8.4%	(33,293)	–8.2%	(33,959)	–8.1%	(34,638)	–7.9%	(35,331)	7.8%
Net income before income taxes	61,800	16.5%	64,912	16.7%	68,161	16.9%	71,554	17.0%	75,095	17.2%	78,791	17.3%
Less state and federal income taxes	24,720	6.6%	25,965	6.7%	27,265	6.7%	28,621	6.8%	30,038	6.9%	31,517	6.9%
Net income before extraordinary items	37,080	9.9%	38,947	10.0%	40,897	10.1%	42,932	10.2%	45.057	10.3%	47,275	10.4%
Extraordinary items of income or expense	(5,000)	–1.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Net income	32,080	8.6%	38,947	10.0%	40,897	10.1%	42,932	10.2%	45,057	10.3%	47,275	10.4%

EXHIBIT 26.8 TRADEMARK ROYALTY RATE CALCULATION—STEP 1 ($000'S)

INCOME STATEMENT	2004	2005	2006	2007	2008	2009
CALCULATE NET CASH FLOW						
Subtract:						
Extraordinary items to normalize	(5000)	0	0	0	0	0
Add:						
Depreciation expense	12,000	12,240	12,485	12,734	12,989	13,249
Subtract:						
Additions to working capital	2,000	1,800	1,836	1,873	1,910	1,948
Subtract:						
Capital expenditures	3,000	4,500	4,590	4,682	4,775	4,871
	44,080	44,887	46,956	49,112	51,361	53,705
ASSETS EMPLOYED						
Net Working Capital	90,000	91,800	93,636	95,509	97,419	99,367
Tangible Assets	225,000	229,500	234,090	238,772	234,547	248,418
Intangible Assets	85,000	86,700	88,434	90,203	92,007	93,847
PRESENT VALUE 10.0%						
		42,798	40,700	38,700	36,792	582,898
TOTAL PRESENT VALUE	741,888					

NOTE: Present value in year 2009 includes a reversion calculated by capitalizing year 2009 net cash flow by the discount rate less 4% growth, and calculating the present value of the result.

$8,829/(.16 – .041) × (1/(1 – .16)^4.5

EXHIBIT 26.8 TRADEMARK ROYALTY RATE CALCULATION—STEP 1 ($000'S) *(CONTINUED)*

INCOME STATEMENT	2004		2005		2006		2007		2008		2009	
Sales, less returns and allowances	373,500	100.0%	392,175	100.0%	411,784	100.0%	432,373	100.0%	453,992	100.0%	476,691	100.0%
Less cost of goods sold	205,000	54.9%	195,695	49.9%	205,480	49.9%	215,754	49.9%	226,542	49.9%	237,869	49.9%
Gross margin	168,500	45.1%	196,480	50.1%	206,304	50.1%	216,619	50.1%	227,450	50.1%	238,822	50.1%
Less selling, general and administrative expenses	74,700	20.0%	87,104	22.2%	91,459	22.2%	96,032	22.2%	100,834	22.2%	105,876	22.2%
Net operating income	93,800	25.1%	109,376	27.9%	114,844	27.9%	120,587	27.9%	126,616	27.9%	132,947	27.9%
Other income (or expense)	(32,000)	–8.6%	(32,640)	–8.3%	(33,293)	–8.1%	(33,959)	–7.9%	(34,638)	–7.6%	(35,331)	–7.4%
Net income before income taxes	61,800	16.5%	76,736	19.6%	81,552	19.8%	86,628	20.0%	91,978	20.3%	97,616	20.5%
Less state and federal income taxes	24,720	6.6%	30,694	7.8%	32,621	7.9%	34,651	8.0%	36,791	8.1%	39,046	8.2%
Net income before extraordinary items	37,080	9.9%	46,041	–1.7%	48,931	11.9%	51,977	12.0%	55,187	12.2%	58,570	12.3%
Extraordinary items of income (or expense)	(5,000)	11.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	00000	0.0%
Net income	32,080	8.6%	46,041	11.7%	48,931	11.9%	51,977	12.0%	55,187	12.2%	58,570	12.3%

EXHIBIT 26.9 TRADEMARK ROYALTY RATE CALCULATION—STEP 2 ($000's)

INCOME STATEMENT	2004	2005	2006	2007	2008	2009
CALCULATE NET CASH FLOW						
Subtract:						
Extraordinary items to normalize	(5,000)	0	0	0	0	0
Add:						
Depreciation expense	12,000	12,240	12,485	12,734	12,989	13,249
Subtract:						
Additions to working capital	2,000	1,800	1,836	1,873	1,910	1,948
Subtract:						
Capital expenditures	3,000	4,500	4,590	4,682	4,775	4,871
	44,080	51,981	54,990	58,157	61,490	64,999
ASSETS EMPLOYED						
Net Working Capital	90,000	91,800	93,636	95,509	97,419	99,367
Tangible Assets	225,000	229,500	234,090	238,772	243,547	248,418
Intangible Assets	75,000	76,500	78,030	79,591	81,182	82,806
PRESENT VALUE 10.0%		49,562	47,664	45,827	44,049	705,490
TOTAL PRESENT VALUE	892,592					

EXHIBIT 26.9 TRADEMARK ROYALTY RATE CALCULATION—STEP 2 ($000'S)*(CONTINUED)*

INCOME STATEMENT

	2004		2005		2006		2007		2008		2009	
Sales, less returns and allowances	373,500	100.0%	392,175	100.0%	411,784	100.0%	432,373	100.0%	453,992	100.0%	476,691	100.0%
Less cost of goods sold	205,000	54.9%	195,641	49.9%	205,423	49.9%	215,694	49.9%	226,479	49.9%	237,803	49.9%
Gross margin	168,500	45.1%	196,534	50.1%	206,360	50.1%	216,678	50.1%	227,512	50.1%	238,888	50.1%
Less selling, general and administrative expenses	74,700	20.0%	87,128	22.2%	91,484	22.2%	96,059	22.2%	100,862	22.2%	105,905	22.2%
Less Trademark Royalty 4.0%	0		15,687		16,471		17,295		18,160		19,068	
Net operating income	93,800	25.1%	93,719	23.9%	98,405	23.9%	103,325	23.9%	108,491	23.9%	113,916	23.9%
Other income (or expense)	(32,000)	–8.6%	(32,640)	–8.3%	(33,293)	–8.1%	(33,959)	–7.9%	(34,638)	–7.6%	(35,331)	–7.4%
Net income before income taxes	61,800	16.5%	61,079	15.6%	65,112	15.8%	69,366	16.0%	73,853	16.3%	78,585	16.5%
Less state and federal income taxes	24,720	6.6%	24,431	6.2%	26,045	6.3%	27,746	6.4%	29,541	6.5%	31,434	6.6%
Net income before extraordinary items	37,080	9.9%	36,347	9.3%	39,067	9.5%	41,620	9.6%	44,312	9.8%	47,151	9.9%
Extraordinary items of income (or expense)	(5,000)	–1.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Net income	32,080	8.6%	36,647	9.3%	39,067	9.5%	41,620	9.6%	44,312	9.8%	47,151	9.9%

EXHIBIT 26.10 TRADEMARK ROYALTY RATE CALCULATION—STEP 3 ($000's)

INCOME STATEMENT	2004	2005	2006	2007	2008	2009
CALCULATE NET CASH FLOW						
Subtract:						
Extraordinary items to normalize	(5,000)	0	0	0	0	0
Add:						
Depreciation expense	12,000	12,240	12,485	12,734	12,989	13,249
Subtract:						
Additions to working capital	2,000	1,800	1,836	1,873	1,910	1,948
Subtract:						
Capital expenditures	3,000	4,500	4,590	4,682	4,775	4,871
	44,080	42,587	45,126	47,800	50,616	53,581
ASSETS EMPLOYED						
Net Working Capital	90,000	91,800	93,636	95,509	97,419	99,367
Tangible Assets	225,000	229,500	234,090	238,772	243,547	248,418
Intangible Assets	75,000	76,500	78,030	79,591	81,182	82,806
PRESENT VALUE 10.0%						
		40,605	39,114	37,665	36,258	581,554
TOTAL PRESENT VALUE	735,198					

EXHIBIT 26.10 TRADEMARK ROYALTY RATE CALCULATION—STEP 3 ($000's)*(CONTINUED)*

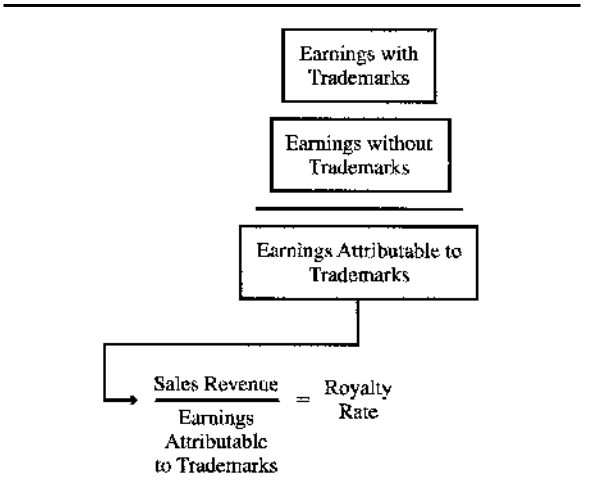

EXHIBIT 26.11 CALCULATING A ROYALTY FROM EARNINGS ATTRIBUTABLE TO A TRADEMARK

enterprise income to the other assets that are complementary to the trademark. (See Exhibit 26.12.)

Again, this technique reveals the maximum that a licensee would be willing to pay. It assumes that the licensee would be willing to pay over all of the incremental income produced by the trademark to the licensor, which would not be the case in real life. A 2.0% royalty (equal to 1.2% before 40% income tax) would consume all of the income attributable to the subject trademark.

However simple this example may appear, it requires extensive analysis to estimate the inputs, and it embodies all of the investment return principles that we have been discussing. This model is a powerful means of calculating both royalty rates and the values of the underlying assets of an enterprise.

(c) USING LICENSING TRANSACTIONS AS A ROYALTY RATE SURROGATE. A popular royalty rate estimation technique is to look to the market for rates that have been negotiated

Asset Category	Asset Value ($ 000's)	Returns Required	Amount of Return ($ 000's)
Net Working Capital	90,000	6.0%	5,400
Tangible Assets	125,000	9.0%	11,250
Intangible Assets	35,000	14.0%	4,900
Intellectual Property	50,000	17.0%	8,500
Total	300,000	10.0%	30,050
Patents	10,000	14.5%	1,450
Proprietary Technology	15,000	20.3%	3,050
Trademarks	25,000	16.0%	4,000
	50,000	17.0%	8,500
Sales Revenue	328,500		
Income Allocable to Trademarks	4,000		
INDICATED ROYALTY RATE	**2.0% (328,500 ÷ 4,000 ÷ 0.60)**		

EXHIBIT 26.12 ALLOCATING INCOME AMONG ASSETS TO CALCULATE A ROYALTY

by others. Previously we have discussed the pros and cons of a market approach and the information that is required to execute it successfully. We also need to consider where our "market-determined royalty rates" come from. There are a number of sources, among which are:

- Valuation professionals and others in the business become aware of licensing transactions through their work. Usually these transactions cannot be divulged to others because of the confidential nature of the client/consultant relationship. Because of this, these royalty rates cannot be used to support conclusions in reports to other clients.
- A variety of public documents are available, such as court records, company annual reports, filings with the Securities and Exchange Commission (SEC), articles in the press and professional publications, infringement litigation awards, and the like.
- Consulting firms maintain a number of proprietary licensing transaction databases that are available for purchase. Most of these are Web-enabled to some degree. Some such sources include:
  - consor.com
  - fvgi.com
  - ipresearch.com
  - recap.com
  - royaltysource.com
  - royaltystat.com

We would estimate that, if one gathered together all of the trademark royalty rate files in the hands of people other than the owners of the trademarks, the information might cover as much as 20% of the trademark licensing transactions made in the past 10 years. If we further eliminate from that information the licensing data relating to cartoon characters, personalities, toy concepts, and trademark licensing by institutions with no profit motive, the amount is probably less than 10%. We should therefore not fool ourselves as to the magnitude of information available to use in comparable analyses relating to commercial trademarks.

As pleasant as it would be for practitioners to be able to observe royalty rates from trademark licensing transactions between corporate owners, such transactions, for practical purposes, are nonexistent. There is a plethora of transactions in which a major corporation has licensed its trademark for use by another company on products and services well outside of its core business. In fact, a whole industry has grown up to discover such opportunities and support the transactions that follow. The royalty rates that flow from these transactions are not, unfortunately, as useful as we would like in the valuation of marks to be used in their core business. As an example, if our task is to value the BUICK trademark for use in the automobile business or to opine on an appropriate royalty rate for the use of the BUICK mark in the automobile business, we are unlikely to discover a trademark licensing transaction in which Chrysler Corporation licensed its TOWN & COUNTRY mark to Ford Motor Company for use on an automobile. This is understandable in that the only potential licensees associated with a trademark's core identity are competitors to its owner. We might find a number of trademark licensing transactions in which Chrysler licensed the TOWN & COUNTRY mark for use on bicycles or picnic baskets, but are those transactions useful in deriving a royalty rate for the BUICK mark in the automobile business?

At the beginning of this chapter, we highlighted the situation in which a market royalty rate was used to determine the compensation where a licensee obtained essentially all of the trademark rights. Since market royalties are often representative of compensation for partial rights, a mismatch can occur.

(i) Some Market Data. With those warnings, we can add our contribution to the plethora of so-called market data. From our files, we analyzed some 300 licensing transactions. We made no attempt to make these transactions comparable with respect to license term, geographic territory, royalty minimums or maximums, indemnities given by either party, or the existence of any special relationships between the parties to the license that might have altered its presumed arm's-length character. We also included many licenses of cartoon characters, celebrities and sport teams, and entertainment groups. While these may not be trademarks in every sense that we have been discussing, there is an extremely large commerce in such property, and any analysis of actual transactions will be weighted heavily with such deals. The problem, of course, is how to use this information in more mundane trademark licensing. So, caveat emptor.

Intuitively, however, we thought that there might be a difference in royalty between trademarks of different types. As we examined the transactions, it also appeared that there might be a royalty difference depending on the type of business or product being *licensed into*. In this way our analysis had some structure, and we arrayed the royalty rates as shown in Exhibit 26.13.

The results seem to bear out our intuition about how rates might differ. Royalties are lower in industrial and consumer service settings and higher when celebrity, character, and college/sports/entertainment entities are licensed into consumer products, foods, and entertainment/leisure goods and services. The same general relationships hold when we observe the royalties at the *high* end of the range, as shown in Exhibit 26.14. Not surprisingly, these relationships are true when observing the average rates as well (see Exhibit 26.15).

(d) AN INDUSTRY ANALYSIS. We also have made an analysis of approximately 1,500 companies whose stock is traded on various exchanges in the United States. Certain financial information was extracted from a computerized database and assembled in these industry groupings:

	LICENSEE'S USE OF THE TRADEMARK					
TYPE OF MARK	Commercial/ Industrial	Consumer Product	Consumer Service	Food	Apparel	Toys/Games/ Entertainment
Institutional		6.0				
Corporate/Products	0.25	1.0	1.0	1.0	5.0	4.0
Fashion		3.0		7.0	2.0	
Celebrity		6.0		10.0	10.0	3.5
Character		4.0	4.0	5.0	2.0	3.0
College/Sports		8.5		2.5	4.5	6.0

EXHIBIT 26.13 ROYALTY RATE ANALYSIS: LOW RANGE OF ROYALTY RATES

	LICENSEE'S USE OF THE TRADEMARK					
TYPE OF MARK	Commercial/ Industrial	Consumer Product	Consumer Service	Food	Apparel	Toys/Games/ Entertainment
Institutional		10				
Corporate/Products	5	10	6.0	15	10	6
Fashion	3	10		7	8	
Celebrity		15		10	12	10
Character		12	4.0	5	15	12
College/Sports		15		10	15	12

EXHIBIT 26.14 ROYALTY RATE ANALYSIS: HIGH RANGE OF ROYALTY RATES

Group 01—Governmental/Institutional

Federal Government
State Governments
City Governments
Governmental Agencies
Armed Forces
Post Office
Internal Revenue Service
Transportation
Hospitals
Universities
Trade Organizations
Charitable Organizations
Fraternal Organizations
Professional Organizations

	LICENSEE'S USE OF THE TRADEMARK					
TYPE OF MARK	Commercial/ Industrial	Consumer Product	Consumer Service	Food	Apparel	Toys/Games/ Entertainment
Institutional		7.7				
Corporate/Products	3.4	4.6	3.2	5.1	6.9	5.0
Fashion		6.0		7.0	5.5	
Celebrity		12.0		10.0	11.0	8.6
Character		8.6	4.0	5.0	8.0	8.4
College/Sports		9.9		6.1	7.6	9.0

EXHIBIT 26.15 ROYALTY RATE ANALYSIS: AVERAGE OF ROYALTY RATES

GROUP 02—Extractive/Commodity

Oil and Gas
Coal
Metals
Electric, Gas, and Water Utilities
Lumber
Grain
Cotton
Chemicals

GROUP 03—Semicommodity

Industrial/Commercial/Residential Construction
Paper
Fruits/Nuts
Meats/Poultry
Dairy Products
Plywood/Dimension Lumber
Specialty Chemicals
Transportation/Freight

GROUP 04—Intermediate Goods/Services

Services for Industry
Design/Engineering/Construction to Industry
Parts/Component Manufacturers
Machine Tools
Textiles
Leather
Plumbing/Heating/AC/Electrical/Masonry Contractors
Wholesalers/Distributors

GROUP 05—Finished Goods

Automobiles
Appliances
Computer Software (business to business)
Electrical/Electronic Goods
Apparel

GROUP 06—Retailers

Mass Marketers
Malls
Department/Specialty Stores/Supermarkets
Small/Intermediate Retail Stores

Dealers
Franchisees

GROUP 07—Industrial/Commercial Services

Construction
Advertising
Market Research
Management Consulting
Accounting
Legal
Financial (e.g., investment banking, commercial credit)

GROUP 08—Consumer Services

Banks/Financial
Telecommunications
Cable Television
Insurance
Hotels
Publishers
Newspapers
Transportation
Restaurants/Fast Food

GROUP 09—Consumer Products

Soap
Personal Care Products
Apparel
Computer Software (shrinkwrap)
Food Products
Beverage Products

GROUP 10—Entertainment

Motion Pictures
Television
Stage
Characters/Personalities/Sports Figures
Sports Teams
Toys/Games

The purpose of this analysis was to observe the proportion of the total business enterprise value represented by intangible assets. An additional objective was to calculate what we have called an implicit royalty rate that would be indicated by the financial results of these companies over a 3-year period, again arranged by industry groupings.

The general structure of this analysis proceeded from a calculation of cash flow for each of the industry aggregates (after-tax net income + depreciation + tax-affected interest). From this amount, we subtracted an amount to represent a reasonable return on monetary and tangible assets. The amount of cash flow remaining was attributed to the entire body of intangible assets within the business enterprises.

This amount, when expressed as a percentage of the net revenue of the business enterprises, indicates the *maximum* amount of royalty that these businesses could be expected to pay for the use of their entire body of intangible assets. Again, we made no attempt to disaggregate the royalty that might be payable for trademarks as opposed to other intangible assets of the businesses.

We have provided the results of this study in the form of a graph, which displays the average, median, high, and low values of royalty rate for each of the industry groupings. As we can observe from Exhibit 26.16, maximum royalty rates appear to range, on average, from about 5% to a bit less than 20%. The trend of maximum royalty rates is generally upward as industry groupings move from extractive/commodity industries to entertainment, sports, and leisure enterprises. We also can observe that the *range* of royalty rates expands as one moves into the industry groupings that depend more heavily on brands and image.

The result, in general, is a function of a company's profitability and the proportionate value of its monetary, tangible, and intangible assets. All else being equal, a more profitable enterprise will generate more earnings attributable to intangible assets. In turn, a business with monetary and tangible assets of low value would be expected to have more income available as a return on intangible assets because the return requirements for monetary and tangible assets will be low.

(i) Scoring and Rating Techniques. Another royalty rate analysis technique that we often observe is based on the use of scoring or rating criteria to quantify the qualitative difference between the trademark being studied and trademarks that have been licensed, and for which the royalty rate is known. This technique gives an aura of academic precision to an otherwise subjective process, but do we really gain anything?

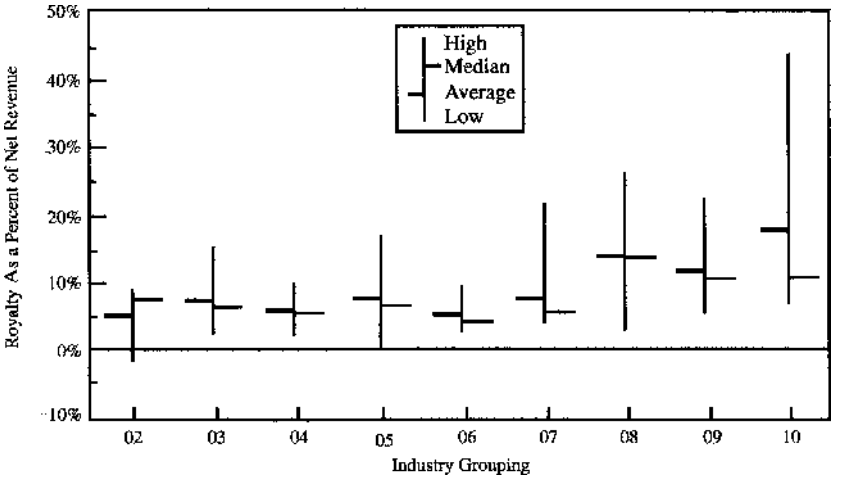

EXHIBIT 26.16 MAXIMUM INTANGIBLE ASSET ROYALTY RATE BY INDUSTRY GROUPING

An example of this method follows.

- Assume that we have made a survey of royalty rates that are in a business sector similar to our subject and that are evident in licensing transactions known to us. The range appears to be between 4% and 8%.
- We then analyze the subject trademark (the one for which we are trying to estimate an appropriate royalty rate), and give it a score for each of its various aspects, using a score from 0 to 100.
- These aspects often include such elements as market share, extension potential, internationality, stability, leadership, growth trends, and the size of the market in which the trademarked product or service is present. Those who use this technique seem to have their own unique scoring elements.
- We then compute the average score across all of the criteria; say it is 82.
- Our conclusion is that an appropriate royalty rate is 7.3% (falling at the 82% mark between 4% and 8%). Mathematically, this is expressed as $((8\% - 4\%) \times 0.82) + 4\% = 7.3\%$.

The accuracy of this method is, of course, dependent on whether the 4% royalty rates known to us were all for trademarks that would score 0 on our scale and whether all of the 8% trademarks would have received a score of 100 on our scale. Most of the time, however, we simply do not know enough about the royalty rates that we extract from exogenous information to know how they might score on a given system. Therefore, we do not know whether they represent a cross-section of deals, a group of bad deals, or a population of great deals.

The point is that for such a system to work, we must know whether the high and low royalties from the marketplace are driven by the criteria in the scoring system. Or are they driven by completely unrelated factors? It is essential that we know whether the low and high royalty rates we extract from market transactions comport with the low and high scores in our rating system. Only then can we have any confidence that our technique for placing the subject property inside a range of market rates makes any sense.

The problem with this system is that *the conclusion it produces always must be within the range of other transactions that we happen to know about*. In our opinion, the facts of our case should control the conclusion. Our technique should not consign us to a specific and finite range.

A similar methodology for trademark valuation also uses a scoring technique in order to position one's subject trademark within a range of price/earnings (P/E) ratios. The subject trademark's score is used to position its P/E at, above, or below the average P/E of its industry. The resulting P/E is multiplied by the earnings assigned to the trademark, and the result is taken as the trademark value. Again, for these results to be at all comforting to the valuer, he or she must have confidence that the factors that drive low P/Es are those that identify a low score in the system, and vice versa. If something unrelated to trademark value is driving the P/Es, then our confidence disappears. At least this method is based, in part, on the earnings attributable to the subject trademark.

CHAPTER 27

LICENSING NEGOTIATIONS AND AGREEMENTS

27.1 LICENSING NEGOTIATIONS

Very often the first contact with a potential licensee is sparked when a patent owner discovers that someone is practicing its patent without a license. The word "infringement" is not usually introduced at this stage of thinking or negotiation but is lurking close. This stage of the process could be described as discovering a company that is in *need* of a license.

(a) GETTING THEIR ATTENTION. The first step is to send potential licensees a letter raising the issue and stating that you believe they are using your patent and should take a license. The second and third steps usually involve sending follow-up letters restating your opinion. Months typically pass before a face-to-face meeting can be arranged. You must understand, the first reaction of unlicensed practitioners is denial. The second reaction is denial, and the third reaction is a strong reluctance to pay anyone any amount of money, coupled with more denial. Your first letter probably was set aside, waiting to be joined by additional letters. The first meeting is arranged only after a series of follow-up letters and an assertive telephone call. Admittedly, just getting the attention of the unlicensed practitioner can be a difficult part of the process. Once you have made contact with potential licensees and have their attention, they are annoyed and only listening halfheartedly, but at least you have their attention. A meeting is then arranged, and the most important presentation in the entire process is scheduled.

(b) COMPREHENSIVE PRESENTATION. A serious, well-prepared presentation is required—mandatory. Unlicensed practitioners will be using the meeting to measure your combative worthiness. They will be listening to you, and they will be looking for weaknesses in your story. Do not approach the first meeting as an easy chat over coffee. You want money from people, and they are going to want to know why they should even consider giving you any. Potential infringers most likely have developed a product or process independently through significant efforts in research, engineering, production design, and marketing. This does not mean that you are not entitled to receive a royalty for your patent, it means that potential licensees may see you as an interloper trying to weasel in on the good fortune they are enjoying from their hard work.

At least two and possibly three people from the patent owners' side should attend the meeting. The team members should include inside counsel and perhaps outside counsel. Engineering expertise should be presented, and someone from the business side, a decision maker, should be in attendance. The number of members on your team shows how serious you are. It also provides communications benefits. It takes at least two sets of

ears to come away from a meeting with an accurate memory of what transpired. When one team member is engaged in discussion, sometimes heated, with the other side, members of the negotiating team are free to absorb the full content of the discussion. After the meeting, a debriefing session should be planned. It should be anticipated as an integral part of the first meeting. The negotiating team should not plan on quickly disbanding to points unknown after the meeting. The debriefing session can provide enormous benefits as notes are compared about what just transpired. Debriefing should not be left for later. It should happen immediately after the meeting while impressions are fresh.

The ideal negotiating team has diverse knowledge and skills. You must understand the industry into which the patent, you hope, will be licensed. You must know the size of the market and the market share possessed by potential licensees. You should understand the profitability of the industry and the competitors of potential licensees. It is important to understand how potential licensees are using the patent and gain some understanding of their profits. Of course, you should have a team member who understands not only patent law but the specific patent in question. You must develop a comprehensive understanding of the issues involved, and you must demonstrate to the unlicensed practitioners that you understand their business and their use of your patent. Preparation is vital. Key areas to understand include:

- The strength of your patent
- Related patents owned by potential licensees
- Licenses, and the associated royalty rates, to which potential licensees are already obligated
- How the product or activity making use of your patent is infringing—obtain a product and take it apart
- How potential licensees are marketing the product
- The efforts that would be required for potential licensees to design around the patent
- The profits of potential licensees on an overall basis and specific to the activity that makes use of your patent
- The competition faced by potential licensees
- The size of the market in which the patent is used and the share possessed by potential licensees
- Market share trends of potential licensees—are they gaining or losing market share?
- Improvements for potential licensees brought about by use of the patent in the areas of sales, profits, market share, stock price performance, customer perception, and product quality

Potential licensees also may be facing issues that could complicate reaching agreement. If possible, they should be researched. The decision maker you meet may have, years ago, assured upper management that patent infringement would not be a problem regarding the activity you are now calling into question. Your contact at the potential licensees may be extremely reluctant to inform upper management that his or her original opinion was mistaken. While this is not really your fault, it can represent a major hurdle and becomes your problem to overcome. Financial pressures on potential licensees also may become a roadblock. A depressed stock price is not likely to appreciate when a new deal is negotiated requiring potential licensees to pay you a royalty for past and future use of your patent. Alternately, the market will not likely greet with enthusiasm the threat of an infringement lawsuit.

Somewhere along the way the threat of litigation will have to be broached, and with it the threat of an injunction. Introduction of this subject matter should be done matter-of-factly. It does not have to be introduced with table pounding and a booming voice. It also should not be interjected in a reluctant manner. Do not apologize for the real possibility that you will defend your patent rights in court. Infringement litigation is a fact of life and part of the overall process of patent protection. Infringement litigation is powerful in and of itself. It should not be diluted by apologizing for its possible introduction into the proceedings. And it does not need bolstering by framing it in a loud, threatening voice. All that needs to be accomplished is that potential licensees understand that you mean business and will proceed to court as a matter of fact.

As you can see, four key areas are involved in the negotiation, including patent law, product/engineering know-how, market information—including competitor knowledge—and licensing economics. The negotiating team needs to have a firm background in these areas.

(c) MEETING PREPARATION. A good place to start preparation is with the product brochures of unlicensed practitioners. Get their brochures describing the product in question. Using this information, point to features of the product and then point to the specific patent claims being infringed. Put the patent and the product brochure, or the product itself if possible, side by side. You must make sure potential licensees know that you understand their product and that it infringes your patent. Rub their nose in their product relevant to your patent—gently but assertively. Specifically match patent claims and product features. Draw lines connecting patent claims to advertised benefits. Stress the seriousness of your infringement claims. The initial approach should be persuasive, but with conviction.

After explaining how the product infringes, the next step is to explain what a license will cost, why it is a good deal, and what infringement litigation will cost. As previously mentioned, infringement litigation is an alternative that must be addressed to demonstrate that you are serious. Make sure that potential licensees understand that you will seek an injunction if that is what it will take. This is where knowledge of market share and product profitability is important. The implications of an injunction are very strong when large markets and market share are at stake.

The way in which the presentation is made can go a long way toward proving that you are serious. A formal presentation is recommended. Flipcharts or overhead projections can graphically and convincingly make key points about the areas discussed. The charts should show how the patent is infringed, the position of the infringing product in the marketplace, and the economics of the proposed licensing agreement. Charts showing information about competitors and the industry structure go a long way toward indicating that you understand exactly what is going on and demonstrate that you are not pleased. The presentation can give potential licensees a glimpse at what your infringement case will look like, but it also demonstrates that you have a strong case and that you are serious.

When you draw attention to the cost of litigation, you should talk about how the cost of litigation goes beyond attorneys' fees. The amount awarded can be lost profits if you are an industry participant. If available, a list of damage awards in similar cases in the industry should be one of the charts at the end of your presentation. Even when a royalty is most likely to be the basis of calculating damages, you should stress that the royalty rate on the table for negotiations is not necessarily the same royalty rate that will be requested from the court and possibly awarded. It does not hurt your case to point out

that very high royalty rates have been awarded in infringement cases. You should make sure unlicensed practitioners clearly see that a traditional license and royalty rate is the option most desirable for them.

Most important is preparation. The negotiation team must spend time and money to get ready for the initial presentation. A great amount of diverse information needs to be gathered, but this is not the time to pinch pennies. A presentation that is based on a well-informed negotiating team is going to get serious attention from unlicensed practitioners.

(d) LICENSOR CONCERNS. Rapidly running through the minds of unlicensed practitioners is the competitive disadvantage that your licensing deal represents. In a competitive industry, your royalty rate represents another cost that will put unlicensed practitioners at a cost disadvantage. This concern must be addressed. One way is to assure unlicensed practitioners that they are not the only industry participants with whom you are meeting. The royalty rate at which you offer to license your patent can be presented as a *special* rate for their being the first unlicensed practitioner to take a license. A *special* rate can provide both parties with an advantage. The unlicensed practitioner can get a license at a lower rate than anyone else in the industry. In exchange, you can get a license agreement with an industry participant that conveys credibility on your patent and that can be used in negotiating licenses with other industry participants. The first licensee grants credibility to your position and also makes it easier for corporate managers at subsequent licensees to tell upper management that a license should be taken. They can point to the license agreement with another company. Corporate managers follow the herd. They do not want to be the only company with a license nor do they want to be the only company that is holding out. Managers you meet with will be in a far better position when they can point to another company as partial justification for recommending the taking of a license. Thus, the first license can be very valuable, and a special royalty rate to the first licensee can be justified.

The first license can provide enhanced credibility in a number of ways. Sometimes you can negotiate recognition for yourself beyond the standard press release that announces the deal. You should try to get the licensed products marked to identify you as the licensor. You might also get your name included on product brochures and in advertising. In exchange for this recognition, you might have to be flexible about the royalty rate, but the credibility that the first license provides can be worth it.

(e) MOST FAVORED NATION. Flexibility with the royalty rate for the first license can be problematic when the second and third licensees ask for a "favored nations clause." The best way to avoid this problem is to establish a policy against granting favored nation clauses: Do not grant them. A favored nations clause is an invitation to, almost a guarantee of, litigation. If licensees insist, then require an additional up-front license fee of several million dollars and explain it as needed to cover the costs of the litigation that you are expecting. Deflect arguments for favored nations clauses by focusing on the details of the agreement that is being negotiated. Try to show licensees that the contemplated deal is good on its own merits, regardless of what other licensees are paying for the invention. Explain that there can be a lot of negative complications of an antitrust nature associated with agreements that prescribe how others are treated. Sometimes you just have to come out and tell them that they are not entitled to the royalty rate of the first licensee. The first licensee was a risk taker, taking a license before it became fashionable. Explain that the first licensee got a special deal for being first, and that door is closed.

Favored nations clauses can be invoked whenever a subsequent deal is even minutely different. This is especially true when a subsequent deal has reduced or eliminated cash payments in exchange for cross-licenses. In subsequent deals you may decide to cross-license. Subsequent licensees may have important patents to trade. In exchange for the cross-license, you may reduce or eliminate the license fee and/or the running royalty rate. Before the ink is dry on the new license, the cash buyer will point to the lower royalty rate of the subsequent deal and demand equal treatment without giving any monetary credit to the value of cross-licensed property. When this scenario unfolds, you are on your way to court.

The credibility provided by signing the first license is very important, especially for small companies in an industry dominated by large competitors. You might not be able to get the industry leader to pay attention to you, but the second- or third-largest player in the market might like the idea of having a license as an advantage over the leader. If the price of the first license is attractive, the first licensee can use the existence of the license agreement with you against the industry leader in the market. The customers of the leading company might want the safety of dealing with a licensed supplier. When the industry leader loses a sale or two to a licensed competitor, you will have its attention.

(f) EXCLUSIVITY. If the first licensee wants an exclusive license, you must get a royalty rate that compensates for the other licenses and royalty income that you will be giving up. This level of negotiation is a balancing act. Do you want a large royalty rate on a portion of the market, or do you want a smaller royalty rate on all of the market? If you give an exclusive license, you save the time and effort associated with running around to license all industry participants. You also relieve yourself of having to enter into litigation with a stubborn unlicensed practitioner. Judging this balance requires insightful assumptions and financial analysis. A new member to the negotiating team might be needed in the form of business controller or financial analyst. If you grant an exclusive license, try to get a share of the sublicensing royalty income that the exclusive licensee might enjoy, but do not count on sublicense royalty income. An exclusive licensee may want to keep the use of the technology to itself.

(g) INDUSTRY PARTICIPATION. Universities and inventors (not in the business) can be the greatest fear of corporate licensing executives. These licensors do not have any interest in cross-licenses, so corporate licensees have little room for offering alternatives to cash. Licensors that are not in the business only want royalties and large amounts of them. University licensors and inventors usually do not have large amounts of cash for infringement litigation, so they do not have a strong hand when it comes time to say, "Take a license or we will meet in court." They do possess a strong hand when they say: "Take a license or I will meet with your largest competitor."

Universities have limited funds, and the licensing departments are expected to be completely self-sufficient. Unlicensed corporate practitioners know this weakness. Universities often are hungry for licensing fees, possibly to the point of making unrealistic trade-offs between up-front fees and royalty rates. This is an area where corporations have an advantage, and care should be taken if you are a university or inventor. A significant up-front fee can be offered in exchange for a lower royalty rate. To a point this trade-off can make sense.

(h) SCHEDULE. At the end of the meeting set a reasonable but firm time schedule. Establish a date by which unlicensed practitioners must respond to your offer. Unlicensed practitioners will need to meet with other managers and upper levels of management. They

will need to conduct their own review of the situation, and they will need time to digest their findings and time to hold decision meetings. This is to be expected, but without a deadline, the decision meetings will take on a life of their own at the unlicensed corporation. Something must exist to force unlicensed practitioners to reach a consensus, so give them a deadline. As with everything else, be fair but firm.

27.2 LICENSING AGREEMENTS

If your negotiations were fruitful, you will need to create a license agreement. The remainder of this chapter presents some of the more important terms of a technology license agreement. It is provided as basic information for understanding license agreements. We are not attorneys and do not hold ourselves out as legal experts. When preparing license agreements, we recommend that legal counsel be sought. Our goal is to provide appreciation for some of the more important elements of a license agreement.

Generally, license agreements begin with identification of the parties involved in the transfer and a recitation of their intentions. Outlined below are other important elements of a basic license agreement.

Licensed grant is the most important element of a license. This section should clearly define what is being licensed and the specific rights that the licensor is granting to the licensee. Usually the licensee is granted the right to "make, use, or sell." Some authorities believe that the phrase "to have made" is not required, but if such a phrase is incorporated into the license, it should qualify that the rights granted allow for rights "to have made for the licensee." This qualification should avoid confusion about whether sublicensing rights have been granted. It should be noted that the rights to "make," "use," or "sell" can be granted separately.

Definitions that are clearly stated can help avoid later confusion and possible litigation. Definitions are usually included regarding:

- Property to be licensed
- Fields in which the rights can be used
- Territories in which the rights can be used
- Net sales
- Improvements

Other definitions also may be important, depending on the particular license.

Licensed patent is an element of the agreement that identifies the patents for which rights are granted. If a limited number of patents are involved, they can be directly mentioned in the grant paragraph. When many patents are involved, a specific list of patents often is appended to the agreement.

Licensed products define the technical subject matter to be licensed and are important where a patent has many claims. For instance, in a patent claiming both product and process for manufacturing a product, this paragraph should explain the intentions of the parties as to whether one or both claimed forms of the invention are being licensed. This paragraph is another area where limitations can be expressed. Specific products can be identified for which broad rights are not part of the license.

Field of use can specify the rights granted for different industries or divide the use of the licensed technology rights for a specific industry. A technology that has universal applications can be licensed to different parties for use in different industries. Within a given industry, field of use specifications can carve out different products or services.

Subsidiaries, affiliates, and controlled companies should be identified when some extension of the licensed rights is expected to be granted to the indicated parties. If such entities are not intended to participate in any aspect of the license, then such a statement should be incorporated into the license.

Territorial rights can be specified as covering the entire world or a small region within a single country.

Exclusivity grants rights to a single party for the defined field of use and territory. If this is the intent of the parties, this should be stated.

Sole licensee can be looked at as a variation of exclusivity. In this case, the licensee is the only other party granted the defined rights while the licensor still is allowed rights to practice the invention.

Sublicensing arrangements should explain any rights that the licensee is granted with regard to licensing the technology to others. When sublicensing rights are granted, the agreements should specify how the licensor will be compensated from the income that the licensee obtains through sublicensing.

Duration of the license should be specified along with renewal options. The license can run for the lives of the patents or for a shorter period.

Compensation arrangements can take many different forms. A running royalty on product sales is very common. The royalty can be expressed as a percentage of the net sales obtained by the licensee. The royalty also can be expressed as a fixed amount per unit. Compensation arrangements can be presented by a one-time payment that allows the licensee to practice the patents for the term of the license.

Licensee fees also can be required by a license agreement, whereby the licensee gives the licensor a payment for the license. The fee can represent an advance against which future royalty obligations will be charged, or it can simply represent a form of "signing bonus" for the licensor. Such fees also can be scheduled as certain developmental or marketing milestones are reached.

Other compensation considerations to explain in the agreement include:

- Defining a license fee payment schedule
- Defining the royalty basis: "net sales" or "units"
- Defining what constitutes a sale (i.e., when shipped, when invoiced, or other circumstances)
- Establishing the royalty rate and currency in which payments will be made
- Defining the royalty period
- Establishing the format for reporting royalty payments
- Establishing minimum royalties and/or guaranteed amounts that will be paid
- Defining how sales to affiliated firms will be treated
- Establishing the basis for sharing sublicensing income
- Setting an interest rate for late payments
- Addressing the finality of the licensor's acceptance of royalty reports or whether subsequent challenges are allowed

Improvements and grant-backs can be valuable property developed in the future. The licensee may want to receive the latest version of the licensed technology as the licensor continues to research the subject technology. The licensor may want to enjoy any enhancements to the technology that are developed by the licensee as it practices

the invention. This element of the agreement explains how such property will be handled and if additional compensation will be required.

Audit rights and procedures allow the licensor to inspect the records of the licensee to ensure that the proper amount of royalties has been paid. Usually the licensor agrees to absorb the cost of conducting the audit. This section of the agreement also should discuss:

- Timing of the audits
- Notice requirements for the licensee
- Establishment of how underpayments will be treated
- Record retention period requirements for the licensee

Representations and warranties by both parties are common elements. Typically the licensor declares that it has the necessary rights to grant the license, and the licensee declares that it is willing and able to accept the license. It has been held in court that there is no implied warranty that the licensed patents are valid. There is also no implied warranty that products made under the licensed patents will not infringe the patents of a third party. In most cases a warranty clause will be included in the license whereby the licensor states that "Nothing in this agreement shall be construed as:"

- A warranty of the licensed patent validity
- A warranty as to the scope of the licensed patents
- An obligation for the licensor to file infringement suits against third parties, unless this obligation is specifically required elsewhere in the agreement
- A warranty that anything made, used, or sold (or otherwise disposed of) will be free of possible infringement of the patents of a third party

Other representations and warranties should establish that the licensor does not have any conflicting agreements. Very often the licensee acknowledges that it will make its *best efforts* to: *commercialize*, *advertise*, *promote*, and *establish* product introduction by specified dates.

Indemnity for the licensee centers on wanting to be indemnified against third-party patent infringement lawsuits brought against the licensee. For the licensor, the desirable clause indemnifies it from tort or product liability actions brought against the licensee.

Third-party infringement lawsuits may be accepted as the responsibility of the licensor. If the licensor agrees to bring such actions, it sometimes is wise for the licensor to limit the number of actions that it is required to support at any one time. In return, the licensee should agree to pay royalties while the lawsuit is being fought. An escrow account may be established for the royalties until the lawsuit is decided.

Most favored nations clauses were discussed previously. Such clauses are something that a licensor should avoid. In effect, licensees asking for such a clause are asking for insurance that covers their negotiating skills. They are asking for the licensor to give them the best deal that others may negotiate even though they were not capable of negotiating such an arrangement. Licensees should be told that insurance companies do not provide protection for free and neither do you, as the licensor.

Bankruptcy does not automatically terminate the license. The trustees of the bankrupt company may look at the license as a valuable asset of the company. The licensor

can find itself with a license to a company that is underperforming its obligations. Yet termination of the license because of the bankruptcy may be difficult.

Failure to make payments clauses can be used to terminate the license. In the event that the licensee does not make timely payments of royalties, the licensor should retain the right to terminate the agreement.

27.3 CRITICAL QUESTIONS

As you consider licensing negotiations, consider these big questions. They may seem like basic questions, but they are at the heart of technology transfers. These questions provide a stream-of-consciousness look into the questions that surround the pricing of technology transfers. First we consider questions from the point of view of licensing technology into a company. Then we frame the questions from the point of view of licensing technology out of a company. Many of the questions reflect considerations that occur when infringement litigation is looming in the background. Such a threat is not always involved in licensing, but the threat is common, and such a framework for these questions must be included. Specific answers for each question could not be provided because such answers are highly dependent on many factors, such as technology, products, industry, competitors, and market share of the licensor and licensee. Still, we have tried to provide some general guidance as to where an answer for each question may lie.

27.4 LICENSING-IN TECHNOLOGY

Do we really need this patent or, dare I say it, should we infringe?
Technical and legal opinions from inside and outside your organization may be needed to answer this question. Be careful; if infringement litigation ultimately is filed, these opinions may become the subject of discovery.

How many other patent licenses are we going to need?
Many industries are experiencing an avalanche of new inventions, and those in the field often find themselves facing demands from new parties, some of which they never heard of. A patent search is the place to start answering this question, but in the face of fast-moving technology fields, you may never be sure.

How much would it cost to invent around this patent?
The engineering department is the starting point for answering this question, but whatever solution it develops must pass through the patent legal office to determine if the new design actually circumvents infringement. Also, consider how long you will be out of the market while designing around the patent(s) at issue.

How long would it take to invent around this technology?
In addition to engineering costs, remember that manufacturing costs may be involved, and in some cases the change will require new marketing materials and training for the sales staff. In some cases, the amount of time may involve years.

Can we really invent around this patent, or is that guy Poindexter from R&D just a bunch of big talk?
Engineers are often overly optimistic. Such optimism makes them great inventors, but sometimes it can be harmful if negotiations are terminated too quickly.

Do they offer any technology besides the patent license?
You may discover just by asking that the licensor will provide technological know-how, future improvement patents, and consulting along with the patent license.

How long until my negotiating counterpart retires?
Is your counterpart in the negotiation a young pup trying to make a big splash within the company or an old dog waiting to join the Senior PGA Tour? Psychology and emotions play a bigger part in licensing negotiations than you might think. Spend some time learning about the personal forces driving your negotiation counterpart.

For that matter, how long until I retire?
If less than one year, take a long lunch and have a drink—stop worrying about this licensing deal. Not always, but sometimes, the questions are easy to answer.

Can I get a paid-up license for a few million dollars?
Maybe, but not likely.

I wonder if they actually would litigate.
Your legal department should be able to research how many infringement litigations the licensor has filed and the patents at issue. Such information could provide an indication of the licensor's proclivity for litigation. Find out how many of the lawsuits filed by the licensor have settled.

What would it cost to defend against an infringement lawsuit?
If the case goes all the way through trial, the legal bill could easily reach many millions of dollars. This does not include the cost of people from within your organization being diverted from their normal duties for discovery, deposition, and trial testimony.

Can I get a noninfringement opinion out of those people in our legal department?
Most often outside counsel is used for such opinions to avoid conflict of interest.

Okay, then, can I get a noninfringement opinion out of our outside counsel? What would that cost?
Getting a noninfringement opinion depends on the facts at issue. Reputable law firms usually cannot promise a favorable opinion without conducting an investigation. The cost will depend on the firm you use and the complexity of the technology and patents in the industry.

Is my adversary a major competitor?
If you are involved with licensing from a direct competitor, the royalty rate probably is going to be higher because the license grants rights for use of a market advantage. In many cases, a competitor that is licensing valuable technology to you is effectively giving you a better shot at taking some sales and the associated profits from them. The price for this right is likely to be high.

Why are all of my outside relationships adversarial?
A few studies have concluded that 85% (more in many cases) of company value is represented by intellectual property and intangible assets. You are involved with managing the most important assets that a company can hope to possess. Not only are substantial dollars at stake, but very often pride is a key issue.

In fact, why are all of my inside relationships adversarial?
This could be a different problem. Try a breath mint.

Can I get an exclusive deal and do I really need it?
You might get an exclusive deal but probably not from a competitor. In general, be prepared to pay more for exclusivity and make sure you really need it.

Is exclusivity worth paying for?
This is partly a marketing question. The sales staff may be able to tell you the importance of having an exclusive advantage for your industry. In some cases, exclusivity may be very powerful. In other cases, the power of your other intangible assets, such as trademarks and distribution networks, can make exclusivity unnecessary.

What is this product line worth to my company?
This strategic planning question deserves to be answered by a net present value financial analysis. You may find that the product in question is a fundamental component to the corporate strategy and that licensing the patent being offered is something that must be addressed.

What are my profit margins on the subject product?
Your finance department should have gross profit information, but get it to estimate selling, general, and administrative expenses so that you can negotiate from the point of view of operating profits.

What are my profits after I pay a reasonable royalty rate?
Find this amount by making sure the product still provides an appropriate investment rate of return after you pay the royalty. This book describes many methods for satisfying this requirement.

What are my profits after I pay the royalty that they are asking?
Probably very poor. Your negotiating counterpart is not likely to start out by offering a low royalty. He or she also might not have any idea about the profit margins derived from the product line by you or, for that matter, might not even understand the profit margins that the company is making. Introduction of the typical profit margins earned on products using the technology in question can show that the requested royalty rate is absurd.

How much would it take to commercialize this great idea?
For a new product this could include the time and expenses associated with engineering, manufacturing production procedures, regulatory approvals, consumer research, public relations, development of marketing programs, development of advertising compaigns, and sales training. All of these costs, balanced against the risk of product failure, must be factored into the royalty rate negotiation.

How long until we can hit the market, and what amount of capital investment is needed?
In answering this question, the time value of money becomes a central issue, and this affects the royalty rate negotiation range. A long time frame makes the present value of the project lower. This also impacts the level of royalty that can be paid.

What is my company bringing to the table in the way of trademarks, customer lists, and other intangible assets?
Your financial analysis should reflect the benefits of these valuable assets. Make sure the royalty rate does not reflect the contribution of these assets and only compensates the licensor for the patented technology that you are licensing.

Will this patented product generate sales for other products that I already sell?
Make sure this is a real possibility before agreeing to a royalty rate that anticipates such a possibility. The marketing and sales department, including salespeople in the field, should be consulted.

How much can we make in servicing contracts?
If this is a significant portion of your business, then high profits are likely. You can expect the licensor to want royalties on these service activities when you get to the next question.

Do they expect royalties on service fees?
Paying royalties on replacement parts and product refurbishment might be reasonable, and cases exist where royalties are paid on maintenance and repair services.

I wonder if they know what I am paying for other patent licenses.
They will have this information only if it is part of a past filing with the Securities and Exchange Commission (SEC) for publicly owned companies, or if your public relations department has announced past deals and details of the financial terms.

What are the other licensees of this patent paying?
Finding out might not be possible if the licensor keeps license agreements confidential and has not disclosed any financial terms in filings with the SEC.

I wish that our industry had a useful rule of thumb.
Why? It probably would not address the specifics of your situation. Such a rule of thumb might be useful for setting an order-of-magnitude royalty, but a customized analysis that addresses the situation at hand is preferable. Rules of thumb can be useful for patents that define a product but not so for incremental improvements.

How long does this patent have left to run?
This is important only if you can live without the product until the patent expires. If you cannot tolerate being out of the market that long, then the question becomes less important.

Should I pay whatever they want and then begin inventing the next-generation product?
The next generation could be a bargaining tool for lowering your royalty rate in the future. Try not to give it away in the first license agreement, though.

Suppose that we actually have been infringing. What have we really gotten out of it?
Your profit analysis may provide a hint about the answer to this question. Also take a look at your market share and trends.

Does this patent involve the whole product or just a neat little feature?
Perhaps you can limit the royalty base to only a percentage of the entire product. While this is a nice approach, it will likely be difficult to implement.

Does the market really care about the patented feature?
Assumptions here could be misleading. Ask the marketing department and talk directly to some of the sales staff who are out in the field. You may find that a particular feature is not contributing to closing sales.

Is my adversary infringing anything that we own?
This question and the next two are looking for a way to obtain a license without having to pay any cash. If you are going to cross-license, make sure that you can live with a competitor in possession of the cross-licensed technology.

What can I offer as a cross-license?
The possibilities are limited only by the patent portfolio that you possess. Finally, the reason for maintaining all of those unused patents becomes crystal clear.

What or who can my company purchase that would then let me offer a cross-license?
Licensing disputes have been solved by acquisition of a company that owns technology that your licensing counterpart needs or desires. In fact, another way to solve your problem is to acquire the licensor. Then fire your counterpart.

Does the patented product require changes to our marketing efforts?
New products can require a significant investment in marketing, distribution, and sales force training. Make sure that any royalties agree to reflect this required investment. It is a net present value kind of thing.

Will we need a new sales force, or can our current sales reps handle this new product?
The existing sales force may be able to handle another specialized product, but a dedicated sales force that handles only the new product may greatly enhance the success of your new product.

Can our current products coexist with this new one?
Product cannibalization must be considered when sales of other products for which no royalty is required might be lost to a new product requiring a royalty payment.

I wonder what royalty rates might be appropriate for my situation.
ipresearch.com offers a series of books:

- *Royalty Rates for Technology*, third edition
- *Royalty Rates for Pharmaceuticals & Biotechnology*, fourth edition
- *Royalty Rates for Trademarks & Copyrights*, third edition

Other sources of royalty rate consulting services include:

- *Royalty Source*, which can be accessed at royaltysource.com
- *Consor, Inc.,* a consulting company located in La Jolla, California
- *InteCap, LLP*, a consulting firm headquartered in Chicago, Illinois
- *The Big Four accounting firms* often maintain a database of royalty rate information

27.5 LICENSING-OUT TECHNOLOGY

This section of the chapter looks at licensing from the point of view of trying to place the technology with another company.

Do they really need this patent? Are they infringing?
Technical and legal opinions from inside and outside your organization may be needed to answer this question. Be careful—if infringement litigation ultimately is filed, these opinions may become the subject of discovery. Such an opinion can be a helpful negotiation tool (i.e., threat).

How many other patent licenses are they going to need? How many others are going to hit on them?
Many industries are experiencing an avalanche of new inventions, and those in the field often find themselves facing demands from new parties, some of which they never heard of. A patent search is the place to start answering this question, but in the face of fast-moving technology fields, you may never be sure. Although it would be nice to consider this factor "their problem," it is a reality that must be addressed. You might consider allowing them a reduction in the royalty rate if others come to them for licenses, but set a floor below which your royalty rate will not drop. Then hope that no one else comes after them.

How much would it cost to invent around our patent?
The engineering department is the starting point for answering this question, but whatever solution it develops must pass through the patent legal office to determine if the new design actually circumvents infringement. In negotiations, your stance should be that inventing around is not a reality for them.

How long would it take them to invent around our patent?
In addition to engineering costs, remember that manufacturing costs may be involved, and in some cases the change will require new marketing materials and training for the sales staff. In some cases, the amount of time may involve years. Tell them they are looking at being out of the market for decades.

Can they really invent around this patent?
Engineers are often overly optimistic. Such optimism makes them great inventors, but it can be harmful if negotiations are terminated too quickly.

Do they offer any technology we could use?
You may discover just by asking that the potential licensee has technological know-how, future improvement patents, and consulting capabilities that could benefit your company. Even if other areas of unrelated technology are involved, a cross-license might be just as good as money.

What is really driving this negotiation for my counterpart?
Does my counterpart need a "win" to build a career or to make a point in his or her organization? Does he or she really want to make a deal or just try to find out more about my organization? Emotions can play a big part in any negotiations, and examining the situation for hidden agendas can be worthwhile.

What are my real motivations?
Am I bringing some mental baggage to the negotiation that may be getting in the way? Is there undue pressure to "make a deal, any deal"? Am I focused only on the business aspects of the negotiation?

Should I consider offering a paid-up license for a few million dollars?
Only if your patent is fraught with weaknesses that will not stand the test of a trial.

I wonder if they actually would litigate.
Your legal department should be able to research the number of infringement litigations involving the licensee and the patents at issue. Such information could provide an indication of the licensee's proclivity for litigation. Find out how many of the lawsuits have settled.

What would it cost to bring an infringement lawsuit?
If the case goes all the way through trial, the legal bill could easily reach millions of dollars. This does not include the cost of people from within your organization being diverted from their normal duties for discovery, deposition, and trial testimony.

Can I get an infringement opinion out of those ultraconservatives in our legal department?
Most often outside counsel is used for such opinions to avoid conflict of interest.

Okay, then, can I get an infringement opinion out of our outside counsel? What would that cost?
Getting an infringement opinion depends on the facts at issue. Reputable law firms usually cannot promise a favorable opinion without conducting an investigation. The cost will depend on the firm you use and the complexity of the technology and patents in the industry.

Is my adversary a major competitor?
If you're involved with licensing to a direct competitor, the royalty rate probably is going to be higher because the license grants rights for use of a market advantage. In many cases, a competitor that is licensing valuable technology from you is effectively taking some of your sales and the associated profit. Remember that letting the competitor have incremental sales might be reasonable if it keeps you from having to invest in added manufacturing capacity and supporting infrastructure. If you have enough excess capacity, then giving away incremental sales is expensive and the royalty rate should reflect that fact.

Why are all of my outside relationships adversarial?
A few studies have concluded that 85% (more in many cases) of company value is represented by intellectual property and intangible assets. You are involved with managing the most important assets that a company can hope to possess. Not only are substantial dollars at stake, but very often pride is a key issue.

Should I give them an exclusive deal, and how much more royalty can I really get out of them for it?
If you are in the market, then you do not want to give them an exclusive deal. You will want to practice the invention for yourself and may be able to get a percentage of sales from all of the other competitors in the industry. Unless the potential licensee is willing to make good for the royalties that all of the other industry players might generate, then an exclusive deal is probably not the way to go.

Will they think that exclusivity is worth paying for?
This is partly a marketing question. The sales staff may be able to tell you the importance of having an exclusive advantage for your industry. In some cases, exclusivity may be very powerful. In other cases, the power of their other intangible assets, such as trademarks and distribution networks, can make exclusivity unnecessary.

What is this product line worth to their company?
This strategic planning question deserves to be answered by a net present value financial analysis. You may find that the product in question is a fundamental component to the corporate strategy and that licensing the patent being offered is something that must be addressed.

What are their profit margins on the subject product?
If you are not in the industry, it may be hard to determine their profit margin. Outside consultants and other industry research may be needed. If you are a market participant, then your finance department can use your profit margins as a proxy for their margins.

What are their profits after they pay a reasonable royalty rate?
Find this amount by making sure the product still provides an appropriate investment rate of return after they pay the royalty. This book describes many methods for satisfying this requirement.

What are their profits after they pay the royalty that they want to pay?
Probably terrific. Your negotiating counterpart is not likely to start out by offering a high royalty. He or she also might not have any idea about the profit margins the company is earning from the product line. It is not all that uncommon. Introduction of the typical profit margins earned on products using the technology in question can show that the requested royalty rate is quite reasonable.

How much would it take to commercialize this great idea?
For a new product, this could include the time and expenses associated with engineering, manufacturing production procedures, regulatory approvals, consumer research, public relations, development of marketing programs, development of advertising campaigns, and sales training. All of these costs, balanced against the risk of product failure, must be factored into the royalty rate negotiation. You have to let them earn a profit on their investment and a reward for bearing risk.

How long until they can hit the market, and what amount of capital investment is needed?
In answering this question, the time value of money becomes a central issue, and this affects the royalty rate negotiation range. A long time frame makes the present value of the project lower. This also impacts the level of royalty that can be paid.

What is their company bringing to the table in the way of trademarks, customer lists, and other intangible assets?
Your financial analysis should reflect the benefits of these valuable assets. Make sure the royalty rate does not reflect the contribution of these assets and only compensates you for the patented technology that you are licensing. If you can get away with a royalty that represents more than the patented invention, you may be happy for a while, but in the long run conflict will result.

Will this patented product generate sales for other products that they already sell?
The marketing and sales department, including salespeople in the field, should be consulted.

How much can they make in servicing contracts?
If this is a significant portion of their business, then high profits are likely. You can expect the licensee not to want to pay royalties on these service activities, but if your

patented invention provides this type of opportunity, then getting royalties on all the benefits the licensee will enjoy is reasonable.

Can we get royalties on service fees?
Paying royalties on replacement parts and product refurbishment might be reasonable, and cases exist where royalties are paid on maintenance and repair services.

I wonder if they know what I am willing to accept from other licensees.
They will have this information only if it is part of a past filing with the SEC for publicly owned companies, or if your public relations department has announced past deals and details of the financial terms.

I wish that our industry had a useful rule of thumb.
Why? It probably would not address the specifics of your situation. Such a rule of thumb might be useful for setting an order-of-magnitude royalty, but a customized analysis that addresses the situation at hand is preferable. Rules of thumb can be useful for patents that define a product but not so for incremental improvements.

How long does this patent have left to run?
This is important only if they can live without the product until the patent expires. If they cannot tolerate being out of the market that long, then the question becomes less important.

Should I promise them access to the next-generation product?
The next generation could be a bargaining tool for raising your royalty rate. Try not to give it away in the first license negotiation session.

Suppose that they actually have been infringing—what have they really gotten out of it?
Their profit analysis may provide a hint about the answer to this question. Also take a look at their market share and trends.

Does this patent involve the whole product or just a neat little feature?
Tell them it does not matter. Your patent is in their product, and the price of the entire product is the royalty base.

Does the market really care about the patented feature?
Assumptions here could be misleading. Ask the marketing department, and talk directly to some of the sales staff who are out in the field. You may find that a particular feature is not contributing to closing sales.

Are we possibly infringing anything that they own?
If so, this license might get you out of the box by negotiating a cross-license.

What can they offer as a cross-license?
The possibilities are limited only by the extent of their patent portfolio. Be careful that they offer you meaningful technology in the cross-license. They may offer a lot of technology from which you may never gain any benefit.

Does the patented product require changes to their marketing efforts?
New products can require a significant investment in marketing, distribution, and sales force training. Make sure that any royalties agreed to reflect this required investment. It's a net present value kind of thing.

Will they need a new sales force or can their current sales reps handle this new product?
Their existing sales force may be able to handle another specialized product, but a dedicated sales force that handles only the new product can greatly enhance the success of the new product. Take the position that they will be able to gain new sales from their existing sales force.

Can their current products coexist with this new one?
Product cannibalization must be considered when sales of other products for which no royalty is required might be lost to a new product requiring a royalty payment. Once again, your position should start with a picture of perfect coexistence. It may be helpful, though, to have a firm grasp on reality.

27.6 CONCLUSION

Each party in a negotiation must face the same questions. A fair result will occur when each party reaches the same answers. Good luck.

CHAPTER 28

LICENSING INTERNET ASSETS

When this chapter was first written, the outlook for Internet businesses seemed to be "up, up, up" without end. This exuberant view persisted in the face of financial losses, forlorn hopes of future earnings, and the failure of any really successfully e-commerce business models to emerge.

Of course, we now know that the basic investment rate of return theories were not repealed and that there was not an unlimited supply of capital with which to experiment. The e-commerce bubble burst, to the considerable discomfort of many entrepreneurs and investors.

There are some strong e-commerce survivors, however, and it is clear that impressive growth potential remains, albeit more controlled. A multitude of e-commerce business models have been tried, with a great deal of attrition. Many Internet sites are information providers, and this segment presents some of the more difficult legal and financial problems. The Internet grew up with a philosophy of everything-is-free. This philosophy was a strong influence, and many early business plans were built around the idea of free content with revenues being generated by advertising. Today the everything-is-free philosophy has eroded to the extent that most successful Internet information providers combine free information with information available for a fee. On the legal front, there has been a well-publicized controversy involving recorded music in which the recording industry (the copyright owners) sought to prevent the free distribution of music via the Internet. The industry even took the unusual step of bringing suit against Internet users who had downloaded musical works. This is a critical area for potential licensors and licensees to monitor. Once protected intellectual property goes "on the air" in digital form, it becomes very difficult to protect and exploit in the traditional ways. Sorting out the future rights of intellectual property owners and intellectual property users may well require some technological advances as well as legal resolutions.

Against this backdrop of financial turmoil, the Internet has, of course, revolutionized our existence. The technology for wireless communication, or radio, was originally thought to be a technology for replacing telephone wires. David Sarnoff of the fledgling Radio Corporation of America (RCA) saw it as a way to bring music into our homes. When these devices were introduced to the market in the 1920s, their acceptance was overwhelming. Much the same happened with television in the 1950s. Like newsprint, radio, television, and shopping malls before it, the Internet is a new medium by which to introduce and sell products and services. The essential differences, however, are that the Internet is worldwide in scope and is a two-way medium that permits communication and a consummation of the sale without a personal interaction. In addition, some products, such as information, can be delivered online as well.

We have witnessed a tremendous proliferation of e-commerce, including Web sites offering:

- Specialized content or information to be used elsewhere
- Access to libraries and collections of art and music
- Information about companies, organizations, and governments
- Pornography, photography, psychology, or genealogy
- Consumer goods for sale
- Commercial and industrial goods and services
- Stocks, bonds, and investment advice
- Auction or brokerage services
- Forums for fans of movies, musicians, entertainers, and sports figures
- Games of skill and games of chance

Because some of the changes the Internet brings are so dramatic, and because the growth of e-commerce has been, and is expected to remain, so explosive, we can become so enamored that everything with a dot-com heritage seems magical. The Internet has provided a whole new licensing arena. In what ways is it the same as, or different from, our other licensing experiences? We will attempt to resist the romance and address these questions, putting this in the perspective of intellectual property licensing and joint venture activity. Whatever conclusions we reach are sure to change as this incredibly fast-moving business environment goes forward.

28.1 INTERNET BACKGROUND

The Internet dates from the early 1970s, when a communications network was established by the U.S. Department of Defense to connect various military and research locations. As part of this project, technology was developed that permitted dissimilar computer systems to communicate with one another and enabled the use of location "addresses." In the 1980s, the National Science Foundation (NSF) began to expand its own network to enable colleges and universities to access and use its supercomputers. The concept of e-mail soon developed. This network was for the transmission of text only, and only a few commercial users were present.

During this rather long development period, the Internet was discovered by nonacademic and nongovernment users; from about 1992 to the present, it virtually exploded in use, size, and capability. This massive growth has been fueled by rapid technological developments in our communications network infrastructure and increasingly capable and inexpensive personal computers. The Internet is now global and connects millions of users; it has become a huge distribution system for all forms of media.

28.2 INTERNET ECONOMICS

(a) WEB SITE BUSINESS UNIT. The relevant unit of business for this discussion is the Web site, or "home page." This is the Internet location of a business entity. A Web site is a node in the system, analogous to a knot in a vast fishnet. To create a Web site, one rents an address, obtains the rights to a domain name by which to call it, and creates some software that will cause a display on the computer screen of anyone who connects to it. If we intend to do interactive business at the site, the software is more complex (e.g., to

communicate with customers and fulfill their requests), and we may need to obtain or create some interesting content in order to make the site more attractive.

In our terms, a Web site is a place of business, and it shares many characteristics with more familiar places of business. It has premises (a Web address assigned by, and rented from, a central agency), a sign out front (a domain name), and fixtures within (pages of information located on a computer and controlled by software designed by the owner). There may be an inventory of goods for sale or content that is offered for viewing or downloading. There are business systems for accepting orders, performing an accounting function, processing payments, and fulfilling requests for products or services. In addition, there are people behind the Web site to design, maintain, and enhance all of the software systems; interact with customers when necessary; gather, edit, and prepare the content; and interact with suppliers and advisors, just as in a more conventional business. In fact, there may be a whole conventional infrastructure behind the Web site, either doing non-Internet business or supporting the Internet presence as the sole place of business.

A Web site is a business enterprise composed of monetary, tangible, and intangible assets. To be sure, the proportions of these assets are different than in a conventional business. A storefront is constrained by physical location, while a Web site is in communication with the world. A Web site can be expanded and changed rapidly and at moderate cost. Tangible assets are not as flexible. The difference in the scope of Internet business makes it easy to think of the Web site or Internet enterprise as something totally different and unique. Observed functionally, however, all of the same ingredients are there, performing the same tasks, albeit on a quite different scale.

(b) WEB SITE ADVERTISING. A popular business plan for e-commerce enterprises was to generate high traffic to their Web site by offering attractive content or by selling goods or services at or even below cost. When traffic developed, profits were expected to come from advertisers. If the Web site was intended to be an electronic billboard, then the content element was paramount. Several of the largest e-commerce enterprises such as Yahoo! and GOOGLE began as so-called portals. They offered themselves as a place "to go first" on the Internet, and they built search software to assist Web surfers in locating what they wanted to see. The incoming traffic that they drew also made them attractive as advertising sites. It began with simple "banners" of company names or logos and quickly expanded to "links" (a button to click on that will connect one directly to another Web site).

Many Web sites today make their primary income by selling advertising space to other Web sites and non-Web businesses and/or by charging for high-profile links to other sites. One can buy "keywords" from search engine sites that will get one to the head of the line in Web surfer searches.

One of the largest and most visible of the e-commerce companies has been Amazon.com, which made the swing to profitability only in the three months ended September 30, 2003. Previously, since its inception, Amazon.com had incurred steady losses, even though revenues grew from just over $600 million in 1998 to $3.9 billion in 2002.

One of the unexpected success stories in e-commerce has been the Internet search firm GOOGLE. It has become profitable because it offers Internet viewers a very strong and fast search engine to seek out relevant data among the huge mass of information available. Because of this success, advertising revenues are strong. Very often the information sources that are returned as the result of a keyword search are related to commercial sites that benefit, and therefore pay, for this exposure.

In spite of these successes, we still observe a high-stakes scramble for viewers, not at all unlike that pursued by broadcast and cable television businesses for years. At the same time, Internet companies are struggling to develop mechanisms by which they can learn about the demographics of their viewers in order to make their billboards more valuable and capable of producing higher ad revenues.

There is potential for Internet advertising to be very effective, if one could deliver Web viewers with known demographics. Web viewers are essentially anonymous when they access a site, unless they choose to reveal information about themselves, which few are willing to do. In February 1999, a company called Free-PC announced that it would distribute 10,000 Compaq computers free to users who would provide personal user information, such as income, hobbies, age, and so forth. Free-PC reported that this information was well worth the $500 purchase price of each computer, and that it would profit by selling targeted advertisements that would be seen on the computer screens. This was a novel approach to this knotty marketing problem, the solution to which offers so much potential for Internet advertising.[1] Today, no one is attempting to purchase Web viewers in this way. The economics of that business model did not justify its use.

There has also been an important shift between those conventional retailers that advertise on the Internet and those e-commerce companies on the Internet that advertise to obtain viewers. In 1997, Web retailers spent most of their advertising dollars online, mostly at Web portals. In an interesting turnabout, e-retailers accounted for $323 million in TV advertising in 1998, according to Competitive Media Reporting.[2] Ad spending has continued at an even stronger pace, with television remaining the preferred medium. So conventional retailers were shifting their budgets and buying advertisements on the Internet, while Internet sites were shifting their budgets and buying advertising in newspapers, radio, and television. Our sense is that both conventional retailers and Internet sites have given up this "crossover" advertising strategy.

One must recognize that there will come a time when the number of sites attempting this business model will dwindle due to quitting the business or consolidation.

(c) WEB MARKETING. An Internet e-commerce marketing ploy was so-called "viral marketing," in which Internet users were provided incentives to encourage their friends to use retail Web sites. The e-mail addresses of friends were given to the retailer, who sent a marketing message. If the friends purchased items, the referrer was rewarded with discounts or money; then, of course, the friends could sign up, hence the "virus" name.

Another marketing technique was to reward Web surfers for every hour they spent online—as long as they agreed to accept an advertising banner continuously on their screen. One company paid $0.50 each hour, to a maximum of $12.50 per month. Piggybacking on the viral marketing concept, subscribers got an additional $0.10 an hour for friends who signed up and an additional $0.05 an hour for friends of the friends. A slightly different version of this was employed by SportsLine USA, which awarded points, similar to a "frequent flyer" program, for surfing its pages and buying from its advertisers. Points were later exchangeable for merchandise, movie passes, and restaurant discounts.

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1. Gordon V. Smith and Russell L. Parr, *Valuation of Intellectual Property and Intangible Assets*, third ed. (Hoboken, NJ: John Wiley & Sons, Inc., 1994), Ch. 17.
2. As reported in Leslie Kaufman, "Web Retailers Empty Wallets on Advertising," *New York Times*, (November 11, 1999), p. 1.

Our sense is that many of these promotion ideas died with the e-commerce businesses that spawned them. There has also been a tremendous proliferation of spam (unwanted incoming e-mail messages), and Internet users are very guarded about releasing their e-mail addresses or those of others, especially in a promotional atmosphere.

(d) WEB SITE COMMERCE. From the preceding discussion, a picture of Internet commerce begins to emerge. Because business is done at the Web site level, we focus on the general business models.

(i) Corporate and Professional Firm Information Sites. Corporate information sites educate customers, investors, or prospective employees about a company. The sites may contain annual reports, profiles of management, business descriptions, product descriptions, and a means to contact the companies for more information. Sites of professional firms emphasize personnel and practice areas.

(ii) Institutional Sites. These sites include sites of universities, governmental units, and not-for-profit groups providing information about themselves and their services.

(iii) Organization Sites. Organization sites promote membership or support for a group and may have member services sections accessible on a restricted basis.

(iv) Data Sites. Data sites offer access to databases of information such as financial data and stock market prices, newspaper and magazine archives, photograph collections, patents and trademark registrations, documents produced by governmental and regulatory agencies, and so on. There is a vast amount of information available, sometimes without charge; some sites require a payment in the form of a per-document fee or membership.

(v) Retail Sites. Retail sites are in many forms. They are locations through which one can purchase goods and services. Catalog merchandising companies have embraced the Internet as an adjunct to the catalog and mail-order business. There are Web site "department stores" offering the products of a wide variety of retailers.

(vi) Advertising or Destination Sites. Advertising or "destination" sites seek heavy incoming traffic that will be attractive to advertisers or other Web site owners seeking to enhance their own traffic through links. Access to a search engine is usually a part of these locations.

(vii) Communication Sites. Communication sites are for the purpose of facilitating communications among those who access the location. Often there is a sign-up requirement, but usually no fees are involved. Those accessing the sites can pose questions or make statements. Often these sites have a theme or affinity group appeal. Many Web sites are combinations of the preceding categories. A site owner who has the objective of developing an advertising site may offer access to databases or products or services as a way to build incoming traffic. A retail site operator may find that it is so popular that accepting advertising becomes viable.

When analyzing e-commerce, it is important to recognize the relationship between a company's Web commerce and its conventional business. One of the difficult and currently unanswered questions facing analysts is the extent to which Internet business is incremental. As an example, many use the Internet to search for and research products or services that they subsequently purchase in stores. Is this incremental, or would the

sale have been consummated anyway? How often is it that someone buys on impulse while surfing the Web? When one purchases an item from the Web site of a mail-order company, is that additional commerce or just commerce by another means?

Tasty Baking Company (a producer of one of our favorite Delaware Valley products, Butterscotch Krimpets) is offering on its Web site special assortments and collector's tins of its products for $19.95 to $34.95. Thus, a regional baker has extended its market countrywide and, more importantly, has done so without impinging on existing sales or ruffling its retail outlets, because many Internet sales are probably to Philadelphia expatriots who now live outside the normal distribution area.

Procter & Gamble (P&G), from its Web site, will direct potential buyers of its products to the retail store nearest their location. Its retailers also can buy an active link on the P&G site to speed the process for potential customers. This technique is also appropriate for hard-to-locate goods and services, such as vintage wines. We understand that some wineries and distributors have come together to establish a wine-shopping Internet site to assist potential buyers in finding the vintages they seek. These techniques may not result in completely incremental sales for the producer, but most sales are likely to be incremental among the retailers.

Another important aspect of e-commerce is that the Internet has provided us with a very efficient market. With a few mouse clicks, one can compare prices or seek alternative goods or services. We also assume, rightly or wrongly, that e-commerce is accomplished at less cost to the provider. We therefore expect at least some of that cost reduction to be reflected in the prices we pay. When this expectation is combined with the efficient market, the profit pressure on producers can be great. We can observe, as an example, the drastic reduction in the fees to trade stock in the market. All of this results in heavy profit pressures on e-commerce businesses.

At the same time, e-commerce enterprises are finding that there are some unexpected costs associated with e-commerce, especially where tangible goods are concerned. One of these has been known and addressed for a long time by conventional retailers. Selling goods and services is one thing, but delivering them is another. Gearing up to process the returns is an even more vexing problem. Estimates indicate that for every $100 in e-commerce sales, $5 is returned. This is not out of line with conventional direct-marketing companies, but e-commerce firms have not been prepared for this reality of business.

(e) WEB SITE ASSETS. In Chapter 18 we discussed the business enterprise model and the fact that it is composed of monetary, tangible, and intangible assets (including intellectual property). That framework applies as well to a Web site enterprise. If the Web site's home page is its window to the world, we can work backward from there to observe the assets that are supporting it, as is evident in Exhibit 28.1.

Web Site	Support Organization
	Monetary assets—net working capital
Domain name	
Site content	Tangible assets
Computer hardware	Supplier relationships
Computer hardware	Financial relationships
	Elements of a going concern
	Assembled workforce
	Contractual relationships

EXHIBIT 28.1 WEB SITE BUSINESS ENTERPRISE

We have divided the total business into those assets directly associated with the Web site itself and those associated with the support organization. In the simplest of Web businesses, the support organization might be made up of one person, a computer, and a place to work. In a more complex organization, such as Amazon.com, the support organization (for order processing and fulfillment) is very large. It is common for e-commerce businesses to contract out many of the support functions, so that one might not find a large workforce, warehouses, and inventory, but rather key contracts with suppliers of these services.

The only really new type of asset present in Exhibit 28.1 is the domain name, though in many ways it is similar to a trademark. Every Web site must have a numerical address that serves as its "location" on the Internet. A typical Internet address is a series of digits, such as 209.68.1.151. To facilitate use, each such address has an alphanumeric equivalent called a domain name. A domain name is an alphanumeric address (26 characters maximum) of a computer at a specific location. Invoking a domain name on the Internet leads one to the Web site of an individual, corporation, organization, government, or other institution. Web sites are "named" because the actual numerical addresses are too cumbersome to remember. There are several elements to a domain name, the most important of which are the so-called top-level domains (TLDs) and the second-level domains (SLDs). TLDs are either country designators (e.g., us for the United States, uk for United Kingdom), or one of several generic designators originally intended to denote user segments (.com for commercial entities, .gov for government, .edu for educational institutions, .mil for military, .net for network-related organizations, .int for international uses, and .org for not-for-profit organizations). The SLD is separated from the TLD by a dot, and is a distinctive name chosen by the Web site owner.

A domain name has meaning as the address of a particular entity and thus takes on some of the characteristics of a trademark. As an example, if one wishes to connect to the Web site of IBM Corporation, it would be natural to key in ibm.com rather than look in a directory to discover that IBM's Web site has the address of ertlxt.com. By the use of meaningful names, the Internet avoids the "telephone book" task, and the communication process is greatly facilitated.

If we analyze the assets of an e-commerce business through its financial statements, we observe that these enterprises are financed almost exclusively with equity. This is reflective of their perceived business risk. For the three companies shown in Exhibit 28.2, long-term debt is nonexistent, except for a very modest amount for Amazon.com, which has a substantial inventory to finance. When we allocate the market capitalization for these companies to the underlying assets, we observe that intangible assets represent all but 5 or 8% of total value. This is also shown in Exhibit 28.2.

(f) INTERNET INFRASTRUCTURE. The previous discussion, as well as most of that which follows, concerns e-commerce as it is carried out on Web sites. The Internet is, however, part of a vast communications network that has heretofore been dedicated to common carrier transmission of telephone conversations, radio and television signals, data transmission, and fax machines talking to one another. When this chapter was first written, there was considerable concern that the then-expected explosive growth of Internet traffic would strain the telecommunications infrastructure. The concern was that the telecommunications system might strangle the traffic necessary to fulfill the expectations of all of the optimistic business plans in the e-commerce community. Part of this concern also stemmed from the hope of being able to provide enhanced systems requiring more bandwidth than was available to our homes and places of business.

	Value of Common Equity	Value of Long-Term Debt	Value of Business Enterprise	Monetary Assets	Tangible Assets	Intangible Assets
		($ millions)		%	%	%
Amazon.com	16,234	1,763	17,997	4.0	1.0	95
eBay Inc.	56,788	–	56,788	4.0	3.0	93
Yahoo!	39,865	750	40,615	3.0	5.0	92

EXHIBIT 28.2 FINANCIAL CHARACTERISTICS OF E-COMMERCE COMPANIES

To meet this significant and critical need, existing and new telecommunications carriers set about to bolster the system. The same eager capital that was available to e-commerce businesses funded the new entrance to this market. Rather quickly, fiber-optic circuits were in the ground and in the air criss-crossing the United States and even beneath the oceans. Sophisticated satellite systems also were planned. At the same time, there were vast improvements in the technology of the termination equipment, enabling it to transmit far more data and bandwidth over existing circuits.

When all this came together, the result was a huge overcapacity in the telecommunications system, which still exists today. Many of the new telecommunications carriers disappeared, and several others are now just emerging from bankruptcy as a result of the unusually rapid and effective advances in technology that rendered most of their circuits (and investment) redundant. Technology usually does not have this effect, but in this case it in essence removed one of the risks that might have been associated with Internet commerce.

28.3 INTERNET LICENSING

In Chapter 21, we discussed the risks associated with the exploitation of intellectual property. Licensing is one form of that exploitation, so a discussion of business and investment risk is germane to its understanding.

Valuable intellectual property is attractive for licensing and generally commands high royalties for its use. The reason for this is that the value of business intellectual property is based on its income-producing capability. The higher that capability is, the higher the value will be. The more income a property can produce, the more income there is to share between licensor and licensee, hence the higher royalty. It is useful, therefore, to observe the characteristics and quality of potential income streams as a prelude to licensing.

We have presented a discussion of business risk as it relates to various types of Web site business. In general, the income streams associated with them have significant risk:

- Web site enterprises are often start-ups with technology-oriented owners who may or may not turn out to be effective businesspeople.
- Barriers to entry are low, so the typical qualification phase associated with obtaining financing is missing. Readers may recall that in the early days of the software market, anyone with a clever package could take an ad in a magazine, perhaps sell a few units, afford a bigger ad, and so on. We have seen what happened. The industry is dominated by large companies with effective distribution and the ability to get on the shelves of the mass marketers. Along the way, many software entrepreneurs were "consolidated" or disappeared. The same thing has happened to many Internet start-ups.

- The explosive growth of the Internet causes, by itself, more than normal dislocations.
- The past, unusually plentiful sources of venture capital have become unavailable.
- Unanticipated costs and market pressure on prices will cause Web site business failures.
- Lack of adequate capital will cause some Web businesses to lose momentum or not keep up with competition.
- Fast-developing technology (including software) tends to cause more than normal business dislocations.

While reciting this litany of e-commerce business uncertainties and risks, we also recognize the tremendous potential represented by the Internet. We would not recommend to anyone to stay out until the dust settles—it may be too late to be a player then. It may be that this, in part, is what is driving the market for the common stock of e-commerce companies. Yahoo! continues the process of transforming itself, Amazon.com is selling far more than books, and Internet brokerages are offering more complete services. The e-commerce businesses that survive will learn by their experience and will be on the scene for whatever the market demands in the future.

That said, we will focus on the Web site asset that is unique: the domain name. A Web site has been referred to as "real estate," and that is appropriate. The value of real estate is said to be founded on "location, location, location." A domain name is representative of "location." Just as a building in a preferred location commands premium rent, a well-located Web site can command premium royalties or advertising fees. What gives a Web site its location and high value? Obviously, good "hit" statistics. Many times, however, we are making licensing or advertising decisions before a record of traffic can be compiled.

The importance of the domain name varies, depending the type of Web site it is associated with. It is very important in some cases that the domain name be an image of a trademark or be a generic name (e.g., autoracing.com) in order to be an effective magnet and fulfill its role. In other cases (e.g., amazon.com), the Web site owner has created an awareness of a domain name that does not directly identify the owner or relate to the products or services being offered. From our previous discussion, we know that this awareness has been created at a considerable cost. Sometimes the domain name is almost incidental to the process, because Web viewers reach the site through keyword searches of the site's content. They then "bookmark" the site (record the address in their computer) in order to be able to return to it in the future.

There once was an active market in domain names, but this has declined. After the early spate of cybersquatting and name-hoarding, a number of entrepreneurs invested in the registration of generic domain names and then offered them for sale. Some also operated auctions. Although sales of domain names have occurred, the indicated prices may not equate to value. Many sales have involved some degree of compulsion on the part of buyer or seller, as the law was sorted out with respect to trademark rights. Such transactions would reflect investment value rather than fair market value because of the special motivation of buyer and seller.

This is the probable explanation for the very wide range of domain name transaction prices that can be observed. A search for domain name sellers on the Web revealed several. On pagewave.com, we observed market references to unnamed domain name sales in the range of $110,000 to $250,000, a report that the owner of tv.com turned down $50,000, and a report that the owner of sweden.com turned down a $25,000 bid. This site also reported that the Professional Golfers Association purchased the pga.com site for $26,000 from the Potato Growers of Alberta.

Several sources reported the sale of the altavista.com domain name for $3.35 million, which seemed to be the high-water mark in the marketplace. On zdomain nameet.com, we learned that business.com was sold by Business Systems International of London for $150,000 to an unnamed Texas bidder and that Internet.com had been sold for an undisclosed sum "well into the six figures."

More recently, we observed a number of domain names for sale:

bowling.tv:	$ 10,000
clean.org:	$ 10,000
fishing.net:	$ 60,000
aids.net:	$ 75,000
disteet.com:	$149,000
americans.com:	$150,000
consultants.com:	$189.000
outlook.com:	$500,000

Source: GreatDomains.com

The Internet Web site igoldrush.com offers a good deal of information about the market for domain names. In its Internet Goldrush Domain News, the site offers a number of observations:

> Always remember that the current domain name resale market is much weaker than it was just a couple of years ago, at the height of the Dot-Com bubble.
>
> To revisit a theme that has been brought several times on this site already, please bear in mind that 99 percent of domain names are essentially worthless.
>
> Example: cars.com may be worth enough to retire on. Sportscar.com may be worth enough to buy a second-hand car on. Performancesports.com may be worth a few hundred dollars. Eperformancesportscars.com is worth nothing.

Igoldrush.com lists these domain names for sale:

microdesign.com:	$ 2,000 per year
capital.fm:	$ 150,000
communication.com:	$ 150,000
myblueprint.com:	$ 250,000
crystalpalms.com:	$1 million
mrx.com:	$1 million

The wide range of asking prices and reported sales relative to domain name transactions is obvious. For this reason, it is extremely difficult to utilize this information as a benchmark to the valuation of a domain name. It also indicates to us that these transactions are extremely buyer-specific and therefore do not really represent market value as we have previously defined it.

A special case is the domain name that is the same as an established trademark. Certainly, mcdonalds.com has value, but does that value exist only because of the immense value of the McDonald's family of trademarks? Are domain names that mirror existing, known trademarks merely secondary marks in the same family? We believe that to be true. Therefore, their value is some portion of the total value of the trademark estate.

We have discussed the domain names of Web-based businesses that are not related to preexisting trademarks (although they may also be registered as trademarks). These will grow in value as do the businesses with which they are associated. There are also other domain names (at least the SLDs) that could not be trademarked at all, such as fishing.com, canada.com, or coffee.com (unless including a logo or unique design). As domain names, however, these are potentially the most valuable in the marketplace, since they are unique and would have considerable marketability due to their versatility and wide appeal.

Even the more valuable of these domain names could be subject to dilution as more TLDs are created. If .firm (for businesses), .shop (for shopping sites), or .rec (for recreation/entertainment services) were available, the demand for .com sites presumably would be diminished. We already have observed some of this activity with the TLDs of other countries, which offer an option to register an SLD that is already occupied in the .com TLD. These domain names are not likely to represent an equivalent substitute, however, because Web searchers are not as likely to key in canada.jp (Japan) as they are canada.com, in a search for information about our neighbor to the north.

There is also the possibility that a specialized search engine will appear, specially designed to cross-reference and seek out domains, regardless of whether they are literal in their meaning. This would negate, to some extent, the value of generic and versatile domains.

We also can consider a cost approach value for domain names. In one situation, someone registered a domain name that was the initials of a Fortune 200 company. The person was not cybersquatting; the initials also represented his company, and he had been using the site actively for three years. The large corporation wished to buy the name, and one of the considerations of the owner was the expense that he would have to bear to change his domain name without interruption to business or confusion to customers.

There are no useful rules of thumb for domain name value or for the fees that would be fair for being a host to advertising or links or co-branding ventures. We can offer these observations relative to licensing of domain names or other Internet properties:

- License terms will be short. This was discussed in general in Chapter 21 with respect to technology. In the Internet environment, one should not make long-term commitments. Conditions are changing too fast and the roster of e-commerce companies will change too frequently. New applications for property will arise, and locking in to a long-term relationship will eliminate flexibility.
- As always, high value (high income-producing capability) equates to high royalties.
- License arrangements must provide protection for the inevitable shake-out that will continue to occur in the e-commerce industry. The licensor or licensee with whom you are doing business may disappear, be legislated out of existence, be acquired by your competitor, or itself acquire a "problem" entity.
- Royalty audits will be much more common.
- Even after the shake-out, every e-commerce site is not going to succeed. There are not enough eyeballs and hours in the day to make it happen.
- Prepare to be flexible in royalty structure. In many cases, high guarantees and up-front payments are not economically feasible. Try for royalty renegotiations—starting low may give comfort to the licensee and the opportunity to escalate gives you a chance in the upside. There may be no "net sales" as a royalty base—flat fees or "fees per click" may make sense. Take (or offer) stock options—IBM and AT&T are doing it.

- Do not forget to monitor use and to exert quality control in trademark or copyright licensing. The variety of activities on the Internet is limited only by the imaginations of some very creative people.

The market for rights to Internet properties is still in a formative stage. For the most part, however, the licensing practices that have worked before will work again. Most of the Internet transactions involve assets that are quite familiar. In a nutshell, we are suggesting that, at the present time, you do business in the electronic world with a sensitivity to downside risks.

CHAPTER* 29

ANOTHER VIEW OF LICENSING STRATEGIES

Chief executive officers (CEOs) around the country are wondering why their companies are not earning billions of dollars per year from licensing and other intellectual property management practices. After reading about the success of IBM and Texas Instruments, their competitive natures immediately make it impossible for them to face their contemporaries. So they summon the company licensing executive into their office, promote this person to vice president of intellectual property management, and tell him or her to deliver several hundred million dollars of licensing income for the next quarter's earnings report. "Oh, by the way," they tell the new vice president, "don't license out anything important or valuable."

In this chapter, we will explain the nature of an intellectual property management effort. Understanding the different types of intellectual property management strategies that exist, and why each can be appropriate depending on specific corporate philosophies and strategies, is important. Bigger objectives for licensing income and other forms of intellectual property management require an enormous commitment from a new vice president, and reporting responsibilities must be linked directly to the new vice president and no one else in the company.

This chapter begins with Exhibit 29.1, depicting the levels of intellectual property management, which first was introduced by Julie Davis, formerly of Arthur Andersen. First we will discuss the different types of generic intellectual property management currently being conducted from the point of view of corporate objectives. Then we will discuss the potential for visionary intellectual property management and the corporate infrastructure that is required to achieve the big money in licensing.

29.1 DEFENSIVE STRATEGIES

Protection of profits and markets is the principal objective of this strategy. A portfolio of intellectual property is maintained to hold competitors at bay. The legal department often is the central force of this strategy. It prosecutes patents and maintains them to use against competitors that are making inroads into business markets of the company. This strategy has evolved because the traditional barriers to entry have crumbled. In the past,

*This chapter was cowritten with Patrick H. Sullivan, who is an expert at creating profits from intellectual assets and is considered one of the leading conceptual thinkers in extracting value from intellectual capital. He is a founding partner of the ICM Group, a Palo Alto, California–based consulting company focused on managing intellectual capital to maximize value. He is also cofounder of the ICM Gathering, composed of managers of intellectual capital for large, diverse international companies who meet to exchange information on new and innovative management techniques.

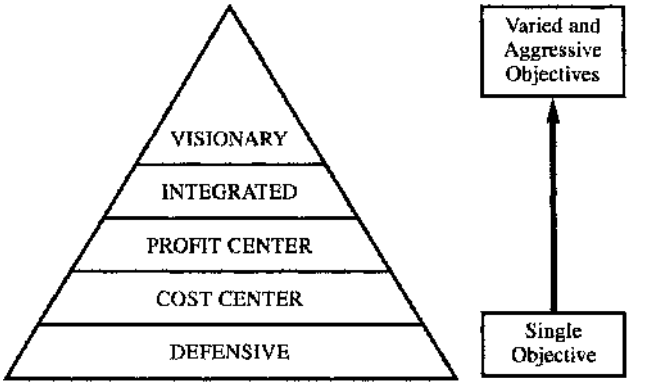

EXHIBIT 29.1 LEVELS OF INTELLECTUAL PROPERTY MANAGEMENT

distribution networks, manufacturing capacity, and large bank accounts of cash made it difficult for competitors to steal market share. Today these barriers are easily eroded, leaving the legal rights associated with intellectual property as the most powerful wall remaining between a strong market position and crumbling market share.

A defensive strategy is simple: patent everything in sight and threaten competitors with infringement litigation when they come too close to making products or doing business in a similar fashion. Licensing income is not a goal that is part of this strategy. In some cases licensing occurs, but usually as part of settlement of infringement litigation.

The intellectual property management model depicted in Exhibit 29.1 can serve to protect you from infringement litigation. In the event that a competitor comes after you for infringing one of its inventions, your portfolio of patents may contain one or more patents that can neutralize the threat. A countersuit may be appropriate, or a cross-licensing of the respective patents may make the entire problem disappear.

The defensive intellectual property management strategy is a passive strategy of maintenance and monitoring. Maintenance of the portfolio is the primary activity, coupled with monitoring the activities of competitors for encroachment on your market share. This strategy is the least expensive of those presented in the pyramid and tightly focuses on a single objective.

29.2 COST CENTERS

One step up from a defensive strategy is the allocation of the costs of maintaining the intellectual property portfolio among the different business units that benefit from the portfolio. Maintaining a large portfolio of patents and trademarks requires that the owner pay annual fees for each patent. The fees are not limited to the United States, so protecting an invention around the world can become expensive. Multiply the fees by the thousands of patents that many companies maintain, and the annual expense gets very big very quickly. At this level of effort, your focus starts to consider the usefulness of some components of the portfolio. Usually a study is conducted to identify patents and trademarks that are not economically beneficial. Once intellectual property of questionable economic value is discovered, it can be abandoned, resulting in a significant savings of maintenance fees. Think in terms of real estate. You would not likely maintain a shuttered manufacturing facility that you never plan to use again. You would sell it or give it away if necessary, allowing you to save maintenance costs, insurance costs, and property taxes.

Market positions around the world need to be analyzed to implement this strategy, but savings can be achieved quickly. Often you will find that you are paying to maintain patent protection for countries in which you no longer operate. There may be a conflict between prosecuting patents and global operations. The patent department might be seeking global domination with your patent portfolio while business units may be exploiting markets more prudently. As a result, the company is protecting innovations in countries where it does not currently and may never operate. This is the reason that costs should be allocated to the various business units. Profit and loss statements have a way of getting the attention of business unit managers. When they start paying for something, they will start asking questions. The answers may lead to the discovery of cost savings.

It is important to give business managers a certain degree of control for this strategy to work. Often, once the cost allocation is implemented, complaining business managers are told that they must accept the overhead charge. This policy defeats the purpose of the cost-savings strategy. The last thing you want is for the business managers to be quiet. The allocation of costs allows for certain patent costs to be questioned, and this can lead to identification of the patent protection costs that are being wasted. Details provided by your allocation system are important for allowing benefits to be reaped here. Business managers must be able to see where their profits are being spent and which patents are being attributed to their units. If the allocation is calculated too broadly, the business managers will never be able to understand which patents they are responsible for maintaining and therefore will never identify which ones can be abandoned. A comprehensive implementation of this strategy requires a thoughtful allocation of both the costs and the contents of the patent portfolio. Each business unit needs a list of the patents for which it is being charged and the amount of the charge. A significant effort may be needed to catalog the patent portfolio and associate each patent with a product line and business unit. The effort is ultimately worthwhile when cost savings result. This strategy still is directed primarily at keeping customers away from your markets, but the cost-savings aspect is the first step toward active management of the intellectual property portfolio.

29.3 PROFIT CENTERS

Producing income directly from the intellectual property portfolio is the added goal at this level of management. Generally the defensive goals are still part of the overall strategy, but here is where additional income-producing goals come into play. The new objective involves the generation of income directly from your intellectual property. This can be accomplished by licensing patents, trademarks, and copyrights inside and outside of your industry. Outright sale of these assets is also a means by which to generate profits. Another approach is derived from tax strategies.

Licensing your technology to competitors is probably the easiest first step. We know that this sounds as if we are advocating the diminution of your last remaining competitive barrier, but this is not always the case. Entering into the profit center management strategy requires a shift in corporate philosophy. The previous two philosophies (defense and allocating costs) focused on keeping technological advantages for internalization. The profit center model requires you to consider whether you wish to allow competitors to use your inventions against you. In a small, two-player market in which your salespeople go head-to-head on a regular basis, you might not want to license a competitor. In large markets with several players, a different viewpoint can allow your company to generate new profits. This philosophical shift requires you to admit that your company will never dominate 100% of the market. You must admit that you are always going to lose a

certain portion of the market to your competitors. However, why not get a piece of their sales each time they beat you out for a new customer?

Licensing to companies in other industries can provide another source of licensing income without the problem of arming your competitors with your inventions. This avenue, however, requires work. You must learn a lot about other industries to see where your inventions can fit. This takes time and money. Still, this is a source of income that is not explored in the prior two management strategies and is often significant.

Licensing outside your industry is not a slam-dunk activity. Potential licensees from outside your industry are not likely to greet your advances with open arms. Remember, you are an outsider coming to them with a request, sometimes a demand, for money to license your invention. Efforts will be required to explain why they need a license. Your legal, financial, and technical managers likely will be involved in this sales effort. Yet the effort can generate many licenses and significant amounts of annual income.

Tax savings are another and indirect source of income. A penny saved is a penny earned, and if paying less income tax saves it, the income is even more gratifying. Implementation of the cost-savings strategy probably identified patents that are not providing an economic benefit to the company. This does not mean that the underlying invention is valueless. In such cases, an asset has been identified for sale outside your company. In other cases, a patented technology may not yet be commercially viable without further development. An embryonic technology still has value even if other corporations currently are not willing to pay for needed developmental costs. In such instances, companies are donating their unused technology to nonprofit institutions and taking a charitable deduction on the value of the technology. Procter & Gamble (P&G) provides an example of this:

> The link between corporations and universities goes beyond cash contributions and research grants. Corporations also give patented technology to universities. In return the corporation gets a tax write-off equal to the value of the donated technology. The university obtains a technology that may eventually become a generator of royalties from licensing. Society gains access to a new technology that might have otherwise been closely held by the corporation or not commercially developed at all. Recently Procter & Gamble announced that it is donating more than 40 U.S. and international patents along with the accompanying intellectual property to the Milwaukee School of Engineering (MSOE), a world leader in rapid prototyping systems. MSOE will realize all future licensing revenue from the patents.
>
> The patents make up P&G's proprietary "PHAST" (Prototype Hard And Soft Tooling) technology, which radically reduces the time it takes to design and develop molded parts across a wide variety of fields. PHAST helps products go to market sooner. The reason for choosing MSOE was explained by Gordon Brunner, P&G chief technology officer. "A world-class technology such as PHAST needs a world-class leader in rapid prototyping to develop it." "MSOE was selected because it is uniquely qualified to realize the PHAST technology's full potential," said Brunner. "MSOE is the only university in the world with machines that use each of the four leading types of rapid prototyping techniques," he added. "Beyond that, MSOE has a proven ability to bring technologies to the marketplace through a consortium of companies for which they've already developed products." According to MSOE President Hermann Viets, "PHAST technology will revolutionize the tool and die industry. PHAST is a great example of the technical and scientific innovation for which P&G is known. With further development, this technology can be applied to everything from cooking utensils to children's toys to high-tech tennis shoe soles."
>
> This donation to MSOE marks the beginning of a broad initiative by P&G to donate technologies to universities and research. P&G invests more than $1.7 billion in research and development each year. Sometimes the intellectual property that comes from this research effort does not fit with P&G's strategy. Brunner said, "Donating these commercially viable patents and the accompanying intellectual capital to leading universities and research institutions will help us make important new connections. It will also extend the value of the technology more broadly to the world, so that more consumers can benefit much sooner."

Rapid prototyping is a process that enables a three-dimensional product model to be created quickly and automatically from computer data. PHAST is a series of steps that accelerates standard rapid prototyping processes and produces mold inserts for prototypes more quickly, helping products get to market faster.

PHAST can make prototypes up to five times faster than other conventional mold making techniques. For example, prototype injection-mold tooling can be produced by PHAST in just one-and-a-half to three weeks, compared to an industry average of six to eight weeks when using conventional methods. PHAST is particularly helpful because product developers can get initial samples off a mold much faster than before. It provides developers quick and inexpensive working samples that can be tested with consumers, then revised as needed and tested again quickly. In addition to being quick, PHAST technology is simple to use and doesn't require computer systems or designs like other rapid prototyping processes. Therefore, PHAST can be taught to workers with basic tool-and-die skills, and it can be used in low-tech companies or developing countries that produce patterns by hand rather than computer.

MSOE's Rapid Prototyping Center, which is part of the university's Applied Technology Center, develops ground-breaking new products for a client consortium which includes Ford Motor Co., Harley-Davidson, Kohler Co., SC Johnson, and Gardner-Denver. The 25 companies in the consortium seek simple, time-saving approaches to producing new products. Established in 1903, Milwaukee School of Engineering is a private university educating students in both technical and non-technical areas in the disciplines of engineering, technology, management, nursing, and communications.

To make this gift P&G engaged an independent expert to find a worthy recipient of the PHAST technology. It also engaged an outside firm to determine the value of the gift for use in filing its income tax return.

P&G markets more than 300 brands to nearly five billion consumers in more than 140 countries. These brands include Crest®, Tide®, Pantene®, Pampers®, Oil of Olay®, Vicks®, and Pringles®. P&G has operations in 70 countries and employs more than 110,000 people. In fiscal year 1998–99, P&G sales were $38 billion. P&G has 1,500 M.D. and Ph.D. scientists leading research and development at 19 P&G technical centers around the world. In addition, P&G works closely with hundreds of universities and research and technology partners worldwide.[1]

29.4 INTEGRATED MANAGEMENT

The integrated management strategy adds to the defensive, costs-savings, and profit objectives the concept of making strategic decisions regarding intellectual property. Entering into joint ventures and strategic alliances is part of this level of intellectual property management. Establishing universal industry standards also can be part of this level of management. Cost-savings and profit center goals continue to be important, but at this stage your business management models are making intellectual property an integral part of the overall corporate strategy. It becomes the driving force behind your key decisions. Recently Qualcomm sold off its semiconductor-manufacturing business. It now focuses completely on exploiting its communications-oriented intellectual property.

Entry into new strategic alliances and joint ventures is not accomplished easily without something special to contribute. Cash and manufacturing capacity are not so scarce that potential joint venture partners will give up a significant financial interest to obtain access to them. Intellectual property, patent rights, and technical know-how are currently the coin of the realm. Using intellectual property for the creation of new products and services in combination with another company is becoming a necessity. Products are becoming more complex. Many require expertise in a broad range of different technologies. Rarely does one company possess all of the required expertise. This results in more strategic alliances, but entry into the game requires that you contribute intellectual property. A new approach to your management of intellectual property will open up these

1. *Licensing Economics Review*, 5 and 6 (1999), p. 26. Reprinted with permission.

opportunities. Biotechnology and pharmaceutical companies have practiced this strategy, using intellectual property as the foundation. They are no longer alone. Complex electronic products such as high-definition television, wireless communication, medical instruments, and computers are requiring the establishment of alliances. Your intellectual property is the ticket into this new arena.

29.5 VISIONARY INTELLECTUAL PROPERTY MANAGEMENT

When you get to this level, your portfolio of patents, trademarks, and copyrights are the foundations for the future of your company—and possibly for the rest of the world. One form of visionary management takes a global view, wherein developed nations invent and developing nations manufacture. Intellectual property has the potential to elevate the poorest nations into players in the world commerce game. The poor benefit and begin to climb up the economic ladder. Not only does this benefit humankind, but it creates new markets for your products and services.

We have not seen much visionary use of intellectual property, but we are confident that these strategies are not far away.

29.6 MAKING THE BIG BUCKS

Now comes the time to discuss what it takes to turn an intellectual property portfolio into the kind of money that gets its own line item on the income statement of the annual report. People are the key ingredient. Elevating one person to vice president of intellectual property management and then waiting for the money to begin coming in does not work. An organization of experts is needed.

Some of the smartest people we know are involved in the management of intellectual property. The breadth of their knowledge is enormous. Success for intellectual property managers requires a solid understanding of all aspects of business. We would not be surprised to see these people become the primary selection pool for future CEOs. Areas of business that intellectual property managers must understand fully in order to do their jobs include licensing, technology, law, negotiations, and finance, among others.

First, they must understand the technology that they are licensing. This includes the technology itself, the science and research efforts of their company and others in their industry, as well as those outside their industry. Intellectual property managers also must understand the law of technology licensing. They need to know the strengths of their patent portfolio and compare them to those of competing patent portfolios. General business law is another arrow they need to have in their quiver. Market information is important too. An appreciation for end-product customers, market participants, and emerging competitors affects the licensing strategies of these professionals.

The ability to negotiate is fundamental. Intellectual property managers must identify resistance points and find mutually acceptable solutions so that deals can be made that will serve the interests of many parties. This is complicated by the global nature of the economy. Negotiation with foreign entities requires sensitivity to cultural differences.

Knowledge of finance is important not only for pricing the technology intellectual property managers are offering to other companies, but also for understanding the impact of licensing strategies on their own companies. They must be aware of the impact on their company's incremental profits in comparison to the benefits of completing a license agreement.

So, here we have a group of executives with skills in law, marketing, competitive intelligence, finance, accounting, science, technology, negotiation, and international commerce.

It is not easy to find one individual with expertise in all of these fields. The result is that a department, group, sector, or wholly owned subsidiary must be established, and this entity must have employees who possess the different skills just discussed. They must receive their marching orders directly from the top of the organization, and they must be given broad responsibilities for managing your intellectual property.

Patience is the final ingredient. It will take years before a significant licensing income stream can be developed, but when it happens, the money will continue pouring in for as long as you continue to have intellectual property—and you will continue to create intellectual property forever, because without it you will not be in business for very long.

29.7 INTELLECTUAL PROPERTY TOUCHES ALL ASPECTS OF LIFE

Intellectual property has become part of every aspect of life. Because over 80% of most corporate value is composed of intangible assets and intellectual property, it is not surprising that our professional practice is dominated by these valuable assets. We have been called on to value intellectual property and intangible assets for many reasons.

(a) TRANSACTION SUPPORT. Intellectual property is being exchanged more often as an independent asset. Individuals sell inventions to corporations. Universities sell inventions to corporations. Corporations sell trademarks and patents to each other. In all of these cases, the price must be determined and valuation opinions must be conducted. Often the values involved are enormous. In such cases, corporate managers are required to get outside opinions supportive of the transactions. Previously, investment bankers offered such fairness opinions as part of mergers and acquisitions. Currently, managers are looking for third-party opinions to support contemplated transactions as evidence to upper management that the transaction is valued fairly.

(b) BANKRUPTCY. Intellectual property values are playing a larger role in bankruptcies. Value opinions are needed for presentation in court as debtors scramble for assets that can satisfy their losses. As the value of intellectual property dominates corporate assets, banks are lending on these assets and accepting them as collateral. When disaster strikes, the value of intellectual property becomes a central focus of bankruptcy proceedings.

(c) LICENSING. When the owner of intellectual property is considering licensing a property, the outright value is also a consideration. As an alternative to licensing, consideration often is given to selling the property, and a value opinion often is performed.

(d) STRATEGIC ALLIANCES. Often two independent entities come together to form a third entity for the purpose of exploiting new technology. Each party brings different contributions, which frequently include intellectual property. In order to determine the relative ownership of the new alliance, a value for each independent contribution of intellectual property is needed.

(e) ESTATE AND GIFT TAXES. When Theodore Geisel died, the value of the Dr. Seuss copyrights had to be determined. When patents, trademarks, or copyrights are part of an estate, they must be valued. These properties also are becoming the subject of gifts that

parents are giving to children. Future royalties then are enjoyed by the recipient of the gift when the gifted patents are licensed. Value exists in these gifts, and valuation opinions are needed for income tax purposes.

(f) MARITAL DISSOLUTION. In one case, the value of patents owned by the husband had to be determined as part of the marital assets. He personally owned a key patent that was used in a business that he controlled. Royalties were paid by the business to him, apart from his compensation for running the company. As valuable intellectual property is owned by more individuals, its value will play an important part in the distribution of marital assets.

(g) INFRINGEMENT DAMAGES. A growing focus of litigation involves patent and trademark infringement. The damage analysis is directed at determining the damages caused by the infringer. The conclusion is not necessarily a fee-simple amount but still involves much of the same type of analysis discussed throughout this book, and ultimately represents a valuation of specific rights involving intellectual property.

(h) INTERCOMPANY TRANSACTIONS. The transfer of intellectual property between related parties comes under the scrutiny of various taxation authorities. As a result, we have valued patents and trademarks that were the subject of domestic and international transfers.

(i) COLLATERAL-BASED FINANCING. As intellectual property becomes the dominant asset of companies, it also becomes the primary collateral on which banks are willing to make loans. Banks are asking for valuation opinions for patents, trademarks, and copyrights as security for their loans.

(j) ATTORNEY MALPRACTICE. Sometimes an intellectual property attorney inadvertently fails to properly obtain rights or renewals that should have been obtained easily. In such instances, an opinion of the value that was lost is required for presentation in court.

(k) ACCOUNTING REQUIREMENTS. Acquisitions require that buyers properly state the value of purchased assets on their balance sheets. Because acquisitions are being driven more by intellectual property than fixed assets and intellectual property dominates acquired companies, valuations for accounting statements are becoming another reason for valuing intellectual property.

(l) REGULATORY REQUIREMENTS. Initial public offering (IPO) documents are referring more often to the importance of the intellectual property of the company that is being taken public. Because intellectual property often dominates these companies, a valuation opinion sometimes is presented within the IPO document.

(m) AD VALOREM TAXES. Property-taxing authorities traditionally have been limited to taxing the value of fixed assets. Unfortunately, some of the valuation techniques that are used capture value that is intangible in nature. Instances arise requiring intellectual property and intangible assets to be valued so that appropriate property tax bases can be determined.

This review shows that intellectual property is at center stage when it comes to business, taxes, marriage, bank debt, and even death. The remainder of this chapter discusses how intellectual property is changing business.

29.8 INTANGIBLE ASSETS AT THE CENTER OF DEALS

(a) MERCK & CO. AND COLLAGENEX PHARMACEUTICALS, INC. In many instances, unique distribution networks are central to a transaction. Many joint ventures and strategic alliances involve a small company and a larger one. The small company often has a new product or technology. The larger company has a well-established distribution network. Both benefit from working together. The large company adds a new technology to its core competencies, and the small company gets access to a large base of potential customers. Without the alliance, the smaller company may never have the time or resources to develop an equivalent distribution channel. Recently, Merck & Co. and CollaGenex Pharmaceuticals, Inc. turned this business model upside down.

Merck launched a new product, Vioxx, into the painkiller marketplace. It was Merck's new arthritis and painkiller drug, which continues to command huge market share. The unique strategy used to introduce the painkiller focused on dentists, in the hope of gaining customer exposure first in a limited market that could later be expanded. While Merck has an enormous sales force in comparison to CollaGenex's, the smaller partner in this alliance to led the sales effort. CollaGenex is one of the few companies that market pharmaceuticals to dentists. Its sales force is focused on this special niche, and Merck exploited this specialty. When considering the value of a distribution network, size is not the only important factor. Smaller sales forces can be extremely valuable when they have dominance in niche markets. After this limited introduction and acceptance, Vioxx was marketed broadly and has become a major blockbuster drug product.

(b) KMART AND WAL-MART. A comparison of Kmart and Wal-Mart can serve as another example of the power of intangible assets, even though this example is not part of a strategic deal. Both of these companies compete in the discount department store category, but they pursued different growth strategies. Kmart invested in new stores by acquiring specialty retailers with investments in Borders Books and Sports Authority sports equipment. Wal-Mart instead invested in computer-controlled inventory systems and specialized distribution networks. Kmart has since sold off its specialty retailers and is near bankruptcy, whereas Wal-Mart is the dominant force in discount retailing in the United States. Intangible assets helped Wal-Mart attain its prominence in retailing. Recently Kmart merged with Sears, partially in an attempt to compete more effectively with Wal-Mart.

29.9 E-COMMERCE AND INTELLECTUAL PROPERTY

E-commerce continues to grow and has great potential to change the cultural and business landscape. A story in the *Wall Street Journal* indicated that many goods can be purchased over the Internet for less. This alone is reason to hope that more shopping eventually will be accomplished from home computers.

More changes are expected, and corporations may never be the same. Retail malls may eventually disappear. As Internet shopping expands, consumers will spend less time looking for parking spaces around the unattractive malls that have disturbed the landscapes surrounding suburbia. All of the money that retailers currently put into real estate, fancy store designs, chic display structures, and sales training for store personnel might find its way into larger shareholder dividends. Or, instead of developing practices and procedures for retail operations, more corporate dollars might find their way into making improved products. The important intangible assets of today may not exist in the near future.

A looming change for retailers may be a change in how they conduct business. E-commerce will not necessarily provide added incremental sales and profits. More likely sales amount and growth will be unaffected by e-commerce. The big change will be how sales are made and how customers are managed. Instead of building retail infrastructure, retailers will need to build Internet infrastructure. They will need to develop enhanced customer service networks to answer the questions and solve the problems of online shoppers. Companies already possess these systems to a certain extent, but in the future they will be vitally important for conducting business. Outstanding service over the phone lines will be the new mantra for winning customer loyalty. Easy and fast access to the Internet will be a new selling point. Secure payment methods will become increasingly important. Web sites that are intuitively easy to search will be the Holy Grail of retailers.

Some things may not change but may instead get bigger. Until someone can deliver products over the phone lines, delivery services will greatly benefit from e-commerce. United Parcel Service (UPS) and Federal Express have seen dramatic increases in their businesses, although the character of their deliveries is changing. No longer are these companies only delivering documents that we have come to believe are always urgently needed across the country within 24 hours. Deliveries that involve consumer goods of all kinds are filling the trucks of these companies. Clothing, computers, dog food, books, apparel, music, home furnishings, office supplies, and every other conceivable tangible good is being delivered to satisfy online orders. These growing and profitable companies likely will set records as demand for their stock is surely going to be high. E-commerce and intellectual property have resulted in very high stock valuations for new companies that have not earned profits. But an IPO of a dot-com stock, founded on intellectual property, is not the only way to make a killing in the market. Sometimes companies with lots of trucks also can make a stock portfolio soar.

E-commerce is going to continue to bring about huge changes. It will reinforce some business models and make their underlying assets more valuable. It also may decimate other models and the assets used for implementing them. Corporate assets that currently are cherished and nurtured because of the strategic advantage they provide may become worthless. New intangible assets will take their place, some of which cannot even be imagined.

29.10 SPECIFIC TRENDS IN INTELLECTUAL PROPERTY DEAL MAKING

We recently attended a meeting of the Licensing Executives Society.[2] This professional organization is at the forefront of managing intellectual property. Not only do members of this organization identify trends, but they often create them. Trends that are beginning to emerge are reviewed below.

(a) CROSS-LICENSE BALANCING PAYMENTS. When two large and competitive corporations collide, very often they settle their differences by cross-licensing their patent portfolios. This provides both parties with freedom of operation. After a successful cross-license, engineers at the participating companies are free to create new products without fear of infringing patents that are not owned by their company. Cross-licensing for freedom of operation continues as a basic intellectual property strategy for some

2. Insight into the trends described in part of this chapter was provided by Peter Wirth of Genzyme, Ted Galanthay of ST Microelectronics, and William Manning of Manning & Napier. Their participation in the recent Licensing Executives Society conference is greatly appreciated.

industries, but a new feature is surfacing. Some companies are requiring what is termed "balancing payments." These payments compensate one of the parties in the cross-licensing arrangement for contributing a more valuable patent portfolio. Part of the reason for these balancing payments comes from top management. Many CEOs have seen the extraordinary income that companies such as Texas Instruments, IBM, and General Electric have derived from their patent portfolios. These competitive individuals also want to participate in this bounty and send demands to middle management that require the maximization of intellectual property exploitation. As a result, cross-licensing activities are experiencing pressure for balancing payments. The pressure comes from an equally strong resistance to making such payments.

In the electronics industry, the makers of telecommunications equipment, computers, and consumer electronics have long conducted cross-licensing. For these companies, the new force in the industry is the pressure created for balancing payments. But cross-licensing is not for everyone. By contrast, the biotechnology industry has not yet embraced cross-licensing except in some rare instances. In the biotech world, licensing remains an exclusive arrangement conducted on a product basis. The risk and cost of research and bringing new products to market may cause this model to change in the future, but currently intellectual property in this industry is closely held and licensed on an exclusive basis.

(b) LICENSES FOR LIMITED PERIODS. Traditionally, patents have been licensed for their legal lives. In some industries this is changing. Individual patents and entire portfolios are starting to be licensed for limited periods. The reason goes back to deriving maximum revenues from intellectual property. Companies that are pushing for limited-term licenses are making a bet on the future. They think that continuing research and development will enhance their patent portfolio. The enhanced portfolio then will be more valuable. A cross-license running for the term of the patents does not afford these companies an opportunity to renegotiate the terms of the original cross-license. Limited-term licenses force the licensing parties to revisit their past deal and strike a new one. At the future date, the parties to the original agreement are betting that they will be in a superior position. Balancing payments may be won more easily by the stronger party or may even facilitate the elimination of a competitor as one of the parties refuses to continue the original relationship. Currently it is not clear how these limited-life licenses will play out, but it seems apparent that each company that is a party to these arrangements will be conducting significant research and development efforts in order to have new bargaining chips as limited-period cross-licenses come up for renewal.

(c) LESS UNRECOGNIZED AND HIDDEN INTELLECTUAL PROPERTY. Unrecognized property licensing may fade in the future. Emphasis on mining patent portfolios has caused many companies to discover idle intellectual property and conduct licensing programs designed to exploit the rediscovered property.

Idle intellectual property came about as a result of technology that was developed but not exploited. In the past, companies embarked on research that was associated with specific business strategies. Along the way, the strategies changed and the completed research was shelved and forgotten. Companies continue to search their intellectual property holdings for just such properties. Once again, the driving force behind this effort came from a desire to maximize income from past investment in intellectual property. A large and growing field of consultants has encouraged the search for idle intellectual property. These consultants perform many of the efforts required to identify idle patents that possess commercial exploitation potential and are rewarded with a fee for

their efforts. Their clients then earn substantial income from selling or licensing the property that is mined from their portfolios. This search effort is not completed but eventually must come to an end when the best of the idle properties finally are rediscovered.

(d) MORE NONCORE INTELLECTUAL PROPERTY. Unrecognized intellectual property is being brought into the sunshine and exploited through licensing. While exploitation of unrecognized intellectual property is expected eventually to be exhausted, another type of idle property is expected to create new licensing opportunities. Mergers and acquisitions play a significant role in commerce.

Business combinations come about for a variety of reasons. Sometimes a strong company acquires a weak rival and automatically captures incremental market share. Other times company combinations bring complementary strengths together that could not otherwise be exploited. Often merger and acquisition combinations change the character of intellectual property. A business combination often involves a new and focused strategy for the new company. Sometimes this new strategy lessens the importance of certain intellectual property to the combined companies. Such intellectual property then becomes, in a sense, idle but not unrecognized. Licensing programs then are instituted to derive income from this property. As mergers and acquisitions continue, this licensing opportunity will continue.

(e) MONETARIZATION OF INTELLECTUAL PROPERTY. The conversion of property into liquid funds is referred to as monetarization. Such conversions have long been associated with intellectual property. In the past, this has been accomplished by some of these actions:

- Licensing intellectual property for royalty income
- Selling intellectual property for one-time, lump-sum payments
- Initial public offerings of immature companies that primarily possess new technologies
- Leveraged buyouts driven by the desire to extract intellectual property from the purchased company

A new strategy has recently emerged. Intellectual property royalty income is serving as the foundation for investment securities. An April 1998 story in *Licensing Economics Review* illustrates this trend as it is being conducted for copyrights:

> Another pop icon turned to high finance as British singer Dusty Springfield announced a deal in which she would get millions of dollars in exchange for future royalties from her hits such as "You Don't Have to Say You Love Me." The deal was the latest in the new field of rock-and-roll financing that started with the landmark $55 million bond offering last year set by performer David Bowie. Springfield's deal was put together by a group formed by Prudential Investments and RZO, a specialized investment securities firm. The parties would not disclose terms, but industry sources said the financing deal was valued at under $10 million. . . .
>
> The deal was backed by the future cash flow of more than 250 record masters, or virtually every song recorded by Springfield. Her career spans four decades and includes such hits as "I Only Want to Be With You," "Wishin' and Hopin'" and "You Don't Have to Say You Love Me." Springfield was one of Britain's top pop stars in the 1960s, known for her soulful voice, beehive hairdo and thick mascara. In the 1980s she found renewed chart success when she teamed up with the Pet Shop Boys.

Less than a year later, another story appeared in the February 1999 issue of *Licensing Economics Review* and showed that intellectual property securitization is continuing despite some skepticism.

> Heavy metal band Iron Maiden became the latest musical act to hit Wall Street with the closing of a $30 million bond offering backed by future royalties of hits like "Bring Your Daughter to the Slaughter." The latest rock-and-roll bond deal comes as skepticism abounds about the so-called new frontier of entertainment financing, following two years of intensive hype from Hollywood and Wall Street firms. Under such "securitization" deals, the bonds are backed by the artists' future royalties. Michael Elkin, attorney at the law firm of Thelen Reid & Priest, which structured the Iron Maiden deal, stated that he was working on similar transactions worth more than $200 million.
>
> Music securitization has many doubters as fewer deals than expected have followed since the first bond offering backed by royalties of British rock icon David Bowie was rolled out in 1997. Many of the biggest deals said to be nearing completion, including one involving Michael Jackson, have yet to materialize. Some industry experts said the complexity and labor intensive requirements of crafting such deals have been deal-stoppers. . . .
>
> The Iron Maiden deal was similar to the one crafted by New York investment banker David Pullman for Bowie, who took out a 10-year, $55 million loan collateralized by his future earnings from songs. Like the Bowie bond, the Iron Maiden bond would be sold in a private placement to an institutional investor in the next few weeks. The main difference between the Iron Maiden deal and Bowie's is that the latest one involves a group of people who own copyrights, rather than one individual. So far, the Bowie deal remains the largest music-rights securitization ever done.

We also have seen an intellectual property securitization in which patents and trade secrets were transferred to a holding company as part of an arrangement that mimicked a real estate sale-leaseback. The transferred intellectual property served as the basis for a loan to the holding company. The funds were provided to the manufacturing company that originated the intellectual property. In return, the manufacturing company paid royalties to the holding, which in turn used the royalty income to repay the bank loan that was collateralized by the intellectual property.

Intellectual property is dominating all aspects of commerce, and it surely will infiltrate the investment community in many different ways.

(f) SPECIFICALLY CREATED FOR EXPLOITATION. Thomas A. Edison often is credited with creating the career of research and development. Before Edison established his Menlo Park, New Jersey, laboratories, new technology was invented haphazardly. Companies would stumble on new technology as they conducted their businesses. This changed forever as Edison established himself in business for the specific purpose of invention. In the biotechnology industry, this business model has been continued since the inception of the industry. Young biotech firms established themselves based on a new science with the goal of creating new medical therapies. Commercial exploitation for these companies has been conducted mostly through alliances with established pharmaceutical companies. Their established partners possessed broad distribution networks and efficient manufacturing capabilities, and had the expertise needed for gaining regulatory approvals for new drugs. Currently we are seeing the biotech business model adopted in other industries. Core technologies in computer hardware and software are being developed by what have become known as intellectual property houses. These firms have been created for the sole purpose of developing new technologies that will be exploited through licensing. The April 1999 issue of *Licensing Economics Review* provided a report that illustrates the business model being pursued by IP houses. The story is presented below:

> The intellectual-property cores [*fundamental intellectual property*] industry is still the talk of Silicon Valley. Last year the idea centered on a myriad of startups that would spin semiconductor cores and larger companies would knit them together into systems on chips. However, the IP cores business is turning out to be harder than anyone thought. Problems are emerging about how to sell the cores, how much support is required and even which technologies can make a viable IP

cores business. Optimally the IP core industry would allow companies to go surfing on the Web and grab different cores from a variety of places. While most industry observers agree that an IP cores industry will eventually exist, it's becoming apparent that the model won't be as easy to build as was originally thought.

The IP core business model says you remove the major costs of semiconductor development, primarily manufacturing, and concentrate on designing circuitry. It also says you're able to sell that circuitry to multiple industry players using multiple fabrication plants and to collect ongoing revenues, usually in the form of royalties.

Expectations have been high but despite a few early successes with companies such as MIPS and Rambus Inc., problems have surfaced. Some designs just didn't work inside a customer's chip. Prices for commodity cores plummeted and the wreckage has left many venture capitalists gun-shy about IP companies. Part of the problem is also that IP hasn't become the kind of gold strike that attracts technology investors. Compared with an e-commerce company, or even a fabless (fabless means a company with fabrication facilities) semiconductor house, the revenue growth of an IP play isn't fast enough for venture capitalists' needs. Some investors are more comfortable with investing in semiconductor IP where it is part of a company that has its own fabrication facilities.

Two elements seem to be essential to the success of the star IP core providers: a link to a massive market and the fact that the companies sell processors. Processor vendors are particularly well placed due to the emerging embedded market and "anything but Microsoft" philosophy that's cropping up in pockets of the embedded market. Embedded designs are being developed without allegiance to a particular microprocessor and standardized on a real-time operating system from a small company, which opens the door for a variety of processors to be used in a variety of designs.

So, what is it exactly that IP companies have been missing from their success formula? One quick business lesson is that IP works best when it's specialized. Commodity products attract too much competition. PCI and USB cores are prime examples, as their prices have plummeted. But at the same time, that specialized IP has to be a sustainable business, which means finding a high-volume application to match. IP companies also must take an approach that goes beyond providing components. It's becoming clear that IP operations, like the rest of the electronics industry, must follow a systems-minded approach.

Legal concerns also must figure prominently into the business plan, because an IP company lives or dies by its patents. Although not yet a pressing problem it's possible, indeed likely, that legal questions will be the next hurdle for the IP cores industry.

Intellectual property houses are driven by the quest to develop new and fundamentally important technologies. They hope that these technologies will create new industry standards that all industry participants will need to adopt. Licensing income then is expected to be derived from all industry players that desire to stay in the industry. As the *Licensing Economics Review* article illustrates, some of these companies are publishing their core intellectual property on the Internet, making it available for inspection and modification by potential users. This business model has yet to be fine-tuned, but it is a tribute to Thomas Edison and to the strength of worldwide patent protection.

29.11 TRADEMARK STRATEGIES

Intellectual property–based strategies can have a surprising impact on established business models. De Beers has embarked on a branding strategy for diamonds. Some call it an inscription, while others refer to it as a decal. Whatever the name, De Beers is trying to bring branding to the diamond industry.

De Beers has controlled the supply of diamonds around the world since 1888. It commands approximately 60% of the diamond market. This dominance has been created by stockpiling stones to ensure price stability, boosting demand through advertising, and creating markets from scratch in Japan and the Far East. Now the company is embarking on a new strategy with its Millennium brand diamond. The brand is unusual. It cannot be

seen with the naked eye or with a jeweler's loupe. The brand is burned into the stone's table and includes the De Beers name, along with an individual serial number. The 100- to 300-micron inscriptions can be viewed only by using a 200-power magnification viewer. These diamonds are expected to sell at a 30% to 50% premium over non-Millennium diamonds. Consumers are expected to be drawn to these branded diamonds for the same reasons they are drawn to most other branded products. The Millennium brand is expected to convey a stamp of quality. Consumers will be assured by the brand that the stone they are buying is not drilled, treated, or synthetic.

Tiffany also is participating in this branding strategy. Recently this 114-year-old jewelry merchant introduced the Lucida diamond engagement ring. The ring has a unique and flattened cut to the diamond that is described as being reminiscent of classic styles. The ring also utilizes a new and unique setting that complements the flattened cut of the diamond.

As with all intellectual property–based strategies, a question arises about the impact on the rest of the industry. How this new branding strategy will affect diamonds of equal quality that are unbranded is yet to be seen. Other diamond suppliers provide high-quality diamonds that are not drilled, treated, or synthetic. In fact, the industry has developed a rigorous system for grading diamonds. A VS (very slightly flawed), pure-color diamond with careful cutting is the same regardless of where it is purchased. In fact, De Beers will continue to sell high-quality, nonbranded diamonds of equal quality alongside the Millennium brand. The impact on unbranded diamonds is unclear but will be a definite result of the use of an intellectual property-based strategy.

While technology and e-commerce drive company strategies, we continue to see that traditional brands are of enormous and enduring value. This explains why De Beers and Tiffany are working at bringing more branding to their industry.

In a 1999 article, the *Wall Street Journal* listed the companies that were found to have the best reputation. Babies and safety are the factors that earned Johnson & Johnson (J&J) the best corporate reputations. The results of the survey came out of an online survey of average Americans. Emotions involving trustworthiness, quality, safety, and effectiveness gave J&J the edge in earning the best reputation. It seems that the survey indicates that old-fashioned values are alive and well in America. It is easy to believe that the world is changing into an ugly place—a place where cherished values of the past have no meaning. Television talk shows flood the airways with a parade of extremely dysfunctional people, leaving the impression that they are typical representations of our society. Movies distort violence beyond all realism. Foul language seems to be the popular choice among all demographic groups. Frighteningly, the music of our younger generation is not filled with rebellion but bombards them with messages of mindless hate. The *Wall Street Journal* survey about corporate reputations indicates that we are still attracted to the fundamental values of honesty, loyalty, fairness, quality, and high moral behavior. Companies possessing brands that embody these ideals have irreplaceable intellectual property of enormous value.

Reputation is extremely valuable. As consumers face store shelves that are loaded with dozens of alternate selections, the reputation of a company often guides a shopper's hand. Advertising alone does not create reputation. Actions also have a profound impact on reputation. Many of us still remember the way in which Johnson & Johnson reacted to the tainting of its Tylenol product. It recalled all Tylenol products across the country. Expense was not a consideration. Public safety and continued confidence in their products guided J&J. Huge advertising budgets cannot buy this type of positive exposure for a company. Pronouncements are meaningful only when they ultimately are guiding

actions. When a company, or an individual for that matter, actually "walks its talk," everyone takes notice. The *Wall Street Journal* reported the top 30 best corporate reputations. Here are the top 10:

Johnson & Johnson
Coca-Cola
Hewlett-Packard
Intel
Ben & Jerry's
Wal-Mart
Xerox
Home Depot
Gateway
Disney

So while some of the trends discussed illustrate unique applications of intellectual property, we see brands as an enduring value that is not affected by the fast-paced change that is driving business strategies. As the world of commerce swirls at a hurricane's pace, brands sit in a calm center. In the current advertising blitz for Internet companies, the importance of brands is evident. Using traditional advertising media, these new companies—based on new technology and strategically employing new intangible assets—vie for consumers, using tried-and-true advertising with the hope of establishing world-class brands. E-commerce is advertising in newspapers, magazines, television, and even highway billboards. A trend is often a confirmation of an established practice. Brands continually are being confirmed as very valuable intellectual property.

29.12 INTANGIBLE RICHES

Valuable properties always have been in demand. The creators of such property often have profited handsomely. Railroad, oil, and steel properties made those who controlled them the wealthiest people in the world. This is a fundamental doctrine. New excitement is derived from the character and nature of the properties that will be in demand in the future, the control of which will bring new wealth. It remains to be seen what properties will hold the key to future riches, but clearly, they will be intangible.

CHAPTER 30

JOINT VENTURE

Time-savings, cost-savings, and risk reduction strategies are bringing together corporate partners from all over the world as they expand into new product lines and new global markets. Joint venture partners share secrets and economic benefits. More accurately, they pool valuable intellectual property into businesses in which the partners own equity and share profits.

Some companies bring manufacturing capabilities to a venture, while other partners bring research capabilities or marketing know-how. A joint venture between Merck & Co. and Johnson & Johnson allowed for the optimization of unique intellectual property. Merck & Co. used its unparalleled research center to develop a new product line of over-the-counter drugs. Merck has expertise in development, commercialization, and the special skills needed to efficiently obtain Food and Drug Administration (FDA) approvals. Merck, however, did not possess a well-recognized trademark among general consumers. It also lacked the distribution network required to get the new products onto store shelves. Johnson & Johnson possessed the perfect complementary intellectual property in the form of world-class trademarks, along with a well-developed distribution network that had access to store shelves across the country.

Joint ventures are accelerating because plain-vanilla licensing deals cannot provide for all of the complexities of starting new ventures. Licensing basic embryonic technology does not help a mature manufacturing company unless it also receives assistance in building prototypes, establishing mass-manufacturing techniques, and penetrating new markets. Licensing deals also end, very often leaving the licensor with a new and well-educated competitor. Joint ventures, however, can provide superior benefits, such as:

- Permanent access to the intellectual property of another company, access that might not otherwise be available
- Continued contribution of expertise for the mutual benefit of the partners
- Continued loyalty to the joint venture by the contributing parents
- Immediate access to intellectual property that fills a gap in company capabilities
- Elimination of the costs required to create similar or duplicative intellectual property
- Reduction in the potential for failure due to the contribution of partially or completely developed intellectual property

These benefits are valuable. Research funds can be saved by finding a joint venture partner. When new drug development costs $500 million, a joint venture partner possessing a newly developed drug and FDA approvals is a valuable ally. Quicker market entry is also a huge advantage. Very often the first company into the market with a new product can establish a formidable market share position. Followers, even those possessing improved products, can have a tough time turning the heads of consumers away from the

perceived product innovator. Sharing investment risks also is highly desirable in a fast-paced market where new product introductions can cost hundreds of millions of dollars for promotional campaigns. Not many companies can afford to lose more than one or two new product introductions and remain in existence. A partner with which to share the risks is becoming ever more popular.

Some of the types of assets that are being pooled include:

- Research expertise
- Embryonic technology
- Proven technology
- Manufacturing capabilities
- Commercialization capabilities
- Trademarks
- Distribution networks
- Customer lists

A successful business enterprise is composed of these basic components: monetary assets, tangible assets, intangible assets, and intellectual property. In joint ventures, monetary assets are rarely a driving force for completing a deal among well-established companies. Merck and Johnson & Johnson are not really in need of each other's cash. The same is true for tangible assets, such as manufacturing facilities, trucks, and warehouses. Assets that are driving joint ventures come from the intangible asset category and the intellectual property of joint venture partners. Some examples of complementary intellectual property exploitation include:

- Mattel's ability to turn the movie characters of Warner Brothers into profitable toy lines. Warner creates the characters in the movies, and Mattel turns them into worldwide toy sales. Mattel has commercialization capabilities and a well-established distribution network.
- Genentech's expertise for successfully commercializing new biotech products. Inventors develop new gene-splicing therapeutics, and Genentech gets these new medicines past all the requisite regulatory and commercial hurdles and into the hospital for patient use.
- Dow Chemical's development of sophisticated composite materials that United Technologies can use in its Sikorski Aircraft Division. Dow is contributing advanced materials technology to the joint venture, and United Technologies is contributing its research and manufacturing capabilities. United Technologies also is bringing an order book of spare parts contracts from the customers of previously sold aircraft.

The successful venturing experiences at the Massachusetts Institute of Technology (MIT) also highlight the central focus on intellectual property. MIT is a large research university with 1,000 professors, 3,000 research scientists, 4,500 graduate students, and 4,000 undergraduate students. The annual research budget exceeds $700 million. The most dramatic evidence of MIT's research success is measured by the 636 companies that have emerged from the university. They include Digital Equipment, Raytheon, Analog Devices, and Lotus Development Corporation. Together, these companies employ approximately 200,000 people and have annual sales of about $40 billion. All of these successes are based on the integrated exploitation of different intellectual properties.

A study of 12 start-ups that emerged from MIT identified the major characteristics that were possessed by successful spin-offs. The study found that large sums of venture capital alone did not guarantee success. More important was that the venture capitalists involved with the start-up had a network of connections to people and other companies that eventually might make good strategic partners, partners that might be able to advance the process toward commercialization by introducing marketing know-how, distribution networks, and manufacturing expertise.

30.1 OWNERSHIP SPLIT

A crucial issue at the core of all joint ventures centers on the ownership split. Joint ventures provide great opportunities. Unrelated intellectual property can be combined in a nurturing business environment and provide the partners with enormous economic benefits. But who gets what? The remainder of this chapter presents a fictitious company, based on numerous consulting assignments, that uses a financial model for isolating the relative contribution from different intellectual properties for a new venture. It provides guidance about joint venture equity splits by considering factors such as expected profits, capital expenditure investments, and cash flow timing. It also captures the economic benefits of joint ventures associated with time savings, cost savings, and risk reduction. Please note that this example is for illustration purposes only.

30.2 EXPANSION AT OVERBOARD INDUSTRIES, INC.

> Our goal is to increase shareholder value. . . . Our strategy will be to enter new markets. . . . Our plan is to focus on innovative new products that will allow us to exploit our proprietary know-how and thereby create new value for you, our shareholders.
>
> *—Roger J. Weatherson, Jr., chairman of the board and chief executive officer, Overboard Industries, Inc.*

Amid thunderous applause, the newly appointed chief executive officer (CEO) of Overboard Industries, Inc. rapidly left the auditorium where he had just finished delivering his first address to shareholders. Instead of being delighted with his performance, Weatherson was troubled. He had just promised to add new shareholder value to the company. Unlike many chief executives, Weatherson was sincerely worried about his ability to deliver on his promise. Wall Street had decried his appointment because it believed that a longtime insider at Overboard would not have the expansive vision necessary to lead the company through its next stage of growth. Weatherson was determined to prove himself, but had not yet selected the proper product or markets for achieving his announced goal. Driving back to headquarters, Roger Weatherson considered the extraordinary history of Overboard.

Overboard Industries, Inc. was founded by Roger J. Weatherson, Sr. on a revolutionary product that allowed offshore oil drillers to know the exact location of their drilling bits at all times. The first generation of the product occupied every square foot of a 200-foot barge and required another 75-foot service boat for power and control. The product was a computer-controlled probe that integrated sonar, electronics, and gyroscope technology, all of which added to the dimensions of the product. Giant winches on board the barge positioned the drill bit probe into the ocean. The submerged device scanned for the sounds of the drill bit and transmitted periodic data readings through large coaxial cables back to a minicomputer on the service boat. The drill bit locater system was a great success. Offshore drillers always had wanted to know where they were drilling and were never exactly sure. With the Overboard product, they could accurately control the drilling process and thereby save time and money. More importantly, the drillers could be sure they were exploring their own fields and not drilling into oilfields owned by competitors.

Over the years, the product evolved into a portable device. The probe was miniaturized, the controls were packaged into the latest notebook computers, and the locater system was priced so that even small drillers could afford the extraordinary benefits of the product. From its founding in 1972, sales had grown from nothing to nearly $500 million. Profit margins were an extraordinary 15% of sales after taxes. Overboard had developed excellent manufacturing controls as it grew. Managers at the company often boasted that no other company could build sophisticated electronic products cheaper. Not even the Japanese.

New shareholder value, however, was not likely to come from further refinements to the locater product. Weatherson knew that Overboard had the lion's share of a market that could not be expected to grow at a pace that would allow the company to continue its previous rate of rapid growth. His goal of adding to shareholder value would require that he devise a plan to exploit the strengths of Overboard in markets that were new to the company.

30.3 CONSUMER ELECTRONICS

> I've decided that our best opportunity lies in the consumer electronics products industry. I want to make the Pin-Point.

Roger J. Weatherson, Jr. abruptly interrupted the strategic planning meeting he and his top executives were having in his office. Consumer electronics was the new market he had decided Overboard would pursue. During one of their previous strategy meetings, the group had considered manufacturing and selling a product for hikers that would identify their exact location relative to a preset position. It was called "Pin-Point" and had been invented by an electrical engineering professor at Rutgers. The professor had made a convincing presentation about the potential for the product, but needed manufacturing capabilities. A prototype was demonstrated flawlessly. Commercialization required miniaturization refinements and mass production practices—nothing that Overboard could not accomplish easily. Initially the group had decided to explore other possible strategies, but during each subsequent strategy meeting, Weatherson's thoughts drifted back to the Pin-Point. Weatherson explained his decision: "I don't want to make any acquisitions into nonmanufacturing businesses. Our strength is in manufacturing, and not in any of these other acquisition candidates that you guys keep bringing to these meetings. I'm interested in building something, not buying and managing someone else's business."

The location of someone using the Pin-Point locator product could be determined instantly relative to an anchor point. The anchor point would be set into the product at the beginning of an excursion just by pressing a button. At any time during the trip, hikers could establish their exact position relative to the anchor point. The product would make use of the U.S. Naval Geopositioning Satellite System (GPS) and internal gyroscopes. The anchor point would be set by reading the signals sent out by the satellite system, and subsequent readings would establish relative positions. It would be controlled electronically and be no larger than the average paging device. Hikers would never get lost again, and also could use the device to send a distress signal via the satellite system. Other market potential also looked realistic. Boy Scout troops would be excellent target consumers—so would geological field engineers and perhaps even motorists.

Weatherson was excited about the product. It would allow Overboard to use its current manufacturing capabilities and facilities. The product would tap into the growing naturalist movement among consumers, and it would let him prove to the naysayers that Roger J. Weatherson, Jr. could build a new product that would add to shareholder value.

30.4 ACCESS TO THE TECHNOLOGY

Patented technology was key to the Pin-Point. The inventor had developed an extraordinarily small GPS device. He also had devised a portable system that could transmit and receive signals to and from a space satellite. Packaged together, these two patented technologies allowed for fantastic product capabilities. The technologies were the foundation of the Pin-Point product, and the prototype proved itself to be effective and reliable.

The improvements needed for product commercialization were some miniaturization engineering and a limited amount of manufacturing engineering to accomplish mass production. The inventor explained that he could easily accomplish the miniaturization work, but needed more information about large-scale production engineering before miniaturization designs were worth pursuing.

The inventor wanted a joint venture deal: "Mr. Weatherson, my product is developed. It's far more than a mere concept. You've seen it work. A license agreement that pays some nominal royalty does not interest me. It's true that I don't possess manufacturing assets, and it's also true that I would benefit from your production engineering expertise, but I want more than a licensing royalty. . . .My contribution to our possible joint venture is extremely valuable."

Listed below are the contributions that the inventor would be making to a joint venture:

- Reduction of investment risk by providing a proven technology
- Accelerated market introduction by saving Overboard the time that would be needed to develop the product internally
- Savings of research funds that would be needed to learn about and develop the new technologies
- Exclusive access to patent rights

Acceptance of a joint venture arrangement would save Overboard from having to develop the technology itself. There is no assurance that such efforts would be successful at duplicating the invention. Further, if similar technology were indeed developed at Overboard, there is no assurance that the company would not be infringing on the inventor's patents. Acceptance of a joint venture arrangement would allow for production and miniaturization engineering to begin immediately. Otherwise, the company might need to spend years creating the basic technology for itself. Acceptance of the joint venture arrangement also would save Overboard from spending substantial amounts of research funds to develop the basic technology. The inventor offered Overboard a savings of time and money, and a reduction of investment risk.

The posture taken by the inventor in this fictional case is becoming much more common. Intellectual property inventors want more than a licensing royalty rate for the contribution of their inventions. They see that entire businesses can be founded on their original contribution. They see that future technologies and products might be spawned from their inventions. Whole industries can be changed. The initial invention can give rise to enhanced inventions, and these in turn can open new business opportunities. A large, multinational business eventually can spring from a single new technology. These businesses can earn profits into perpetuity. Inventors are no longer content to take small royalty payments associated with licenses that terminate with the life of the original patent. Inventors are looking for economic benefits from the commercialization of the initial inventions and participation in the economic benefits that evolve from second, third, and fourth generations of the initial invention.

Inventors who are offering keystone technological advancements want to participate in the long-term economic benefits derived from their flashes of genius. Companies that want new technology may have to promise much more in the future than a limited stream of royalty payments.

30.5 ACCESS TO THE MARKET

Assuming that Roger J. Weatherson, Jr. could gain access to the technology, Overboard would still be left with a major problem. Access to a niche consumer market such as serious hikers and "wannabes" would not be easily accomplished by Overboard Industries. Although the company is well known in the oil drilling industry, few sporting goods consumers know of the company. An additional problem is that the company sales force is not well connected to the distribution networks needed to place the new Pin-Point product into the proper outlets. In addition to the patented technology, Overboard needs two vital intangible assets in order to get to market:

1. A well-established brand name that serious hikers, mountain climbers, hunters, and wilderness enthusiasts regard highly
2. A well-organized sales force or distribution network that can place the product where it will sell

A well-regarded brand name can be enormously expensive to build from inception. It requires a huge initial outlay to grab the attention of already overloaded consumers, as well as the normal amount of advertising that all products require. More importantly, association with a brand name that the target market trusts could allow for a higher selling price at retail levels, which would translate to a higher wholesale price. Without a well-known brand name, Overboard would need to risk a big investment on creating its own brand. Also, the company most likely would have to price the product lower than if a well-established brand name were associated with the product.

Joint venturing with a trademark company also would provide Overboard with immediate access to a sales force that had strong ties to the proper wholesale and retail outlets. Marketing consumer products is very different from marketing industrial products. A trademark company joint venture would save Overboard the time and expense required to hire, develop, and grow its own consumer products retail organization.

Access to a well-established brand name would:

- Save advertising funds that would be needed to create a new brand name
- Save the funds that would be needed to develop a consumer products distribution network
- Lower the investment risk associated with launching a new product
- Allow for higher product pricing

30.6 MEASURING POTENTIAL VALUE FROM PIN-POINT

The company's founder, Roger J. Weatherson, Sr., had a simple way of creating value. He often would say to his executives, and more times yell: "Grab for market share—control manufacturing costs—the bottom line will take care of itself." The senior Weatherson was a worshipper of earnings per share and never considered cash flow as the true source of corporate

value. He did not have to worry, because rapid sales growth and high profits associated with his oil service drilling products showered the company with cash, and Wall Street did the rest.

The new CEO was more attuned to the dynamic relationship between cash flow and value. Before making any commitments, the young Weatherson wanted to know the potential for value creation that the new product would bring to the company. At the next strategic planning meeting, he described the discounted cash flow (DCF) analysis that he wanted and instructed his marketing, manufacturing, engineering, and operations chiefs to provide the finance vice president with the necessary inputs. Weatherson explained (what we already know from previous chapters) that a DCF valuation model comprehensively captures all of the elements that create value by converting forecasts of net cash flow into a present value, using a discount rate that reflects the riskiness of the expected cash flows. The DCF model considers the up-front expenditures that are required and the cash flows to be derived from them in the future. It also considers the timing associated with receipt of cash flows. Weatherson requested that a DCF be performed to show the value creation that would stem from the Pin-Point product. He specified two assumptions for the initial study:

1. Assume that Overboard already has access to the basic technology that was demonstrated by the inventor.
2. Assume that Overboard already possesses a well-recognized consumer trademark under which to launch the product.

Weatherson also indicated that from this first DCF model he would then show his executives how to determine the value contribution derived from the basic technology and the trademark.

Exhibit 30.1 represents the Pin-Point product line DCF model, assuming that joint venture partners have provided access to the technology and trademarks needed. It shows a 10-year estimate of cash flows and determines a contribution to value of almost $81 million to Overboard. The first-year forecasts represent nothing more than the costs to set up a small engineering group to take the prototype product and prepare it for commercial manufacturing. The engineering department estimated that the effort would take a year and cost $1 million. General expenses for the new business unit were estimated by the operations chief at $250,000 for the first year. Production was expected to begin in the second year, and the sales staff decided that it could get $100 per unit from distributors, while still allowing the retail price to stay between $150 and $195. The prestige associated with an assumed trademark would allow such a hefty price. The sales staff also expected that the first year of sales would be only 25,000 units. It would take time for consumer reactions and media promotions to turn the product into a basic piece of hiking equipment.

The manufacturing executives expected to continue the process of refining manufacturing procedures during the first year. They budgeted another $500,000 for this effort and expected to reduce manufacturing costs as higher sales levels were achieved.

The sales executives expected that competition would surface as soon as the smell of success started to drift around the industry. Therefore, they proposed a reduction in the real selling price of the product as manufacturing techniques lowered production costs. By the fourth year, a 60% gross profit margin was predicted, and everyone planned to hold the gross profit margin steady by indexing selling prices and production costs with the rate of inflation. Unit sales were admittedly a best guess, but demographics research

YEAR	0	1	2	3	4	5	6	7	8	9	10
Units sales (thousands)	0	25	300	1,000	3,000	3,600	4,320	5,184	6,221	7,465	8,958
Price per unit	$0.00	$100.00	$80.00	$75.00	$60.00	$62.40	$64.90	$67.49	$70.19	$73.00	$75.92
Manuf. costs per unit	$0.00	$80.00	$50.00	$35.00	$24.00	$24.96	$25.96	$27.00	$28.08	$29.20	$30.37
Sales	0	2,500	24,000	75,000	180,000	224,640	280,351	349,878	436,647	544,936	680,080
Cost of Sales	0	2,000	15,000	35,000	72,000	89,856	112,140	139,951	174,659	217,974	272,032
Gross Profit	0	500	9,000	40,000	108,000	134,784	168,210	209,927	261,988	326,962	408,048
Gross Profit Margin		*20.0%*	*37.5%*	*53.3%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*
Operating Expenses:											
General & Administrative	250	300	2,880	9,000	21,600	26,957	33,642	41,985	52,398	65,392	81,610
Research & Development	1,000	500	0	0	0	0	0	0	0	0	0
Marketing	0	2,000	2,400	7,500	18,000	22,464	28,035	34,988	43,665	54,494	68,008
Selling	0	500	4,800	15,000	36,000	44,928	56,070	69,976	87,329	108,987	136,016
Operating Profit	(1,250)	(2,800)	(1,080)	8,500	32,400	40,435	50,463	62,978	78,597	98,088	122,414
Operating Profit Margin	*NM*	*NM*	*NM*	*11.3%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*
Income Taxes	0	0	0	3,230	12,312	15,365	19,176	23,932	29,867	37,274	46,517
Net Income	(1,250)	(2,800)	(1,080)	5,270	20,088	25,070	31,287	39,046	48,730	60,815	75,897
Net Profit Margin		*NM*	*NM*	*7.0%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*
Cash Flow Calculation:											
+ Depreciation	0	26	242	753	1,804	2,251	2,810	3,506	4,374	5,458	6,811
− Working Capital Additions	0	313	2,688	6,375	13,125	5,580	6,964	8,691	10,846	13,536	16,893
− Capital Expenditures	250	250	2,150	5,100	10,500	4,464	5,571	6,953	8,677	10,829	13,514
Net Cash Flow	(1,500)	(3,337)	(5,676)	(5,452)	(1,733)	17,277	21,562	26,909	33,581	41,908	52,300
Discount Factor 20%	1.00000	0.91414	0.76178	0.63482	0.52901	0.44084	0.36737	0.30614	0.25512	0.21260	1.00941
Present Value of Net Cash Flow	(1,500)	(3,050)	(4,323)	(3,461)	(917)	7,617	7,921	8,238	8,567	8,910	52,792
Net Present Value $80,794											

NM = not meaningful

EXHIBIT 30.1 NEW PIN-POINT PRODUCT LINE: STRATEGIC BUSINESS UNIT VALUE WITH ACCESS TO TECHNOLOGY, BRAND NAMES, AND DISTRIBUTION

and social trends made the potential for rapid growth quite reasonable. The marketing chiefs decided that sales growth beyond the tenth year should be conservatively expected to grow with inflation.

The assumptions associated with the rest of the line items in the DCF are presented below:

General and administrative expenses, after the initial start-up phase, are expected to run at 12% of sales based on previous company experiences.

Research and development expenses are expected to be negligible after the engineering work for commercialization is completed.

Marketing expenses are budgeted to run at 10% of sales beginning in year 3. A modest introductory promotional campaign is planned for years 1 and 2. The strength of the assumed trademark provided by one of the joint venture partners is well established and should not require a huge initial advertising campaign.

Selling expenses are expected to represent 20% of sales for salary and commissions. The trademark joint venture partner is expected to provide access to shelf space and other retail outlets through its name and well-established sales force.

Income taxes are estimated at 38% of the operating income for both state and federal tax obligations.

Depreciation is calculated based on the remaining useful life of the equipment that is purchased for production of the new product. This noncash expense is added to the estimated net income to yield an indication of the gross cash flow to be generated by the new product.

Working capital additions represent the use of future cash flows to increase inventories and account for increased accounts receivable. When offset against rising current liabilities, the net amount of increasing current assets represents a use of cash flows that will not be available to the shareholders. The additions to working capital are investments in the business unit, and they contribute to value by fueling the anticipated growth of the net cash flow.

Capital expenditures simply represent the amounts used in each year to acquire the machinery and equipment needed to meet the anticipated production levels. Just like additions to working capital, this expenditure represents a use of cash flow that will fuel the expected growth. It is subtracted from gross cash flows because the funds are not available for distribution to shareholders.

Net cash flow is estimated for the 10-year period presented in Exhibit 30.1 as: Net Income *plus* Depreciation *less* Additions to Working Capital *less* Capital Expenditures. The value contribution of the Pin-Point product line equals the discounted value of the estimated net cash flows.

The discount rate is based on using a proper rate of return requirement that introduces the uncertainty associated with actually receiving the forecasted stream of economic benefits. The required rate of return is that amount which is necessary to compensate investors for accepting various levels of risk.

30.7 WEIGHTED AVERAGE COST OF CAPITAL

Corporate investments typically must pass hurdle rates in order to be considered as viable opportunities. Since debt and equity funds are used to finance these investments, the return that is provided must be sufficient to satisfy the interest due on the debt and also provide a fair rate of return on the equity funds. The hurdle rate must be the weighted average cost of capital (WACOC), at a minimum.

A corporation that is financed with both debt and equity might have a capitalization structure that is composed of 25% debt and 75% equity. A good bond rating might allow the corporation to finance debt at 11%.[1] An appropriate equity rate, as determined from one of the models presented in Appendix A, might be 20%.

The weighted average cost of capital is an averaging of the different rates of return that are required by the different capital providers. The average is calculated with respect to the different proportions of debt and equity capital invested in the enterprise and also reflects the tax deductibility of the interest payments associated with debt. Once an appropriate rate of return is determined, discount factors can be calculated that will convert each year of future cash flow into a present value.

The final year of the projected cash flow most likely does not mean that all cash flows will cease, but represents a point at which specific forecasts beyond the final year are not possible. Still, the business enterprise can be expected to generate cash flows into perpetuity. The discount factor in the final year of the forecast represents a capitalization that discounts the perpetual cash flows into present value without having to show specific cash flow amounts into infinity. In Exhibit 30.1, the cash flows of the final year are expected to grow at a constant rate of 4% per year into perpetuity. The discount factor selected is the aggregate of the perpetual cash flow, growing at 4%, discounted to the present value at the selected discount rate.

A comprehensive discussion of modern investment theory goes beyond the purpose and scope of this book. Complete books and careers are dedicated to the study of the relationship between risk and return. Indeed, significant differences of academic opinion exist as to the proper measure of risk, as well as the proper measure of return. The reference list in Appendix D provides a rich collection of books and articles that should be studied to further appreciate the relationship among risk, return, and present value.

30.8 INTERNAL TECHNOLOGY DEVELOPMENT

Having the basic technology for the satellite transmission and reception available immediately provides Overboard with two important advantages:

1. Basic research and development expenditures can be avoided.
2. Market entry can be accomplished much sooner because the time to develop the basic technology is saved.

All that needs to be completed is commercialization engineering. Overboard has extensive experience in this area, which would be further complemented by the consulting efforts of the inventor. The required product development investment is therefore low, and the time needed to get the product to market is low. These two factors, coupled with the assumption about access to a well-known trademark, make the value of the business unit almost $81 million.

> He wants too much. . .it's unheard of for an inventor to get a 25% joint venture interest in the business unit.
>
> —*Frank Counter, Overboard vice president of finance*

Back in Weatherson's office, the strategic planning committee was reviewing a number of financial analyses. Each was a DCF analysis using different scenarios. The financial vice president was a bit disturbed that the committee actually was going to consider handing such a large piece of the Pin-Point business unit to the inventor: "Holy cow, he's not even going to be putting money into the deal!"

1. In the current economic environment, debt costs would be significantly lower.

Weatherson sorted through the presentation folder that contained the DCF analysis and waved Exhibit 30.2 at Frank Counter: "That's why I asked you to prepare this second analysis assuming we had to develop the basic technology ourselves. This schedule shows that our engineering guys expect a 2-year delay and additional up-front research and development costs of $5 million. Some of the costs are for outside consultants to help us develop our unique satellite communications capabilities. The rest of the added costs are for our internal engineers to interface the satellite communications with our own technology into a prototype product. Not having the prototype delays market entry for two years. The drop in value is enormous."

Exhibit 30.2 shows the same input components as previously presented, except for a two-year delay for market entry and added research and development costs of $2.5 million for each of the first two years. The DCF shows that positive cash flows are not generated by the business unit until year 7. The present value drops by almost $44.3 million to a value of $36.5 million. The value drops over 50% because of the added up-front costs and the delay of market entry. Weatherson explains to his committee: "If we can't talk this inventor into a low industry royalty rate like those associated with a license agreement, his request for 25% of the equity isn't all that unreasonable. In fact, we'd better hope that he doesn't perform a similar analysis. He'll find out just how important his contribution is to the value of this project. If he can actually get us into the market sooner than the time frame shown in Exhibit 30.2 and save us the added $5 million of R&D costs, then I don't care if he puts money into the deal. . . .His contribution is the basic technology, the $5 million research savings, and the earlier market entry."

30.9 INTERNAL TRADEMARK DEVELOPMENT

> Roger, we still have to deal with the trademark partner. They want 25% of the deal too and they won't split the costs of advertising and promotion.
>
> *—Tom Handler, Overboard vice president of marketing and sales*

Just as the marketing vice president finished his complaint, Weatherson handed him a copy of Exhibit 30.3 and pointed out: "Tom, your own estimates show that we'll need to launch a substantial advertising and promotional campaign if we decide to establish our own trademark. You're also indicating that we won't be able to get the same premium price for the product without the big name. It means that we need to spend $15 million more in up-front money and that we'll never get the 60% gross profit margin. The selling price will drop without a big name, but our production costs aren't going to change. Without a joint venture partner for the trademark, the value drops big time."

Exhibit 30.3 is the same as Exhibit 30.1 except that early marketing expenses are shown for the establishment of a new trademark. Market entry is not different because this third scenario assumes access to the technology. The differences are the need to spend initially for the creation of a new trademark and the lower selling price of the product due to the lack of implied endorsement from association with a well-known trademark. The value drops to $31.7 million if Overboard decides to develop its own trademark internally. This represents a $49 million drop in value—almost 60%.

"We need a trademark partner," announced Weatherson. "If they hold out for 25% of the new business unit, we'll just have to give it up. . . .What alternatives do we have?"

> "None"
>
> *—Roger J. Weatherson, Sr., Overboard retired chairman of the board and company consultant*

YEAR	0	1	2	3	4	5	6	7	8	9	10
Units sales (thousands)	0	0	0	25	300	1,000	3,000	3,600	4,320	5,184	6,221
Price per unit	$0.00	$0.00	$0.00	$100.00	$80.00	$75.00	$60.00	$62.40	$64.90	$67.49	$70.19
Manuf. costs per unit	$0.00	$0.00	$0.00	$80.00	$50.00	$35.00	$24.00	$24.96	$25.96	$27.00	$28.08
Sales	0	0	0	2,500	24,000	75,000	180,000	224,640	280,351	349,878	436,647
Cost of Sales	0	0	0	2,000	15,000	35,000	72,000	89,856	112,140	139,951	174,659
Gross Profit	0	0	0	500	9,000	40,000	108,000	134,784	168,210	209,927	261,988
Gross Profit Margin				*20.0%*	*37.5%*	*53.3%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*	*60.0%*
Operating Expenses:											
General & Administrative	250	250	250	300	2,880	9,000	21,600	26,957	33,642	41,985	52,398
Research & Development	2,500	2,500	1,000	500	0	0	0	0	0	0	0
Marketing	0	0	0	2,000	2,400	7,500	18,000	22,464	28,035	34,988	43,665
Selling	0	0	0	500	4,800	15,000	36,000	44,928	56,070	69,976	87,329
Operating Profit	(2,750)	(2,750)	(1,250)	(2,800)	(1,080)	8,500	32,400	40,435	50,463	62,978	78,597
Operating Profit Margin	*NM*	*NM*	*NM*	*NM*	*NM*	*11.3%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*	*18.0%*
Income Taxes	0	0	0	(1,064)	(410)	3,230	12,312	15,365	19,176	23,932	29,867
Net Income	(2,750)	(2,750)	(1,250)	(1,736)	(670)	5,270	20,088	25,070	31,287	39,046	48,730
Net Profit Margin		*NM*	*NM*	*NM*	*NM*	*7.0%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*	*11.2%*
Cash Flow Calculation:											
+ Depreciation	0	26	52	78	294	805	1,856	2,303	2,862	3,558	4,426
– Working Capital Additions	0	0	0	313	2,688	6,375	13,125	5,580	6,964	8,691	10,846
– Capital Expenditures	250	250	250	250	2,150	5,100	10,500	4,464	5,571	6,953	8,677
Net Cash Flow	(3,000)	(2,974)	(1,448)	(2,221)	(5,213)	(5,400)	(1,681)	17,329	21,614	26,961	33,633
Discount Factor 20%	1.00000	0.91414	0.76178	0.63482	0.52901	0.44084	0.36737	0.30614	0.25512	0.21260	1.00941
Present Value of Net Cash Flow	(3,000)	(2,719)	(1,103)	(1,410)	(2,758)	(2,381)	(618)	5,305	5,514	5,732	33,950
Net Present Value	**$36,513**										

NM = not meaningful

EXHIBIT 30.2 NEW PIN-POINT PRODUCT LINE: STRATEGIC BUSINESS UNIT VALUE WITHOUT JOINT VENTURE PARTNER FOR TECHNOLOGY

YEAR	0	1	2	3	4	5	6	7	8	9	10
Units sales (thousands)	0	25	300	1,000	3,000	3,600	4,320	5,184	6,221	7,465	8,958
Price per unit	$0.00	$90.00	$70.00	$65.00	$55.00	$57.20	$59.49	$61.87	$64.34	$66.92	$69.59
Manuf. costs per unit	$0.00	$80.00	$50.00	$35.00	$24.00	$24.96	$25.96	$27.00	$28.08	$29.20	$30.37
Sales	0	2,250	21,000	65,000	165,000	205,920	256,988	320,721	400,260	499,525	623,407
Cost of Sales	0	2,000	15,000	35,000	72,000	89,856	112,140	139,951	174,659	217,974	272,032
Gross Profit	0	250	6,000	30,000	93,000	116,064	144,848	180,770	225,601	281,550	351,375
Gross Profit Margin		*11.1%*	*28.6%*	*46.2%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*
Operating Expenses:											
General & Administrative	250	270	2,520	7,800	19,800	24,710	30,839	38,487	48,031	59,943	74,809
Research & Development	1,000	500	0	0	0	0	0	0	0	0	0
Marketing	0	10,000	5,000	6,500	16,500	20,592	25,699	32,072	40,026	49,952	62,341
Selling	0	450	4,200	13,000	33,000	41,184	51,398	64,144	80,052	99,905	124,681
Operating Profit	(1,250)	(10,970)	(5,720)	2,700	23,700	29,578	36,913	46,067	57,492	71,750	89,544
Operating Profit Margin	*NM*	*NM*	*NM*	*4.2%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*
Income Taxes	0	0	0	1,026	9,006	11,239	14,027	17,506	21,847	27,265	34,027
Net Income	(1,250)	(10,970)	(5,720)	(1,674)	14,694	18,338	22,886	28,562	35,645	44,485	55,517
Net Profit Margin		*NM*	*NM*	*2.6%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*
Cash Flow Calculation:											
+ Depreciation	0	26	242	753	1,804	2,251	2,810	3,506	4,375	5,458	6,811
− Working Capital Additions	0	281	2,344	5,500	12,500	5,115	6,384	7,967	9,942	12,408	15,485
− Capital Expenditures	250	250	2,150	5,100	10,500	4,464	5,571	6,953	8,677	10,829	13,514
Net Cash Flow	(1,500)	(11,475)	(9,972)	(8,173)	(6,502)	11,011	13,741	17,148	21,400	26,706	33,329
Discount Factor 20%	1.00000	0.91414	0.76178	0.63482	0.52901	0.44084	0.36737	0.30614	0.25512	0.21260	1.00941
Present Value of Net Cash Flow	(1,500)	(10,490)	(7,596)	(5,188)	(3,440)	4,854	5,048	5,250	5,460	5,678	33,642
Net Present Value	**$31,717**										

NM = not meaningful

EXHIBIT 30.3 NEW PIN-POINT PRODUCT LINE: STRATEGIC BUSINESS UNIT VALUE WITHOUT JOINT VENTURE PARTNER FOR TRADEMARK

30.10 GOING IT ALONE

The elder Weatherson passed out copies of Exhibit 30.4 and explained: "I asked Frank Counter to take a look at your plans assuming that Overboard doesn't use any joint venture partners. I asked Frank to calculate the present value of the new business unit assuming that Overboard will need to develop its own basic technology and create its own trademark. This scenario incorporates the added expenses for both endeavors, the time delay for technology development, and the reduced selling price associated with lacking a well-known trademark. The present value drops to less than $11 million. The project still adds shareholder value by going it alone, but far less than we've been talking about, and I'm not sure that $11 million is the right value. We're talking about accepting substantially more risk. We're now talking about three major endeavors, none of which is guaranteed."

The elder Weatherson surprised everyone with his command of the DCF analyses. The retired chairman also explained that the 20% discount rate might not be appropriate when the added risks of going it alone are considered. In addition to entering a new market with a new product, higher risks are introduced by the compound requirements of successfully developing the basic technology at Overboard and also creating its own trademark. The chances of having all three of these major endeavors simultaneously achieved has got to be considered riskier than the 20% discount rate used for the other scenarios. Weatherson, Sr. concluded: "Going it alone has got to be riskier. I don't know that it's as risky as an embryonic venture capital deal, but I sure do know that the discount rate should be higher than 20%. I asked Frank Counter to see what happens to the value if we use a 25% discount, and Exhibit 30.5 shows the answer. . . . It's red ink, boys … a dead deal if you go it alone."

30.11 SUMMARY

Joint venture partners save each other time and money, and reduce business risks. The five different DCF models indicate the relative importance of a well-established trademark, possession of well-defined basic technology, and expertise in manufacturing. In some cases, intellectual property is more important than manufacturing assets and manufacturing expertise. If Overboard can structure a joint venture deal that gives less than 25% to each of the intellectual property partners, then corporate value will be enhanced. If it has to give in and hand over 50% of the joint venture to the two partners, corporate value still is enhanced. If it goes it alone, corporate value is most likely to suffer.

Joint venture analysis can be greatly enhanced by using a flexible financial model that shows the effect on value when basic assumptions are adjusted. The DCF analysis allows exploration of many variables that impact the viability of joint ventures and the reasonableness of proposed equity splits. A few of the questions that can be answered include:

- What happens if the estimated sales price of the product without the trademark partner is determined by market research to be unreasonably high?
- Is the equity participation request of the inventor still reasonable if internal creation of the basic technology can be accomplished for $1 million less than originally estimated?
- Is a go-it-alone strategy viable if a trademark and distribution network can be created internally for $5 million during the first two years of the venture?

YEAR	0	1	2	3	4	5	6	7	8	9	10
Units sales (thousands)	0	0	0	25	300	1,000	3,000	3,600	4,320	5,184	6,221
Price per unit	$0.00	$0.00	$0.00	$90.00	$70.00	$65.00	$55.00	$57.20	$59.49	$61.87	$64.34
Manuf. costs per unit	$0.00	$0.00	$0.00	$80.00	$50.00	$35.00	$24.00	$24.96	$25.96	$27.00	$28.08
Sales	0	0	0	2,250	21,000	65,000	165,000	205,920	256,988	320,721	400,260
Cost of Sales	0	0	0	2,000	15,000	35,000	72,000	89,856	112,140	139,951	174,659
Gross Profit	0	0	0	250	6,000	30,000	93,000	116,064	144,848	180,770	225,601
Gross Profit Margin				*11.1%*	*28.6%*	*46.2%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*
Operating Expenses:											
General & Administrative	250	250	250	270	2,520	7,800	19,800	24,710	30,839	38,487	48,031
Research & Development	2,500	2,500	1,000	500	0	0	0	0	0	0	0
Marketing	0	0	0	10,000	5,000	6,500	16,500	20,592	25,699	32,072	40,026
Selling	0	0	0	450	4,200	13,000	33,000	41,184	51,398	64,144	80,052
Operating Profit	(2,750)	(2,750)	(1,250)	(10,970)	(5,720)	2,700	23,700	29,578	36,913	46,067	57,492
Operating Profit Margin	*NM*	*NM*	*NM*	*NM*	*NM*	*4.2%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*
Income Taxes	0	0	0	(4,169)	(2,174)	1,026	9,006	11,239	14,027	17,506	21,847
Net Income	(2,750)	(2,750)	(1,250)	(6,801)	(3,546)	1,674	14,694	18,338	22,886	28,562	35,645
Net Profit Margin		*NM*	*NM*	*NM*	*NM*	*2.6%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*
Cash Flow Calculation:											
+ Depreciation	0	26	52	78	294	805	1,856	2,303	2,862	3,558	4,427
− Working Capital Additions	0	0	0	281	2,344	5,500	12,500	5,115	6,384	7,967	9,942
− Capital Expenditures	250	250	250	250	2,150	5,100	10,500	4,464	5,571	6,953	8,677
Net Cash Flow	(3,000)	(2,974)	(1,448)	(7,255)	(7,746)	(8,121)	(6,450)	11,063	13,793	17,200	21,452
Discount Factor 20%	1.00000	0.91414	0.76178	0.63482	0.52901	0.44084	0.36737	0.30614	0.25512	0.21260	1.00941
Present Value of Net Cash Flow	(3,000)	(2,719)	(1,103)	(4,605)	(4,098)	(3,580)	(2,370)	3,387	3,519	3,657	21,654
Net Present Value	**$10,742**										

NM = not meaningful

EXHIBIT 30.4 NEW PIN-POINT PRODUCT LINE: STRATEGIC BUSINESS UNIT VALUE WITHOUT JOINT VENTURE PARTNER FOR TRADEMARK OR TECHNOLOGY

YEAR	0	1	2	3	4	5	6	7	8	9	10
Units sales (thousands)	0	0	0	25	300	1,000	3,000	3,600	4,320	5,184	6,221
Price per unit	$0.00	$0.00	$0.00	$90.00	$70.00	$65.00	$55.00	$57.20	$59.49	$61.87	$64.34
Manuf. costs per unit	$0.00	$0.00	$0.00	$80.00	$50.00	$35.00	$24.00	$24.96	$25.96	$27.00	$28.09
Sales	0	0	0	2,250	21,000	65,000	165,000	205,920	256,988	320,721	400,260
Cost of Sales	0	0	0	2,000	15,000	35,000	72,000	89,856	112,140	139,951	174,659
Gross Profit	0	0	0	250	6,000	30,000	93,000	116,064	144,848	180,770	225,601
Gross Profit Margin				*11.1%*	*28.6%*	*46.2%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*	*56.4%*
Operating Expenses:											
General & Administrative	250	250	250	270	2,520	7,800	19,800	24,710	30,839	38,487	48,031
Research & Development	2,500	2,500	1,000	500	0	0	0	0	0	0	0
Marketing	0	0	0	10,000	5,000	6,500	16,500	20,592	25,699	32,072	40,026
Selling	0	0	0	450	4,200	13,000	33,000	41,184	51,398	64,144	80,052
Operating Profit	(2,750)	(2,750)	(1,250)	(10,970)	(5,720)	2,700	23,700	29,578	36,913	46,067	57,492
Operating Profit Margin	*NM*	*NM*	*NM*	*NM*	*NM*	*4.2%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*	*14.4%*
Income Taxes	0	0	0	(4,169)	(2,174)	1,026	9,006	11,239	14,027	17,506	21,847
Net Income	(2,750)	(2,750)	(1,250)	(6,801)	(3,546)	1,674	14,694	18,338	22,886	28,562	35,645
Net Profit Margin		*NM*	*NM*	*NM*	*NM*	*2.6%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*	*8.9%*
Cash Flow Calculation:											
+ Depreciation	0	26	52	78	294	805	1,856	2,303	2,862	3,558	4,427
− Working Capital Additions	0	0	0	281	2,344	5,500	12,500	5,115	6,384	7,967	9,942
− Capital Expenditures	250	250	250	250	2,150	5,100	10,500	4,464	5,571	6,953	8,677
Net Cash Flow	(3,000)	(2,974)	(1,448)	(7,255)	(7,746)	(8,121)	(6,450)	11,063	13,793	17,200	21,452
Discount Factor 25%	1.00000	0.89628	0.71703	0.57362	0.45890	0.36712	0.29369	0.23496	0.18796	0.15037	0.51131
Present Value of Net Cash Flow	(3,000)	(2,666)	(1,038)	(4,161)	(3,555)	(2,981)	(1,894)	2,599	2,593	2,586	10,969
Net Present Value	**($549)**										

NM = not meaningful

EXHIBIT 30.5 NEW PIN-POINT PRODUCT LINE: STRATEGIC BUSINESS UNIT VALUE WITHOUT JOINT VENTURE PARTNER FOR TRADEMARK OR TECHNOLOGY

By changing the input parameters of the DCF model, all of these questions can be considered. As long as the present value of the expected cash flows is zero or greater, then the weighted average cost of capital has been earned by the venture, and the venture is a worthwhile investment.

Creating a financial model, such as the simple example presented in this chapter, is a miniaturized version of the venture contemplated. The model requires insightful inputs from a diverse group of experts from research, engineering, marketing, sales, manufacturing, and finance. The greatest strength of a discounted cash flow analysis is that it forces a team of insightful experts to consider comprehensively the tough questions of investing in new ventures.

As Peter F. Drucker, professor at Claremont Graduate School in California, said in an interview "Alliances are increasingly the wave of the future. Grass roots development and acquisitions are becoming too expensive."[2] The growing complexities of the many talents required by corporations to compete are much too broad to master alone. Time, costs, and risks make joint ventures the business strategy that will dominate the future. Equity splits are also the wave of the future. They require a comprehensive analysis, and the financial model presented in this chapter can be adapted to ensure that fair equity splits foster continued loyalty to the joint venture from the intellectual property partners.

30.12 SPECIAL PROBLEMS WITH STRATEGIC ALLIANCES

Alliances have become popular among many companies. Some of the reasons already discussed include more shared risk where partners each contribute capital funding, access to the different core competencies of the alliance partners, and acceleration of the time needed for development because of the shared expertise. Alliances are considered to exist when two companies come together to work on a single project. An alliance is less formal than a joint venture whereby two companies come together to form a third company that lasts into perpetuity.

Strategic alliances are not to be entered into without careful consideration. They are possibly the most complex business combination that can be created. Results to date show that few have achieved their intended goals. And like marriages, the breakup can leave the divorced partners with strong animosity for each other. Dr. Bob Gussin of Johnson & Johnson (J&J) described the key characteristics associated with establishing successful strategic alliances at the June 27, 1995, Rutgers University Strategic Alliance Conference titled *Managing Strategic Alliances*. He explained that both partners need to conduct or have:

- A clear understanding of the goals to be attained
- A clear strategy for reaching the defined goals
- Milestones by which to judge the progress of the alliance
- Extensive up-front planning
- Defined roles of responsiblity for each partner
- Frequent communication between the partners at the operating management level
- Enthusiastic and continuing support from upper management

2. Mark Skousen, "Roaches Outlive Elephants—An Interview with Peter F. Drucker by Mark Skousen," *Forbes* (August 19, 1991).

Dr. Gussin indicated that although the list may seem obvious, disasters originate in the lack of attention to these important details. An initial discussion between J&J and a joint venture partner seemed to indicate that the future partner had 200 products ready for market. J&J agreed to form an alliance principally because of the potential to introduce new products in a short time. J&J had plenty of long-term research of its own but wanted access to technology that was ready to go. In fact, 200 research efforts were ready for publication in science journals, and it was almost 20 years before a product actually hit the market from the alliance. The stumbling block was poor communication. "Ready to go" meant different things to the negotiators. A clear understanding between the partners was lacking—seemingly fundamental and obvious in hindsight but nonetheless an Achilles' heel.

In another alliance, J&J realized that the scientists had no common ground. One side of the partnership thought that the scientists from the other side were stupid. The other side's scientists thought that their new partners were crazy. For an alliance to work, there must be some continuity and basis for understanding. This conflicts with the fact that one is getting into an alliance only because of the need for new technical competency, yet that technical competency must be understood. The driving forces of technology transfer are the need to gain access to broad technologies in diverse areas, but each side must have the ability to understand the other. According to Dr. Gussin, partners must be picked carefully and it is important that both companies have respect for each other. Personalities and culture become more important in alliances than in any other type of business combination or operating structure.

At the same conference, Dr. Gene Slowinski of Alliance Management Group, Inc., of Gladstone, New Jersey, reported on a study that focused on the reflections of alliance managers. He studied strategic alliances that involved 50 large/small companies. He found that only 50% of the alliances survived after three years. He also found that only half of those surviving were meeting the expectations that had been established.

Dr. Slowinski indicated that alliances work when partners take small steps together. He refers to this as *phased relationships*, defined as the serial motions of a successful alliance involving movement predicated upon completion of milestones. Continued movement forward depends on an evaluation of a partner's ability to go to the next step. Phased relationships involve limited early investment that is not followed by additional investment until successful phases have been accomplished. A phased relationship leads to a successful strategic alliance when logical decision criteria are established and maintained for assessing progress.

Successful strategic alliances are those where both partners develop internal networks throughout the rest of their parent organization so that resources from both companies are cultivated for the ultimate support of the activities of the strategic alliance. Strategic alliances must compete for ever more severely restricted resources of the partners. Consequently, in-house projects are likely to get more management focus. Parent company management, not directly related to the strategic alliance, is not likely to support the strategic alliance unless political networks are nurtured and cultivated with a focus on the mutual benefits that will be obtained from supporting the strategic alliance. Unless both partners to a strategic alliance cultivate their internal networks to provide the needed resources, the strategic alliance is doomed. A support network is needed from both partners.

The research conducted by Dr. Slowinski supports the professional experiences and observations of Dr. Gussin and indicates that the most important reason for alliance failures is a mismatch between the strategic versus tactical strategies of alliance partners. Unless the alliance involves the core businesses of both companies, it is likely to fail. When a company is in a strategic alliance that represents its core interests with another

company for which the alliance only represents a peripheral interest, the low likelihood that commitment will be maintained by the peripherally involved company almost condemns the alliance to failure from the start. A successful alliance addresses the core business interests of both partners.

Strategic alliances are difficult to organize, control, and make successful, but they will become more important. In the future, access to patent rights in the form of licenses and cross-licenses will not provide the broad expertise that companies will need. Alliances will need to be formed in order to help a licensee practice the patent rights licensed. In the future, where broad and diverse technical competencies are required, a license to practice the new technology will be only the beginning. The licensees will need education to allow for successful application of the technology. Companies in need of new technical capabilities will need enabling technology and the means by which to commercialize the new technology into their product offerings. As a result, the future may bring less naked licensing and more licenses that are prefaced with alliances.

The most important aspect of a successful strategic alliance is that both parties have mutual needs and common objectives. These two characteristics are dynamic and ever changing. It is hoped that when the needs and objectives change, they will change together, allowing both of the partners and the alliance to survive.

CHAPTER 31

UNIVERSITY TECHNOLOGY TRANSFER

Negotiating with a for-profit industrial giant for a technology license is challenging enough. Now, instead of negotiating with another corporation, substitute into the licensing equation an entity that thinks differently. Substitute an entity that does not entirely worship sales, market share, profits, or shareholder value. This is a new challenge, and this chapter provides some insights into the motivations of a university licensor. Although it is impossible to characterize all university licensor motivations, this chapter attempts to highlight some of the unique forces that are behind the moves that universities make.

In 1980, Congress passed legislation known as the Bayh-Dole Act. This law permitted universities to take title to all inventions and discoveries arising from federally funded research. Bayh-Dole also required universities to make every effort to ensure that these inventions were brought into public use as soon as practicable. During the past two decades, universities have surprised everyone, including themselves, with their tremendous success in licensing their research results for commercial application. Through "technology transfer" they provide commercial sector companies with access to new discoveries and innovation resulting from research. Industrial partners develop these inventions and manufacture products that help to improve the lives of the public.

The philosophy behind Bayh-Dole is economic stimulation through privatization. When the law passed, the federal government held roughly 28,000 patents, but fewer than 5 to 10% of these were licensed to industry for development of commercial products, according to the Council on Government Relations, a lobbying group for research universities. By giving universities a chance to sell the rights to technology developed in the course of publicly funded research, Congress hoped to spark an economic boom with taxpayer-funded technology. Overall, the model has been a dramatic success. The transfer of technology from university labs into offices, factories, and stores was fundamental to the growth of Silicon Valley and the success of the new economy. Since 1980, university inventions licensed to the private sector under Bayh-Dole have spawned over 4,320 new companies, according to the Association of University Technology Managers (AUTM). In 2002 alone, 219 institutions surveyed by AUTM reported 4,673 new licenses and options. Gross licensing income from these transactions totaled over $1.2 billion for 2002.[1] Universities found that, in most cases, the most efficient way to bring products to the public was to have corporate partners develop, manufacture, and distribute products based on the technology. As a result, universities are licensing their technology to for-profit organizations. Universities enjoy prestige and income from these arrangements, but close proximity to industry creates a conflict for many academic institutions. The open intellectual climate of a university can, at times, be at odds with a company's goals.

1. The Association of University Technology Managers, report entitled, *AUTM Licensing Survey, FY 2003*, p. 1.

Universities desire a wide dissemination of knowledge and information. Corporations, however, desire closely guarded proprietary knowledge and information. Many universities have developed policies that are unequivocal in stating their position about working with for-profit organizations.

31.1 UNIVERSITY TECHNOLOGY TRANSFER GOALS

The mission and goals of universities are different from those of for-profit organizations. The offices where university technology is managed and transferred must operate under guidelines that serve the university priorities. It is important to keep in mind the mission and goals of universities when negotiating license agreements or presenting corporate capabilities to universities. The amount of license income that a university might receive from doing a deal is only one of many factors that universities consider when selecting a licensee.

Broad goals are typical of university technology transfer programs. Practical application of knowledge for the benefit of the public is an overriding concern. Licensing income is desirable, but universities want to be assured that a substantial chance exists for public benefits to result from any license they negotiate.

Harvard University recognizes the importance and benefits of technology transfer and encourages scientifically productive research collaborations between its scientists and for-profit companies. But its first priority is the maintenance of academic freedoms, scientific integrity, pursuit of knowledge, and the open exchange of ideas and information. To ensure that these standards are upheld during the various interactions with industry, Harvard and most licensing universities have developed guidelines. For example, Harvard has developed *Statement of Policy in Regard to Inventions, Patents and Copyrights, Conflicts of Interest and Commitment*, and *Guidelines for Industry Sponsored Research Agreements*. As these titles indicate, guidelines exist for every different circumstance that bring universities and industry together. These guidelines set policies for how to license technology, what to do when conflicts exist, how to maintain confidentiality, granting exclusive licenses, distribution of licensee fees, distribution of royalties, granting of stock options and equity to the university, and many other circumstances that arise from partnering with for-profit organizations. Each university has a mission statement. In almost all cases, the primary force driving technology transfer is to benefit the general public.

At Johns Hopkins University, the goal for technology transfer is to strive to support the university's mission of developing new knowledge and facilitating the practical application of such knowledge to the benefit of the public. Johns Hopkins supports its faculty and employees in securing commercial development of intellectual and other property resulting from their research so that the benefits of that research may reach society at the earliest opportunity. Johns Hopkins also has developed policies and guidelines that provide incentives for its researchers while protecting the integrity of research emanating from the institution.

At Rutgers University, the goal of technology transfer is to encourage the corporate sector to convert the results of university research into new products and processes that ultimately contribute to public well-being. The goal of the Office of Technology Transfer is to strengthen interactions with industry and to encourage corporate financial support of faculty research that has potential for application and commercial value. The university seeks to expedite both the discovery and the application of Rutgers' research findings that may benefit the people of New Jersey and the nation.

The mission statement of The University of Pennsylvania Center for Technology Transfer (CTT) charges the office with obtaining and managing patents, copyrights, and trademarks derived from the university's academic and research enterprises. CTT creates relationships with industry to develop, protect, transfer, and commercialize intellectual property resulting from the university's research. In the conduct of its activities, CTT is required to promote and support the teaching, research, and service mission of the university. CTT's goals are to:

- Commercialize research results for the public good
- Induce closer ties between faculty and industry to help generate industrial research funding
- Further the intellectual capital of the university by assisting in retaining and recruiting faculty
- Advance economic growth in the local community, commonwealth, region, and nation

A straightforward example of a university's goals is the mission of Stanford University's Office of Technology Licensing (OTL), which is to promote the transfer of Stanford technology for society's use and benefit while generating unrestricted income to support research and education.

Generally speaking, the mission statements of universities can be summarized by two key points: (1) benefit society and (2) make some money. It is important to recognize that the first point is usually more important to the university. The second point often is looked on as a nice side benefit.

31.2 UNIVERSITY OFFICES OF TECHNOLOGY TRANSFER

Many universities have well-established offices that are the focal point of technology transfer. These offices usually are charged with transferring the university's intellectual property in an appropriate and cost-effective manner. To accomplish their goals, most universities:

- Provide oversight of intellectual property management and technology transfer to ensure adherence to university policies
- Assist the university research departments in establishing and maintaining effective technology transfer mechanisms
- Provide legal services and cooperate with the university research departments in promoting and licensing intellectual property
- Take appropriate actions to protect the university's intellectual property
- Promote and negotiate technology transfer to for-profit entities in a manner consistent with a university's objectives and academic environment
- Establish policies and procedures to ensure the avoidance of conflicts of interests
- Review and approve all agreements that convey or affect the university's rights to intellectual property

Many universities use an array of outside services to assist them, including patent attorneys, contract attorneys, and business consultants. The offices of technology transfer are manned by professionals who are consummate facilitators. They must orchestrate the talents and capabilities of many far-flung entities that often have conflicting goals. In some cases, these offices are headed by experienced executives who had careers in industry.

31.3 CONFLICTS OF INTEREST

The growth of university technology-licensing activities has raised questions about whether and under what circumstances a university should license its technology to a company in which its faculty members or other members of the university community have some type of financial interest. Very often the researcher who developed the licensed technology will work as a consultant for the licensee as commercial development of the new invention is pursued. This is a typical situation that most universities expect. Complications arise when the ownership of the licensee includes a faculty member who also remains as a university employee. Universities are sensitive to these situations, and many conflict of interest concerns arise from this situation. As a result, most licensing universities have established formal guidelines that address conflicts of interest, and anyone negotiating with a university should study the pertinent policies for specific universities.

Typically, the staff of the technology transfer offices will take these six steps to minimize the potential for creating an unacceptable conflict of interest in the granting of licenses:

1. The staff will use professional judgment and a range of sources to identify companies as potential licensees for a given technology; this process may include suggestions provided by the inventors.
2. The staff will disclose on an annual basis any financial interests they have in companies that are or may be potential licensees, and may not participate in licensing discussions or negotiations that would benefit those companies.
3. When a primary candidate for an exclusive license is identified and before any license (including option) agreement is negotiated, the staff will ask the inventors whether they have or plan to have a personal financial relationship with the potential licensee.
4. If no financial relationship exists or is planned between the inventor(s) and the potential licensee, the staff will proceed to negotiate a license.
5. If the inventor has a financial relationship but not a substantial interest in the prospective licensee company: each year, the staff will report, as a matter of information, to the responsible faculty committee any licenses or options granted that year to companies in which the inventors have such financial relationships (other than the royalty income the inventor would receive under Harvard's policy, which is discussed in a later section) at the time the license was granted.
6. If the inventor has a close financial interest, a complex procedure is instituted to assure other university committees that the best deal is being negotiated for the university, and the inventor and potential licensee are not receiving favorable treatment at the expense of other potential licensees.

31.4 NONEXCLUSIVE LICENSES

When granting licenses, universities sometimes desire to license more than one party. For example, Harvard seeks to identify licensee companies that have the capability and commitment to develop the technology and bring it to market as rapidly as feasible. This is a primary goal of most universities. In most instances, Harvard and others do not survey all potential licensees, but rather target their marketing efforts on those companies with the best chances of commercial success. When one or more such companies express

interest and make proposals, universities will try to negotiate more than one license agreement. Often universities see such a policy as a means for encouraging licensees to expedite commercialization by creating a competition. Very often this conflicts with the desires of for-profit organizations. The development time and costs to take a laboratory invention to commercial reality are often high. For-profit organizations usually are not interested in pursuing commercialization efforts in a race with other for-profit organizations. Such an environment may serve the interests of university licensors but not those of for-profit licensees. For-profit companies do not want to pursue commercialization activities that ultimately may result in their being second or third to the marketplace. Generally, for-profit organizations desire exclusive licenses. When for-profit organizations are negotiating with universities, special efforts to ensure rapid and broad commercialization of the licensed technology will be pursued. This can help to persuade universities that competing commercialization efforts are not needed.

For 2002, of the 4,594 licenses and options granted by the institutions and universities surveyed by The Association of Technology Managers, 46.5% were exclusive and 53.5% were nonexclusive.[2] The percentages change depending on the size of the licensee. For large companies, only 39% relieved exclusive deals. For small companies, 45% received exclusive deals. In the case of start-ups, 91% of the licenses and options were exclusive.[3]

31.5 FINDING TECHNOLOGY

The source of transferable technology is the university researcher. In fact, one of the primary challenges of university technology transfer offices is identifying inventions that should be protected and for which commercialization is a real potential. The technology transfer offices will never learn of a new invention unless university researchers bring it to their attention. Great ideas can begin in university laboratories. They also can die there unless the lead inventor takes the steps needed to have the invention protected and offered for licensing. To encourage researchers to disclose their ideas, Rutgers University instituted a technology assessment committee. The committee meets monthly. Researchers with new ideas make brief presentations to the committee. The committee asks questions with the goal of identifying a technology with potential for commercialization. Lawyers, businesspeople, university administrators, and other outside consultants sit on the committee.

At many universities, researchers are reluctant to disclose their inventions. Despite a growing recognition of the importance of technology transfer to both academic institutions and industry, many misperceptions persist within the academic community regarding the process. Notable among these is the notion that basic research cannot lead to inventions, and that basic discoveries are unlikely to be the foundation for new commercial products. The opposite appears to be true: Harvard reports that from 1978 to the present, its technology transfer program has enjoyed enthusiastic response from industry, leading to the commercialization of numerous university inventions.

Another myth held by university researchers is that participation in the protection and commercialization of intellectual property is time-consuming and will take valuable time away from academic activities. Although the inventor plays a key role in the preparation of a patent application, the university handles management of patent prosecution and licensing. Yet many researchers are reluctant to take time away from their academic activities.

2. The Association of University Technology Managers, report entitled, *AUTM Licensing Survey, FY 2003*, p. 1.
3. Ibid., p. 18.

There is also the fear that when an academic researcher obtains a patent, it prevents his or her peers from doing academic research on the same matter. This is not true, but it still represents a hurdle for university technology transfer offices. Generally speaking, academic research on a given subject, even if another person has patented the idea, is not considered "patent infringement." The latter occurs when a private individual or a for-profit firm uses a patented idea with commercial intent (including research), whether the patent had its roots in academia or someplace else.

31.6 REWARDS OF INVENTORSHIP

To convince researchers to identify inventions that might be candidates for licensing, universities often publish information describing the benefits that can result from identifying new inventions for licensing. These publications tell their researchers that they will benefit in many ways from technology licensing. Surprisingly for the for-profit executive, monetary compensation often is not the primary benefit that is described. Most universities emphasize that the translation of ideas into products that benefit the public brings great personal satisfaction to a researcher. Maximizing the potential of a researcher's work and establishing links with industrial counterparts are also highlights of licensing. Researchers also are told that working with industrial counterparts may prove an underlying scientific hypothesis. Researchers are encouraged by the chance that an intellectual exchange and collaboration with industrial partners may attract financial sponsorship of additional research. Only after all these intangible benefits of licensing are trumpeted do universities mention that monetary benefits can be earned. With regard to monetary benefits, most universities provide for a sharing of licensing income that directly includes the university inventor.

31.7 HARVARD UNIVERSITY—ROYALTY-SHARING POLICY FOR INTELLECTUAL PROPERTY

Exhibit 31.1 shows the distribution of licensing income (gross royalties and other income minus administrative, licensing, legal, and other related expenses as well as payments to other entities as may be required by the university's agreements with those entities) among different university participants.

The determination of what constitutes "royalties" and "other income" at Harvard rests within the discretion of the university. For example, equipment or funding for support of research received by the university does not constitute "royalties" or "other income" under its policy.

In addition to the sharing of licensing income, Harvard has established seven guidelines for equity received as part of a licensing arrangement:

1. Harvard's equity position should be a minority one (generally less than 15%).
2. Harvard as an institution should not hold board positions.
3. In the event individual inventors hold stock in the company, the requirements of the conflict of interest in licensing policy shall be followed.
4. Harvard should not invest in the formation of the company. This does not preclude investments by venture capital funds in which the Harvard Management Company has invested or by Medical Science Partners, since investment decisions by those organizations are at "arm's length" from Harvard.

	Cumulative Amounts Received	
	First $50,000	Above $50,000
Creator(s)	35%	25%
Creator(s') Department (The creator(s) may direct the use of half of the department's share so long as they remain at Harvard.)	30%	40%
School (Dean's Office or Vice President)	20%	20%
President and Fellows of Harvard College	15%	15%
Total	100%	100%

EXHIBIT 31.1 DISTRIBUTION OF LICENSING INCOME

5. Equity will be held in a separate account by the Harvard Management Company and will be managed and sold according to procedures that ensure that decisions to sell are made at arm's length from the faculty or administrative unit that originated the licensed technology. The Harvard Management Company will also follow its existing procedures dealing with such issues as conflict of interest, insider trading, and the like.
6. Stock will be sold in an orderly fashion as soon as it is possible to sell it in the public market (i.e., once it is publicly traded and any "lock-out" period has expired).
7. Harvard should not invest directly in later rounds of private financing for the company unless the investment is part of the Harvard Management Company's normal investment activities.

At Harvard, of the 50-plus licenses and options granted each year, it is anticipated that fewer than five would include equity. Typically the companies involved are either just being formed (usually around the technology to be licensed) or are within 1 or 2 years of formation. They have little cash and no revenues. Under these circumstances, imposing a large cash burden, in the form of a license fee, would diminish the company's ability to attract initial investors and would pull critical cash from the research and development efforts. Harvard recognizes these limitations and will accept equity as part of the compensation for technology transfers. In this regard, Harvard is not alone. Many universities will accept equity. Nevertheless, licenses with equity generally also include cash payments such as up-front license fees, minimum annual and/or milestone payments, royalties on sales, and a percentage of sublicense income.

Stock is not taken in preference to cash; rather, in the absence of sufficient cash compensation and where universities believe they have negotiated the best cash terms possible, stock is taken as added compensation. The stock is viewed as a reasonable business solution to enhance the overall financial package: acceptable to the company and its investors, while providing an opportunity for the university to increase its potential return.

In addition, particularly with technologies that will be the basis for a start-up company, equity provides a university with some compensation for the value added to the

company as a result of its access to the core technology. In the case of start-ups, the value of the license is based as much on its ability to generate investment capital as on the profits the company may realize from the eventual sale of products utilizing the licensed technology.

31.8 JOHNS HOPKINS UNIVERSITY—SHARING OF REVENUE FROM INTELLECTUAL PROPERTY

Revenues received as a result of licensing agreements in the form of cash royalties and/or equity holdings are distributed in such a manner as to encourage technology development within and technology transfer from the university. "Revenue" sharing does not include funds received for research support. Six general principles that govern the distribution of licensing revenues at Johns Hopkins are:

1. University costs for patent prosecution, licensing, and license maintenance shall be reimbursed from license fees and royalty income and other revenues derived from the technology transfer.
2. All shares of revenue, including the inventor's, should contribute to the reimbursement of university costs for patent infringement actions. The manner and amount of such reimbursement will be determined by consultation between the division dean and the president so as to maintain fairness and adequate incentives in the distribution of revenue.
3. The schedule for distribution of net revenues is designed to provide personal incentives to inventors.
4. The support and further development of technology transfer offices and functions shall be augmented from the distribution of net revenues to the schools.
5. The portion of revenues distributed to the inventors' laboratory(s) shall be limited to avoid imbalance within the inventors' department(s).
6. Continued sensitivity to conflicts of interest requires that certain types of research on a licensed invention by its inventor(s) and/or the university may be disallowed, whatever the funding source. Sponsored research to advance the state of the art of existing inventions is encouraged under those circumstances where the inventor's participation presents little, if any, opportunity to compromise the integrity of the inventor and the university. For review of cases involving potential conflicts of interest, the division should create a faculty committee or committees to review and make recommendations to the dean.

To provide incentives and resources, the university shares licensing income among inventor, the inventor's department, the dean of the School of Medicine, and the university. Annual net invention income (gross invention income minus unreimbursed patent prosecution expenses, associated external expenses, and maintenance fees resulting from School of Medicine licensed inventions) is distributed as shown in Exhibit 31.2. A one-time processing fee of $10,000 is charged to the licensee.

Licensing agreements involving equity participation by the university and its faculty are permitted. Under appropriate circumstances, research sponsored by companies in which faculty and/or the university have equity holdings also may be permitted. (See Exhibit 31.3.)

Annual Net Income	Inventors' Share	Inventors' Laboratory	Inventors' Department	School	University
First $100K[1]	A 35	30	10	23	2
	B 35	30	23	10	2
To $300K[1]	A 30	30	10	25	5
	B 30	30	25	10	5
To $1M[1]	all 20	15	10	45	10
$1M to 3M[1]	all 15	10	15	50	10
Over $3M[1]	all 5	5	5	75	10

A: When school pays patent costs

B: When inventor's department pays patent costs

[1] The $10,000 processing fee and the $100K, $300K, $1M, $3M are in 1992 dollars and are adjusted periodically by the dean in accordance with inflation indicators

EXHIBIT 31.2 JOHNS HOPKINS ANNUAL NET INVENTION INCOME DISTRIBUTION—PERCENTAGES

31.9 DEALING WITH UNIVERSITIES

Well-qualified professionals typically staff the offices of technology transfer. They know their business and usually understand the concerns of for-profit partners, but they face problems that corporations may not realize. In dealing within their university, they often have political challenges to overcome. Sometimes prestigious faculty members can pressure university administrations, which in turn pressure the transfer offices, to bend the rules. This can cause a deal to go through easily, but it also can delay a deal.

Another problem can arise regarding research grants. Some inventors are more interested in next year's research grants than in a potential stream of royalty income. When several for-profit organizations are competing for a technology license, the deal could turn on the promise of research grants. A long time frame viewpoint might argue against this, but the reality is that many researchers are dependent on grants and live from year to year on them. Large royalty incomes that may not start to flow for many years are not as attractive as immediate, albeit smaller, research grants.

Fast commercialization for the benefit of the public is a noble goal but can be frustrating to for-profit organizations. Commercialization of a new invention also includes substantial marketing strategies after the technology is proven. Market research can cause delays that universities do not understand.

This chapter has attempted to highlight some of the challenges of dealing with universities. More information about the technology transfer policies of 69 universities can be found on the World Wide Web at www.nttc.edu/gov/other/university.html. Much of the information that is specific to particular universities was discovered through the links offered by this site. Such information has been carefully incorporated into this chapter, but some editing has been introduced to accommodate a logical flow of the themes discussed herein. Readers are advised to refer to the original documents on the Internet.

Inventors' Personal Share	Inventors' Laboratory(s) Share	Inventors' Department(s) Share	School Share	University Share
35%	15%	10%	30%	10%

EXHIBIT 31.3 JOHNS HOPKINS—DISTRIBUTION OF EQUITY REVENUE

CHAPTER 32

ORGANIZING FOR THE FUTURE

The greatest business challenge in the future will be to ensure that intellectual property is optimally exploited. This goal is more complicated for many companies because they are not aware of all the intellectual property they possess. Vague references to intellectual property still are common among top executives and consultants—they have the basic concept, but do not seem to understand the details. A typical, yet vague strategy statement by many companies goes as follows:

> U.S. corporations must begin to leverage their competencies across businesses.
> We plan to form alliances with partners that possess complementary knowledge capital.

Intellectual property represents the keystone to success for most companies. Trademarks capture market share, and patented technologies often command premium prices for the products they represent. In some cases, over 80% of a company's value is derived from the intellectual property that it owns. Yet enormous and expensive management information systems are better equipped to count and control raw materials or manufacturing equipment. Rarely is there a means for capturing the existence of intellectual property. Admittedly, the intangible nature of keystone intellectual property complicates the task. Yet a rather serious effort is warranted when the lion's share of corporate value lies among patents, trademarks, distribution networks, and other intangibles.

Knowledge capital and competencies will not earn a dime unless they are better defined to show more clearly how they will contribute to increased sales, generate higher profits, and ultimately create corporate value. Before something can be exploited, it must be identified. This chapter will attempt to provide some guidance for finding the intellectual property that can be licensed, traded, sold, joint ventured, or otherwise made to serve as the admission price into a potentially lucrative strategic alliance.

Once the intellectual property of a company is assessed, management must identify the future portfolio of assets that will be needed for future success. This chapter concludes with a discussion about gap analysis as practiced by DuPont.

32.1 MAPPING INTELLECTUAL PROPERTY

An inventory of intellectual property is a realistic goal but is complicated by the multifaceted nature of these intangible assets. Intellectual property cuts across many aspects of a business and often interplays with other intangible assets. When intellectual property does not cut across business boundaries, new questions arise, such as: Why not?

The trademark of a company with various divisions and products, all using the same trademark banner, cannot be conveniently placed in an inventory account that is associated with one of the manufacturing plants or one of the divisions. But customer lists often are associated with a single business division. One business unit may be exclusively using a

customer list that has potential for other divisions. Associating an exclusive list with one business unit is not recommended. Such a practice can psychologically block you from seeing the potential from broader application.

The process for taking an inventory of intellectual property is described as *mapping*. Intellectual property can stretch over many aspects of a corporation like a river that sustains life through entire regions of a country: It is not appropriate to identify a river with the inventory account of one U.S. state. Likewise, it is also inappropriate to identify many types of intellectual properties with one of the company plants, divisions, or subsidiaries. The process of mapping starts with a comprehensive list that identifies the various types of intellectual property. Then a mechanism is derived to show the many places where, in the organization, each of these assets is used. The map should be flexible, allowing the location of property use to be broadly defined, but also including identification of other applications. The usage location, defined as the primary activity or physical location of use, can be defined to run among products, divisions, or manufacturing locations. Different organizations will find that their own circumstances dictate how usage locations should be defined.

The questions to be answered in the mapping process are basic:

- What intellectual property do we possess?
- Where is it being used?

After these questions are answered, a great many new possibilities can be considered: Where else can we use the property? Can it be licensed? Is it being properly protected? Can it be contributed to a joint venture? Can it be traded to fill an intellectual property gap? Should an idle property be sold off for cash?

Once the basic questions are answered, new possibilities might appear for exploiting these assets more fully. Strategic planners who assess the profit centers and profit opportunities of large companies will find many aspects of mapping intellectual property familiar. However, the focus is shifted to intellectual property and away from business units.

Provided below is a brief outline of the steps needed to begin and complete the mapping process. The six steps include:

Step 1. Identification
Step 2. Location
Step 3. Coordination with strategic plans
Step 4. Routing for internal exploitation
Step 5. Identifying gaps
Step 6. Routing for external application

This chapter will focus on providing guidance about what to look for and where to find intellectual property—identification and location.

32.2 IDENTIFICATION

Keystone patents and flagship trademarks are easy to identify. But buried in the organization are many other gems just waiting to be discovered. Start with a list of all of the patents and trademarks of the company, from the legal department. Then begin to think like a detective. But do not limit yourself to the list. Some very valuable intellectual property in the form of know-how can lurk unnoticed. Make inquiries throughout the company by

interviewing managers from all divisions at all levels. It is important to get into the lower ranks of the organization because most of the best insights rise from the bottom to the top. Show everyone the complete list of patents and trademarks, and find out which are being used. Also find out why unused patents and trademarks are not being incorporated into activities. Ask everyone—employees, customers, suppliers—*What makes our product, company, or service special?* and *Why are customers buying our goods?* Do not fall into the trap of only asking the marketing people why customers buy. They have prejudices, just as the engineering, customer service, and manufacturing people do. So ask everyone. The answers will range all over the place, but a few answers will lead to the discovery of unrecognized intellectual property. These are the intellectual property assets that can lead to new opportunities. These are the assets that a comprehensive inventory effort must discover. Examples include secret formulas, process procedures, quality control secrets, customer lists, incentive plans, databases, supplier agreements, employee training methods, and other intangible items never imagined. Xerox Corporation, as an example, found that its internal training program was highly regarded by outsiders. It made an entire business by selling training programs to other companies.

The search must include line functions and staffing functions. Corporate databases can be just as valuable as keystone patents. Marketing plans also can be significantly valuable. They also can have great potential for application to other aspects of the business. The search must include extensive fieldwork but cannot omit the all-too-familiar backyard of corporate headquarters.

A Wisconsin power company spent millions to develop a new computer system that coordinated power production activities with customer utilization and billing. It was a sophisticated program, and other utilities could enjoy its benefits without becoming a competitive threat. Wisconsin Power set up a subsidiary and licensed the new company to market the computer program.

Presented below is a list of intellectual property and intangible assets. Not all will possess the potential for further exploitation. Some will have mild potential; others could be great success stories. Each department of a corporation can be a treasure trove of exploitable property.

Engineering
- Governmental approvals and acquisition expertise
- Governmental regulation compliance
- Quality control testing procedures and equipment
- Design efficiencies
- Product defect statistics
- Assembled engineering workforce

Research and Development
- Research programs
- Patented technology applications
- Patented technology
- Prototypes
- Embryonic research
- Assembled research workforce

Manufacturing
- Production practices
- Knowledge about factors affecting quality

Assembled manufacturing workforce
Order backlog
Spare parts annuity
License agreements
Process patents
Material handling technology
Vendor and supplier list
Just-in-time raw materials delivery techniques
Automated inspection procedures and equipment

Distribution and Marketing

Brands and trademarks
Advertising and media programs
Packaging research
Assembled sales staff and representatives
Retail accounts and shelf space
Statistics on loyal customer buying history
Competitor analysis
Copyrights on sales material
Distribution rights to other products

Finance and Administration

Management information systems
Long-term and favorable lease arrangements
Assembled workforce
Copyrights on computer software
Mortgage portfolios
Unique incentive programs

The following sections describe some of the intellectual property to be found in a mapping program. Not all of it will have the potential for enhanced exploitation, but some of it will. A few possibilities are discussed.

32.3 ASSEMBLED WORKFORCE

In many businesses, the presence of a skilled workforce that is knowledgeable about company procedures and possesses expertise in certain fields is vital to continued profitability and growth. Access to some of these professionals can be used to leverage a company into a strategic alliance. It is common in the pharmaceutical industry for one partner to conduct product research and get government approvals, while the other partner is responsible for large-scale manufacturing and marketing. Expertise is needed in research, manufacturing, and marketing. A full assessment of the special skills of the entire workforce from all departments can be a unique proprietary asset. Successful corporations are very much like individuals. They develop areas of focused expertise, but are weak in other areas of life. Compounding the problem is that people of similar interests and expertise flock together. Managers with primary interests in research tend to like and hire people with similar strengths. In other companies, the dominant "personality" might be marketing. When this occurs, the company develops an unmatched expertise in

an important business function. Instead of dooming the company because of its overspecialization, the dominant tendency attracts other companies possessing complementary specialties. Once a company recognizes its specialties, new possibilities can be discovered by looking for others that might like to joint venture.

32.4 CAPTIVE SPARE PARTS ANNUITY

The continued purchase of replacement parts for capital equipment that has already been sold to customers can be an extraordinarily profitable portion of a business. If a company manufactures and sells complex capital equipment such as aircraft, defense equipment, computer equipment, and other items requiring a substantial customer investment, then the customer purchasing the original item must return continually to the manufacturer for replacement parts and accessories. Typically these items are sold at a healthy premium price, contributing healthy profit margins. Premium pricing of these parts reflects the near-monopoly position that the original equipment manufacturer possesses as the only source for these parts.

The term "captive" is used to describe the nature of the relationship with the customers. Once the original equipment is purchased, few options exist as sources for spare and replacement parts. The term "annuity" refers to the regularity of receiving orders. The continued receipt of orders is a function of the life of the original equipment and the age of the equipment that the company has placed with its customers. In some businesses, the original piece of equipment is sold at an extremely low level of profit or at break-even in order to capture the monopoly position for regular maintenance and accessory parts. The sale of spare parts, replacement parts, and accessories can be a substantial portion of a business. Some companies can estimate the amount of sales from this component of the business very accurately and therefore can plan ahead to achieve the greatest amount of profitability. Sales of new equipment may be hurt during economic downturns, but replacement parts are usually very resilient. Unique opportunities for strategic alliances exist with spare parts annuities. As an example, the Sikorski helicopter division of United Technologies was an attractive joint venture partner to Dow Chemical. The helicopter company possesses a large backlog of spare parts contracts associated with aircraft that were sold to customers. The new joint venture will combine Dow's sophisticated composite materials technology with the business already booked by United Technologies.

32.5 COMPUTER SOFTWARE

Valuable computer software can be related to a company product or can represent internal controls that enhance the efficiency of operations. Microsoft Corporation has copyrighted products that serve as the foundation of its business. Federal Express has internal software and procedures that allow customers to ascertain the location of shipments in less than an hour. Federal Express uses this software to control operations and also as a strong selling point to differentiate it from competitors.

Successful software products are usually a strong foundation from which to launch accessory software, products, and services. These can be handled internally or licensed out. The Microsoft basic intellectual property, the DOS operating system, has taken the company into a large product line of application programs, hardware accessories, programming books, and magazines.

32.6 COPYRIGHTS

Copyrights are legally protected expressions of an idea, including films, books, articles, software, television programs, and other works. Decades of repeat sales are often possible. Copyrights are also excellent candidates for many forms of strategic alliances.

The movie industry has found great success in selling toys, t-shirts, and soundtracks to consumers during and after the run of a new motion picture. Dr. Seuss recently entered a license agreement associated with children's clothing. David Bowie has issued financial securities backed by the royalty income derived from his past albums. Martha Stewart has expanded her homemaking brand recognition into a lifestyle empire incorporating books, magazines, and television programs.

32.7 CUSTOMER LISTS

A list of established customer relationships composed of individuals who order from the company repeatedly can have extraordinary value. The information contained in such lists usually includes the customers' preferences, buying patterns, and history of purchases. In a sense, a list of loyal customers who regularly provide the company with sales is similar to the captive parts and annuity. An opportunity exists to develop other products for sale to this loyal customer list. Also, the list can be a substantial asset for contributing to a joint venture. Loyal customers cost a lot to nurture, and creating a customer list from scratch takes time. Whenever a customer list exists, a valued piece of property exists for expanded exploitation.

32.8 DISTRIBUTION NETWORKS

Many manufacturing companies do not possess an extensive staff of sales individuals. Instead, a network of independent distributors is used to find customers and get orders. These distributors receive a commission on each sale. They also can be a vital source of customer information. Many product enhancement ideas have come from customers through comments made to representatives of the distributor. Development of a distribution network can require an extensive amount of time as prospective distributors are identified, interviewed, qualified, and educated about the products that they will carry.

Lack of an established distribution network is many times the primary reason for product failure. New products from small companies often fail before the customer has a chance to vote on their commercial worthiness. If a new product cannot get to the shelves, the manufacturer will never realize any sales. Distribution networks are a strong bargaining chip when negotiating with a potential licensor, especially when the licensor does not have a similar means to reach consumers.

32.9 TRADEMARKS

Identifying a trademark or brand most often is easily accomplished. For a short list of valuable names, look at the printing on the packaging of company products. Then it is just a matter of determining, through consumer focus groups, the names and marks that can be exploited elsewhere, inside and outside of the company, without harming the core brand value.

32.10 STRATEGIC PLAN AND GAP ANALYSIS

A well-defined strategic plan answers the questions: "Where are we going?" and "How are we going to get there?" Intellectual property is the vehicle that will take you to the

future completion of your plan. With the map in one hand and the strategic plan in the other, you are ready to identify the missing pieces.

During the 1990s, DuPont Corporation implemented a major restructuring of its diverse business holdings. As part of the restructuring of the corporation, an extraordinary number of corporate levels, departments, and functions were eliminated. The company reduced its workforce from 180,000 employees to 107,000. As part of the restructuring, the methods by which the company manages its business holdings changed. The company uses a strategy based on management of its strategic business units as if they were portfolio managers overseeing an investment portfolio. Most operating and strategic activities for each unit are handled at the unit. Centralized corporate departments and overhead functions are minimized. DuPont does not maintain what would be considered an extensive corporate staff. Consequently, the technology management function is handled predominately at the business-unit level.

This new shift of intellectual property management responsibility can be attributed to several factors. One has to do with the number of employees remaining at corporations after the common practice of downsizing has been implemented. Reduced corporate staff numbers mean fewer people are available outside of the business unit for such activities. Employee downsizing also has yielded a trend toward pushing responsibilities, once retained at corporate headquarters, downward into the organization, and intellectual property management is one of the jobs that business-unit managers are reclaiming.

Another reason we are finding intellectual property management at business units has to do with time. The pace at which industry conditions change is not slowing. Reaction to market forces must be immediate and must reflect the front-line insights possessed by business-unit management. Too many months can pass between the time business-unit management and corporate management agree on the best course of action to take in response to changed conditions. Time lost is never regained; neither are lost market shares, sales, product launches, or any of the many other forms of loss to a business that result from delay of action.

Competency is another reason that unit business management is now responsible for intellectual property management. No matter how diligent corporate staff is at studying the conditions of different business units, they will never appreciate the subtle nuances of each separate industry as well as front-line managers. Appreciation for this factor is growing, and the people responsible for creating intellectual property are now responsible for almost all aspects of the commercialization and management of it.

DuPont is a large and diverse business. Broad segments of the business include chemicals, fibers, polymers, and petroleum. Within these broad categories, different business segments include manufacture of:

- Engineered polymers such as elastomers, fluoropolymers, and ethylene polymers
- Specialty chemicals such as titanium dioxide
- Fluorochemicals
- Polymer intermediates
- Coatings for paper, plastics, and textiles
- Specialty fibers
- Agricultural chemicals

Within the listed business segments are numerous strategic business units, each of which focuses on different products that DuPont manufactures for different industries.

Such diversity presents very different challenges, which must be addressed on a case-by-case basis. Each business unit is responsible for itself. Corporate headquarters' staff at DuPont are still available to provide guidance but usually only at the request of the business units. Key executives from DuPont headquarters provide management consulting and guidance that focus on the core competencies possessed by each of the strategic business units while identifying weaknesses that must be addressed by each unit. While the guidance provided can address many different areas of business activity, the implications for technology management and licensing are significant. One of the analytical methods used by DuPont to guide its business units is called gap analysis.

(a) DUPONT-MERCK. DuPont's application of gap analysis in the mid-1990s indicated to the company that to be a winner in the pharmaceutical business in the future, it had to address the core gaps—fundamental weaknesses—that existed in its drug-related business. Although the company had a nearly full pipeline of research efforts, it realized that it lacked the important knowledge necessary to gain approval from the Food and Drug Administration (FDA) for the drugs it hoped to bring to market. The company also realized that its marketing know-how and marketing network in the pharmaceutical industry was severely limited and almost nonexistent overseas. As DuPont considered the future it would face with its pharmaceutical division, it realized after critical analysis that the identified weaknesses could be filled by a strategic alliance with Merck.

Merck & Company, at about the same time, had a research pipeline that was less than robust. Still, Merck possessed extraordinarily important expertise in guiding new drug applications through the FDA approval process. Merck also possessed another strength that would solve another of DuPont's weaknesses—it had a well-established and respected marketing network in the United States and overseas. The resulting negotiations gave birth to the joint venture known as DuPont-Merck. DuPont brought the potential for development of new drug products to the alliance, and Merck brought the regulatory and marketing expertise needed for commercialization.

(b) GAP ANALYSIS. *Gap analysis* is a forward-looking analysis that seeks to identify weaknesses that a company may have to deal with in the future. Gap analysis is also referred to as the *future-history approach*, as will be explained later. For now, think of the approach as studying the future as if it were the past. The approach can be especially useful for focusing on technological gaps that will exist and is a powerful way to help guide the licensing department as to the types of individual patent licenses and technology portfolio licenses that it should begin to develop. Although the description of this analysis may sound simple, implementation is challenging. More important, the benefits of thoughtful application can be powerful.

Implementation of gap analysis requires four primary steps:

1. Describe the future industry and economic conditions that will exist 10 to 15 years from now—*Future Game*.
2. Describe the business characteristics of a hypothetical company that will dominate in the future scenario described in the first step—*Future Winner.*
3. Access the current competencies and business characteristics of your company, as determined by mapping—*Current Assessment*.
4. Compare your company to the Future Winner to find areas where important future competencies are lacking—*Gap Identification*.

Exhibit 32.1 presents a graphic that highlights the primary components of gap analysis.

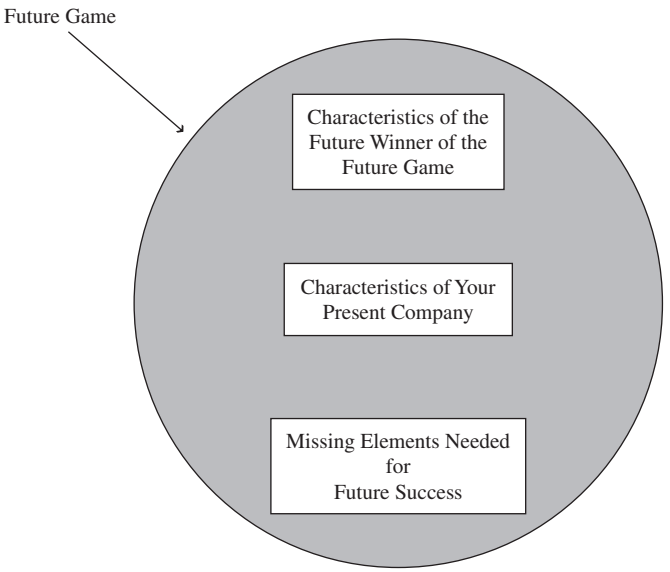

EXHIBIT 32.1 GAP ANALYSIS

(c) FUTURE GAME. Step 1 in the process is to define the future game, where the game is defined as the economic and industry environment in which the company will compete. Part of the definition involves description of future products, customers, competitors, technologies, and manufacturing techniques as well as the future factors of production needed to play in the future game. This involves describing the business environment 10 to 15 years from now, but from the viewpoint of having just experienced the future being described. It involves describing the future in detail, as if it were already history—hence the secondary name for gap analysis: the future-history approach.

It is important to admit that you are guessing at the future but not to let such an admission deter you from sincerely describing the future that is expected. Admitting that the future game being described is based on informed speculation frees you from the constraints that typically work at a subconscious level to stifle imagination. Business forecasts and projections usually are scrutinized and critiqued by others, often at higher levels of management. Such experiences can leave psychological scars that restrict full expression of the imagination. Latitude in describing the future game should be unrestricted.

The only caveat is to remember that the goal is not to create a science fiction novel. Similarly, the goal is not to accomplish an estimation of sales volume for the next three years given prevailing circumstances. Somewhere in between, and more toward the extreme of writing science fiction, lies the future that must be described.

The resulting future game should include descriptions of the market that is expected to develop, the products that are expected to serve the market, the technologies that will be in your product, the competitive environment, the economic conditions, the people who will be needed to produce the product or service for the anticipated market, the facilities that will be required, the funding that will be needed, and the intellectual property in the form of

trademarks and technology that will serve the anticipated future. Detailed descriptions are needed for each key area:

- Customers
- Markets
- Competitors
- Products
- Services
- Production facilities
- Marketing networks
- Distribution channels
- Trademarks
- Technology

Creating detailed descriptions can seem daunting, but it can be placed in a relatively simple framework by comparing the current situation to that which existed 10 years ago.[1] For each of the items just listed, describe the characteristics, in detail, of the different factors as they were 10 years ago. Compare them to the nature of these factors as they are now. The trends and shocking differences between the characteristics of 10 years ago and today should be expected to continue. Comparison of the past with the present provides not only those of a practice session for defining the future game, but insights into the subtle and not-so-subtle changes that have occurred in the past 10 years. The areas that historically have changed the most are likely those that will continue to change and should represent the focal point of defining the future game. The only constant is change, so one thing you can count on is that the business characteristics existing today and those that will exist in the future will be different. To start the ball rolling with visions of the future, consider the implications for your company from computer systems that can talk to their users. Joseph F. Coastes, a self-described futurist and president of Coastes & Jarratt, a Washington, DC consulting firm, says he expects "the future to bring a proliferation of artificial intelligence that sees, understands words, and talks back. These technologies are almost upon us."[2] Artificial intelligence applications are used, of course, but are not yet pervasive.

(i) The River of Time. Albert Einstein described time as a river. Inherent in this description is the idea of traveling back in time—upriver. Performing gap analysis does not require time travel, but immersing yourself in the details of the past clearly can improve a comparison of the past and the present, which in turn enhances your ability to imagine details of the future game. Two novels by Jack Finney can help you develop the proper frame of mind. In *Time and Again* and *From Time to Time*, the protagonist agrees to participate in a government experiment with the goal of returning to the New York City of 1882.[3] Surprisingly, no time machine exists at the government facility. Time

1. For some industries, a period of 10 years or less will suffice, while other industries can discover fundamental industry shifts only by looking back more than 10 years. The target historical period should be one that will illustrate how much basic facts and assumptions about an industry and a specific business have changed in a relatively short period.

2. "Pondering What World Lies Ahead—The Good and the Bad of Life in the 21st Century," *Philadelphia Inquirer* (July 25, 1995), p. G1.

3. Jack Finney, *Time and Again* (New York: Simon & Schuster, 1970) and *From Time to Time* (New York: Simon & Schuster, 1995).

travel is not accomplished by riding inside a whirling machine but simply by willing yourself into the time period desired.

Different time periods are hypothesized to exist simultaneously for a given location. Existing in a past time at a given place depends on the expectations of the time traveler. In order to expect to reach the 1880s when he leaves his apartment building, the protagonist surrounds himself with thoughts and possessions of the 1880s. He reads all newspapers from the 1880s. He listens to music from the time. He dresses in clothing styles of the time and lives in a New York apartment that existed then and that is decorated with period furniture. When he leaves his building, he expects that city travel will be possible only by walking or horse-drawn carriages. He expects to see streetlamps fueled by gas and knows that the arm of the Statue of Liberty is on display in Madison Square as a means to raise public funds for erecting the statue on a permanent base somewhere in New York harbor. When the hero of the tale finally leaves his building, he steps onto the streets of New York, but the point of the time in the *river* at which he enters is the year 1882.

In order to compare your current company with its past, you must immerse yourself in its past. Starting from a macro viewpoint is more efficient than considering the implications of a specific change. List your competitors of 10 and 20 years ago. How many have dropped from the radar screen? What new companies became competitors, and was it a surprise? Why did they enter the field? How were they different from the competitors that dropped out? How do products compare? What technologies were being patented by you and your competitors? Which patent portfolio ultimately served its owner the best? Here are key areas on which to focus:

- The products were different. To appreciate the differences, collect and read product catalogs of the past. Better yet, decorate your office with old products and use them.
- Customers' needs have changed. Learn about the ways in which your products were used by your customers and what utility they gained from your products.
- The machinery used to build the products was different. In fact, the entire process may have changed.
- Raw materials and subassemblies were different. To understand by how much, get production parts lists, purchase order information, and assembly drawings. Some raw materials of the past may have been completely eliminated from current products, and it could happen again.
- Read customer lists from the past, and you may see names that no longer sell anything you currently produce. Who took their place and why?
- Describe distribution channels. Ten years ago, specialty stores may have sold your products. Today the dominant route to consumers may be mail-order catalogs or the Internet.
- Find Wall Street research analyst reports and study the key factors they were citing when recommending your stock and the stock of your competitors.
- Pull all newspaper and trade journal stories about your company, industry, and products from the library archives. Learn about the issues of the past and decide if they actually turned out to be issues at all.
- Talk to employees who retired 10 years ago about every aspect of the company and how the business was run. At a gathering of retirees, a careful listener can learn a lot about past details. The interviews should be with *retirees* because their memories are a snapshot of the past, unmuddied by the changes that wrought the present. *Current* employees who were with the company 10 years ago will not

have clear snapshots of the past because the changes they lived through, which led to the present, have contaminated the purity of their past memories.

- Compare the patent list of today with the patent list of the past and note the significant difference in the type of technology protected and which types prevailed.

As you research the past character of the factors just listed, additional avenues for investigation undoubtedly will present themselves. The process of looking into the past and comparing it to the present is a method for training the mind to make connections between two time periods regarding important characteristics of your company. Such training will pay off immediately as you ultimately attempt to visualize the future relative to the present.

(ii) Fundamentally Unchanged. In essence, markets for products do not fundamentally change. Customers desire safety, security, freedom from hunger, shelter, attractiveness, wealth, and specific product utilities. This has always been true. The products that continue to serve them throughout different points of time still are made of some form of materials and components. The physical embodiment of products is fundamental, but shapes, sizes, and types of materials used have changed and will again. Employees have been, and will be, needed to run the different business enterprise assets, but their skills and numbers will be different. Many elements of the future game are a given and can be assumed to remain static. Carefully selecting areas that are expected to remain static allows energies to be focused on key factors with the greatest potential for change. As you approach this analysis, the most important realization will be that technology is the fundamental reason for change and it will continue. This may seem obvious, but the subtle ways in which technological change has altered your company will become apparent only after you conduct a diligent investigation. Subtle change is like the details of a major project. Left unattended, details can kill you.

(d) FUTURE WINNER. Step 2 of the gap analysis requires a description of the theoretical winner of the envisioned future game. For each of the characteristics that were defined previously, the competencies possessed by the winner of the future game should be described in detail. With the future game defined and broken into manageable pieces of markets, products, and production facilities, the theoretical winner of the future game can be described. One way to start defining the theoretical winner is to study a respected competitor or group of competitors, as is commonly done in benchmarking. An interesting aspect of benchmarking is to look at the competitive strategic alliance actions and licensing policies of competitors. Looking at what a competitor is doing with regard to the technology that it is licensing or the strategic alliances on which it is embarking gives you a very clear idea of its plans, goals, and objectives and how it is positioning itself for the future game. Such an analysis can be instrumental in helping to focus your definition of the shape of the future game and also get a glimpse at what the competitors in the future game will possess in the way of the technological know-how, alliance strengths, and core competencies. The reason to focus on licenses is that, especially in the case of an exclusive license, the technology transfer represents a type of strategic alliance because the exclusive licensor has allied itself with the exclusive licensee. Benchmarking should not dominate gap analysis. Care must be taken not to emulate the companies perceived to be setting the standards. In defining the future game and the future winner, no standards yet exist. Your implementation of steps one and two of the analysis is to set the standards. Benchmarking allows *others* to set the standards, and that is not the goal

of gap analysis. Use benchmarking as a *tool* in helping to define the future winner, but not as the compass by which to guide your company.

(e) CURRENT ASSESSMENT. Step 3 in the process is to critically analyze your situation at the present time with regard to all of the characteristics that will be important for winning the future game. The comparison of the core competencies possessed by the theoretical winner with those currently possessed by your company clearly identifies the gaps. This comparison ought also to identify what must be done or obtained to fill the gaps in order to be the theoretical winner of the future game.

(f) FILLING THE GAPS. Although the options for filling the gaps can be many, licensing of the technology that will be needed is certainly a key option. Licensing strategies dominate this book, but other gap-filling methods are available. Additional options can include mergers and acquisitions, joint ventures, minority interests in third-party companies, strategic alliances, cross-licensing, hiring the technical people needed to develop the missing technology, consultants, and contractors.

(i) Beyond Licensing. Some of the options for filling the gaps include:

- Direct licensing of the technology you need for a royalty payment
- Cross-licensing of patent portfolios to obtain the technology you need
- Acquisition of companies possessing or likely to possess the technology you will need in the future[4]
- Strategic alliances
- Research grants and alliances with research institutions and universities
- Contracting for technology development with private companies
- Contracting for technology development with individuals as consultants
- Adding technical staff with the expertise needed to fill gaps
- Minority ownership interests in companies possessing the needed expertise

Regardless of how deficiencies are filled, gap analysis is a method for finding the intellectual property that will be needed in the future. The *map* shows what you have, and the *gap* shows what you need. The entire process does not need to be completed before benefits are realized. Merely defining the future game can yield important information about a company's future.

4. A major problem here is that buying a company often includes acquiring divisions and properties in which you have no interest. The process of selling off undesirable divisions can become time-consuming, deflecting management energies from the primary goals that initiated the acquisition.

CHAPTER 33

MONITORING LICENSE AGREEMENTS

Kathleen M. Kedrowski and Maria S. Lehman*

33.1 INTRODUCTION

The value of intellectual assets has never been more important than it is today. In order to be competitive, today's organizations must create value from all assets, both tangible and intangible. Intellectual assets include such things as brands, know-how, methodologies, technology, licenses, patents, copyrights, trademarks, trade secrets, and trade dress and may account for more than two-thirds of a company's market value. Failure to effectively create, protect, manage, and extract value from intellectual assets can lead to lost business opportunities, revenues, profits, and market share, and, ultimately, to diminished shareholder value.

As companies pursue new ways to increase revenues and bottom-line profits, licensing of core and noncore intellectual assets has become an increasingly prevalent option. Many corporate-suite executives have tasked those within their organizations with developing and executing intangible asset licensing plans and with generating revenues, sometimes in excess of nine figures ($100 million to $1 billion). Failure to monitor and implement the license agreements effectively can leave the licensor and licensee open to such business risks as corporate, financial, and legal risks that can outweigh the benefits.

33.2 OVERVIEW OF LICENSING

Licensing is used as a business strategy for many reasons. Most common strategies include the creation of a business from licensing efforts, licensing selectively to create technology standards, or licensing for strategic business purposes. Companies such as Texas Instruments, IBM, and others have set the standard for how much licensing revenue can be derived from implementing a successful licensing business. IBM makes all of

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its patents available to anyone for nonexclusive licensing after three years, primarily due to the nature of the changing technologies. Others, such as Motorola and Intel, are more selective in their licensing pursuits. For those companies whose business has become licensing, the fundamental belief remains that intangible assets are no longer just legal assets but also business assets, and should be treated and utilized no differently from tangible book assets that generate economic value to the organization.

Surveys show that the market for licensing is anticipated to reach over $250 billion by 2010. From 1980 to 1999, U.S. patent licensing revenues increased 4,000%.[1] In 2000, annual patent licensing revenues alone reached about $130 billion.[2] Data published by the Association of University Tech Transfer Managers (AUTM) indicates licensing between U.S. and Canadian companies and universities has increased to more than $1 billion.[3] Companies such as IBM, Intel, and Texas Instruments publicly announce licensing revenues in excess of $1 billion each year.

The licensing revenues received by these companies are the result of both stick and carrot licensing. In the industry, stick licenses are executed due to misappropriation or infringement of the intellectual property. For example, Texas Instruments (TI) announced in May 1999 that it:

> signed a 10-year cross-license agreement with Hyundai Electronics Industries Co., the world's second largest producer of memory chips. Based on projected Hyundai integrated circuit revenues over the term of the agreement, TI expects to receive royalty payments of more than $1 billion. This agreement complements the planned merger between Hyundai and LG Semicon Co. Ltd. The cross-license agreement follows a jury trial in U.S. District Court for the Eastern District of Texas that was concluded in March 1999 in TI's favor. In that trial, the jury found that TI's patents were valid and that Hyundai willfully infringed them.[4]

Carrot licensing, however, is the result of proactive licensing to others who may have an interest in using the technology, absent any infringement or misappropriation. Many companies use licensing programs to set standards for the use of technology in the marketplace. One company licenses its technology to its competitors, and that technology then becomes the benchmark for use within the industry. While the company receives revenue—from its competitors, no less—its research and development group is working on the next generation of the currently licensed technology, allowing the company to stay one step ahead of its competition. An example of carrot licensing is found in a 2002 Motorola announcement:

> Motorola, Inc. announced that it has made an equity investment in Morpho Technologies, a provider of licensable reconfigurable digital signal processing (rDSP) intellectual property and chips for wireless, imaging, and multimedia applications. Motorola's Semiconductor Products Sector (SPS) licensed the MS1 Core and Motorola Ventures, the strategic venture arm of the global communications and embedded electronics company, made the investment in Morpho Technologies. Terms of the license and investment were not disclosed. "This investment and licensing agreement validates Morpho Technologies' position as a leader in the reconfigurable computing field and serves as an important milestone for programmable technology," said Warren Holtsberg, Corporate Vice President and Director of Venture Investing, Motorola, Inc. "The MS1 core

1. Samson Vermont, "Little-Known Patent Facts and Stats II," *Patent Journal* (March 2002).
2. Ibid.
3. AUTM Annual Licensing Survey, 1999.
4. Texas Instruments, "Cross-License Agreement Expected to Bring More Than $1 Billion to TI over Next 10 Years; Agreement Follows Jury Decision That Validates Strength and Breadth of TI Patents," news release, May 23, 1999.

complements the core technologies used in current Motorola products, and will enable us to develop innovative and cost-effective solutions for our customers."[5]

Whether the licensing efforts are a result of a business or of selective licensing, stick or carrot, licensing can pose significant benefits as well as risks to a business. If not managed properly, the benefits can be all but lost and the risks become significant. Licensing deals have become more complex and difficult to understand as more licensors and licensees enter the foray and new structures and business models are developed.

33.3 LICENSING BUSINESS RISKS

It is commonly held that negotiating a license will take from 18 to 24 months from the identification stage to the actual execution of the agreement. On average, the base term of most licenses is between 3 to 5 years, before renegotiation or the underlying patent or technology becomes obsolete or is no longer applicable or protected. It is clear from Exhibit 33.1 that, although most of the effort takes place in the negotiation and execution stages, the majority of the risk is experienced after the execution of the license agreement.

Licensing can pose a variety of business risks from a corporate, financial, and legal perspective. An effective licensing program will include steps to eliminate, or at least mitigate, the impact on the business should any of these risks materialize. Licensing risks include:

Corporate:

- Dilution of brands
- Misuse of and loss of value of intellectual assets

Financial:

- Misstated financial statements
- Underreported royalty revenue or expense
- Inability to track performance or make forecasts
- Inconsistent/late reporting/past due payments

Legal:

- Vague license agreement terms that cause misinterpretations
- Lack of awareness and accountability
- Litigation

The unforeseen risks of licensing usually occur because the obligations and payments under the licenses are detached and separate from the process of negotiation. In many cases, those involved in the negotiation and execution—legal, business development, and finance professionals—are not the ones tasked with enforcing the appropriate use of the licensed intellectual property or monitoring and collecting payment.

Corporate risks, including brand dilution and misuse of the licensed technology, can result from the failure to institute training regarding licensing practices and the failure to develop a strategic approach to licensing to ensure that the use is aligned with the corporate vision and goals in the marketplace. Licensors should implement best practices to

5. Motorola, "Motorola Invests in Morpho Technologies and Licenses Its Reconfigurable Technology," news release, October 21, 2002.

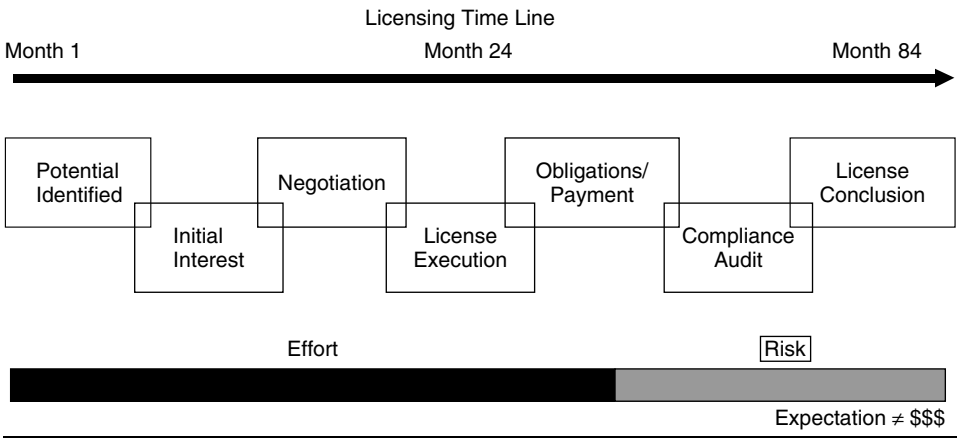

EXHIBIT 33.1 LICENSING TIME LINE

ensure that licensee products are sampled and that their quality control policies promote proper use of the licensed technology.

Financial risks, as noted above, can pose potential economic loss to the organization if not managed. Until recently, the monitoring and collecting of license payments consisted merely of the recording of revenue and depositing of funds based on the licensee's calculated obligations. There was no verification of the terms of the agreement. There was little thought regarding the payment. In fact, if payment was received, it was considered "found money," and in many cases the licensor did not know to which license agreement it applied. Little thought or notice was given to the fact that the royalty was actually a payment for the use of the company's critical assets. A royalty payment is the only financial instrument that allows the party that owes money to inform the receiver of what is owed. This creates great difficulty in assessing whether the payment is proper and whether all obligations under the license have been met. An average 12 to 20% underreporting is common in the licensing industry when licensee payments are left unmonitored, resulting in lost or unrealized revenue for the licensor. It is imperative that licensors monitor or "audit" whether licensees adhere to the terms of the license agreements, a right that is commonly explicit in the language of the agreement.

As the awareness of the intellectual assets increases, so has the trend to assert the licensors rights under the license—to audit the royalty payment and other obligations. Disputes about the differences between the beliefs and expectations of the licensor and the interpretation and actual performance by the licensee have become more prevalent. In 2002, one of the largest verdicts, for over $500 million, for breach of contract and fiduciary duty under a license was entered.

> Genentech Inc., the South San Francisco–based biotechnology giant, was ordered to pay research hospital City of Hope National Medical Center $200 million in punitive damages on top of $300 million in compensatory damages awarded by a Los Angeles jury earlier in the month. Jurors found that Genentech failed to pay royalties on certain drugs arising out of technology invented by City of Hope's scientists under the terms of a 1976 agreement. City of Hope stated that Genentech improperly interpreted the scope of the royalty obligations and further actively concealed from City of Hope the existence of these patent licenses. Jury foreman Herman Askew said the ruling was difficult because the 25-year-old contract between the two parties was ambiguous. The jury had spent two weeks arguing over the meaning of three sections of the 12-page contract, Askew said. Askew further commented, "There really is no bad guy. It's just a business deal that wasn't clear." In his determination of damages, one juror stated he

felt City of Hope had kept sloppy records and was therefore partly responsible for not receiving payments it was due.[6]

From both the court and juror perspective, it is clear that obligations exist for both the licensee and the licensor under these agreements, obligations that require interpretation, communication, and continued involvement beyond the execution of the license.

33.4 LICENSE MANAGEMENT

Licenses result in a business relationship between two parties that may or may not be competitors. As a result, licenses should be managed on a proactive basis, just like all other business relationships. Proactive license management best practices include, but are not limited to:

- Identifying a "point person" for both the licensor and licensee upon execution of the agreement
- Defining up-front key terms, clauses, and other obligations that may not be defined clearly in the agreement
- Actively communicating to understand progress on license obligations
- Developing metrics to measure, track, and monitor payments and other obligations
- Consulting business, technical, and financial groups for implementation risks
- Identifying policies, procedures, and controls necessary and in place to execute the license
- Auditing the licensee's performance under the license agreement

Proactive license management is not reserved only for the licensor. To manage its obligations under the license effectively, the licensee may proactively suggest and implement all of the above best practices.

Many companies, especially those in the business of licensing, implement the best practice of establishing a separate department tasked with managing the licenses. These departments usually hold regular meetings with those in business development, finance, legal, and technology to ensure that the licensing objectives are met and that any challenges, misinterpretations, or issues are addressed promptly.

As noted earlier, under license agreements, particularly those that include running royalties, the licensee is required to calculate and report how much it owes the licensor, based on the terms of the license agreement. The basis for running royalties is usually sales of licensed products, but it also may be based on other measures, such as distribution, quantity, and size. The sales base then may be reduced by certain cost deductions or other applicable deductions particular to the license agreement. Most, if not all, license agreements require the licensee to prepare and submit periodic interim and final royalty statements to the licensor and to pay the royalties due. Additionally, the "books and records" clause of most agreements specifies the types of information as well as the duration for which the licensee must keep the underlying supporting documentation.

Since the licensee is making the royalty payment calculations based on its interpretation of the various license clauses, there is ample room for misunderstanding, misinterpretations, and errors—both intentional and unintentional. In some circumstances, the

6. "Breach of Contract: Genentech Slapped with $500M in Intellectual Property Dispute," Verdict Search, 2002, American City Business Journals, Inc.

royalty terms in the license agreement may be vague, in which case the calculation method used may not be the method intended by one or both of the parties or the spirit of the agreement. Furthermore, the licensee is deciding the types of information and the "books and records" it believes are necessary to support the payments. The underlying support—that which the licensee decides to create and maintain based on its interpretation of the terms of the agreement—is likely all that will be available if and when the licensor decides to review the royalty payments, and could preclude the licensor from being able to audit the historical royalty payments.

Disputes commonly are related to:

- Product coverage (definition of licensed product)
- Sales covered by the license agreement
- License agreement terminology
- Definition of adequate "books and records"
- Acceptable deductions from the royalty base
- Appropriate royalty rates, especially when single and tiered rates are used
- Zero dollar or free sales (samples) of products combined with non–license-bearing products

There are increased risks when the license covers international sales; foreign exchange calculations can affect the royalty calculations, and clear terms must be stipulated in the agreement as to how the conversions will be calculated as well as what denomination of currency the payments will be made in.

Therefore, a critically important part of managing licenses is ensuring licensee compliance. To accomplish this, first and foremost, the licensor must assert its right to audit the performance as defined under the obligations of the license agreement.

33.5 AUDITING THE ROYALTY OBLIGATIONS

Most, if not all, licenses contain a clause stating the legal right that allows the licensor periodically to audit the royalty payments and other obligations under the license. This right normally is called a royalty audit in the licensing industry. The royalty audit right usually is contained in or near the "books and records" clause of the agreement that specifies what types of supporting documentation the licensee is required to keep for the payments made, the duration for which the documentation must be kept, and other obligations under the license agreement.

Royalty audits generally are performed by licensors for either reactive or proactive reasons. Reactive audits, the most common, are usually the result of licensor suspicions that royalties are underreported by the licensee or result from a dispute between the licensor and licensee. Proactive audits are usually part of a strategic license management effort to ensure licensee compliance and to demonstrate protection of rights. No matter the reason for the audit, the process usually results in some type of dispute or litigation matter based on the findings.

A royalty audit is commonly defined as an inspection or analysis of the licensees' process, procedures, and books and records to ascertain whether their obligations under the terms of the agreement have been fulfilled. This analysis requires that the royalty inspector approach the engagement with an objective, investigative approach in order to ascertain whether the royalties were paid accurately and whether other obligations were performed within the terms of the license agreement. In the industry, the term "royalty

audit" "means an investigation by a CPA [certified public accountant], as an objective third party, to ascertain the accuracy and completeness of reporting the amounts due from a licensee to a licensor."[7] "Audit" in this context, however, is a term of art in the industry. It is not intended to be an "audit" as defined under Generally Accepted Auditing Standards (GAAS), in which an opinion is expressed that financial statements have (or have not) been prepared in conformity with Generally Accepted Accounting Principles (GAAP).

Auditing is defined as "a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested parties."[8] Where an audit under GAAS requires the auditor to express an opinion on the financial statements based on the financial statement assertions made by management of the organization, a royalty inspection or royalty "audit" requires an investigation of the royalty payments.

An inspection of royalty accounts is undertaken for two primary objectives. The first objective is to determine whether the licensee has identified, reported, and paid all royalties due for transactions *covered* under the license agreement—commonly referred to as completeness. To do so, the royalty inspector must clearly identify the scope of the inspection in accordance with the terms of the license agreement. This involves identifying all transactions that may be subject to the license, whether reported to the licensor or not. The second objective is to make sure the *computation* of the royalties has been made in accordance with the license agreement—commonly referred to as accuracy. The second objective is a follow-on to the first in that the inspector cannot completely ascertain if the computation is correct if he or she does not know if all the covered items have been included.

In most cases, license agreements allow for the licensor to retain an independent public accountant to perform the inspection. The independent public accountant serves two roles: he or she performs the inspection and serves as a liaison between the licensor and licensee by facilitating communication between the two parties in a nonadversarial manner. In many cases, a technical expert, either from the licensor or independent public accountant, also is involved in order to assist in the completion determination.

The reference to "books and records" in the inspection clause is intended to describe those documents that are to be kept and made available by the licensee for a specified period. This documentation is provided in order to assist the inspector in confirming the completeness and accuracy of the information. Even in the context of a GAAS audit, the intention is not to burden the licensee to maintain and keep every piece of paper that supports the royalty payments or the books and records. It is intended that the critical records supporting the royalty reports be kept, such as system-generated sales reporting. (See Exhibit 33.2.) The remainder of the books and records can be tested on a scope basis through documents or interviews for further confirmation.[9] It is important to note that, even in a GAAS audit, each and every document is not required for review, only those

7. *Litigation Services Handbook*, pp. 25.1–25.2.

8. Auditing Concepts Committee, "Report of the Committee on Basic Auditing Concepts," *Accounting Review* 47 Supp. (1972), p. 18.

9. Once a royalty inspector has reviewed an initial transaction to verify the process by which the transaction is traced through the system, he or she can then select samples to test from the total population of transactions. Scope testing can be performed because the royalty inspector has ascertained the reliability of the financial or nonfinancial information provided with the initial transaction and process review.

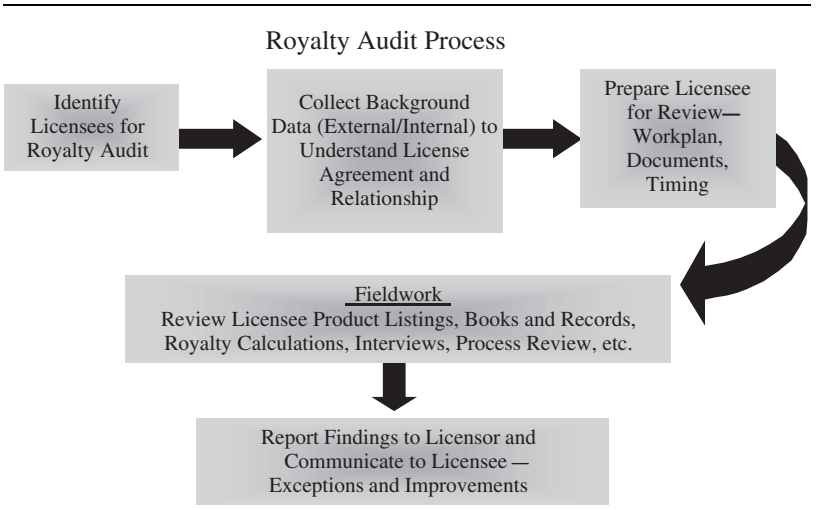

EXHIBIT 33.2 ROYALTY AUDIT PROCESS

pertaining to the financial assertions that are made by management of the organization being audited.

33.6 COMMON AUDIT PROCEDURES AND FINDINGS

In general, a royalty audit may include these nine steps:

1. Gain an understanding of the license agreement, what products are covered, the payment terms, and any other licensee obligations. This is based on the licensor's interpretation, intent, and beliefs regarding the license.
2. Gain an understanding of the licensee's interpretation of the agreement and its performance under its interpretations.
3. Review the licensee's accounting and royalty reporting systems.
4. Recalculate historical royalties paid.
5. Recalculate royalties due using current records.
6. Review and test supporting books and records.
7. Identify results and communicate findings.
8. Identify areas for improvement in the royalty process.
9. Identify opportunities to refine the license agreement terms.

The inspection can uncover a variety of different contract breaches. The most common breaches may be categorized into financial, misuse, and documentation. We do not cover legal breaches in this chapter, as we are not legal professionals. Financial breaches may include underpaid and nonreported royalty payments from:

- Forgotten minimum payments when sales have not yet commenced
- Excluded products such as new licensed products, add-on products, replacement or spare parts, samples
- Excluded geographic or subsidiary sales
- Inappropriate or excessive deductions from the royalty base
- Incorrect royalty rate application

- Exclusion of "demo" or "training" products that have been with the customer for an excessive period of time
- Failure to perform other obligations (such as minimum sales force requirements, advertising, and marketing) that may limit the sales potential of the licensed product

Misuse breaches commonly include cases where the licensee has used the licensed technology in products, geographies, and other instances that are not allowed under the license agreement. A common example is using the technology in a foreign application when the license territory is limited to the United States. Similarly, the license may limit the use to a particular application, such as Italian food, and the licensee may use the product in Mexican food. There are also potential brand dilution risks to the licensor brand when licensees misuse the licensed technology.

Documentation breaches result either from the licensee's failure to keep adequate and complete "books and records" in support of its royalty payments and other obligations, or from its failure to report on time, completely, and accurately on its obligations. Documentation failures can result in a number of complications, particularly if the licensee cannot prove or support its obligations under the license agreement. Most "books and records" clauses are not specific and typically include vague terms. They do not specify, for example:

- What types of core records should be kept
- What supporting records should include
- Whether unique records must be created for the royalty payments or regular course of business documents are sufficient
- Whether the records are to be kept in hard copy or electronic form
- Whether the auditor can make copies

In many licenses, the length of time "books and records" must be kept is undefined, yet licensors must understand the document retention policies of the licensee when negotiating the terms of the license agreement.

33.7 REMEDIES FROM BREACHES OF LICENSING CONTRACTS

In the industry, it is widely believed that no less than 40% of the royalty calculations are inaccurate, resulting in royalty dollars lost of 12 to 20% from underreporting. Underpayments can range from $5,000 to millions of dollars. (Note the $200 million underpayment in the Genentech matter.) Not surprisingly, overpayments are rare.

Remedies under a breach of licensing contract are defined by the terms of the licensing agreement and may include compensatory damages of unpaid royalties, lost profits for nonperformance, loss of asset value (diminution of value), and interest, and, under certain state laws, punitive damages. The calculation of these amounts is subject to the definitions and terms of the license agreement.

The license agreement also defines the court where any disputes are to be tried. Many licenses call for dispute resolution in arbitration, under the International Chamber of Commerce or the American Arbitration Association. In other cases, the breaches may be tried in state courts. The law under which the cases are tried is dependent on the license terms.

A primary area in which the intellectual asset litigation support professional can assist the licensor is in the calculation of unpaid royalties. A clear understanding and interpretation of the license supports the calculation of the royalties due under the license. While

this information usually comes to light during the royalty audit, the other remedies mentioned may require separate calculations. The lost profits suffered by the licensor may be considered. In most cases, lost profits may be only the unpaid royalties. However, in certain circumstances, other obligations of the licensee that may not have been performed, such as advertising or marketing, may result in additional lost royalties or lost profits to the licensee. Loss of asset value requires a calculation that makes the licensor whole, if it can be proven that the licensed intangible under dispute has lost value, temporarily or permanently, due to the actions of the licensee. This may require a valuation of the licensed intangible prior to and after the license agreement. Punitive damages may be awarded, as in the Genentech case mentioned earlier. In addition, many licenses also include clauses that allow recovery of costs to enforce the agreement. If those clauses are upheld in court, the amount of money involved can be substantial.

The intellectual asset litigation support professional can assist the licensor and licensee in a number of additional ways, including:

- Performing the royalty audit, identifying the areas of differing interpretation, and quantifying the exposures
- Assisting the licensee being audited to contain the scope of the audit to within the bounds of the license agreement
- Providing expert testimony on the financial aspects of a license dispute, including the benefit of the license bargain, meaning of the audit and "books and records" clauses, and quantum of differences
- Setting up a license system for the licensor to monitor, track, and measure performance or to proactively test procedures and review documentation, payments, and other license obligations
- Assist the licensor in deciding on the licensees to audit
- Review license agreements to identify best practices that can limit the licensor's financial, corporate, and legal risks

33.8 CONCLUSION

Licensing can benefit the intellectual asset owner in a variety of ways, from creating incremental revenues and profits, to opening new markets, to creating market technology standards. The benefits can be endless. However, if not monitored properly, a license can open the intellectual asset owner up to significant risk, not only from the loss of the expected incremental revenues but also from loss of value of the intellectual asset altogether through brand dilution. Proactive license management and enforcement of audit rights are key to ensuring that the benefits intended in the license are optimized.

PART III

INFRINGEMENT DAMAGES

Infringement damages are yet another measure of value under unique circumstances. The question arises in matters relating to infringement as to what value was lost by the injured party due to the actions of an infringer. It can be an absolute amount or a running royalty translated into a lump sum. This third section of our volume delves into the methods recognized by the Courts for measuring intellectual property infringement damages. The law and methods for determining damages for patent, trademark, trade secret and copyright misappropriation are different, and we attempt to address the methods appropriate for quantifying damages for these different properties.

CHAPTER 34

LOST-PROFIT CALCULATIONS

The central question in lost-profit calculations was succinctly put by Justice Brennan, "Had the Infringer not infringed, what would Patent Holder . . . have made?" [*Aro Manufacturing Co. v. Convertible Top Replacement Co.*, 377 US 476, 507, 141 USPQ 681, 694 (1964)]. The question may be answered by identifying and then quantifying the amount of sales that were lost due to infringement, and the amount of profits that the patent holder would have made on those lost sales. Lost-profit calculations are a function of sales volume, price, and costs.

The determination of the lost sales or volume, the price at which the patent holder would have made those lost sales, and the characterization of the costs necessary to make the lost sales are the central questions in the calculation of lost profits. This chapter discusses the framework and underlying analysis necessary for determining lost sales, issues surrounding pricing and the nature of costs (including a detailed analysis of the difference in fixed and variable costs), and the determination of incremental profitability. This chapter will also provide an overview of some of the major cases that constitute the analytical framework used to determine lost profits, particularly in patent infringement matters. Wherever possible, numerical examples are used throughout the chapter to clarify some of the theoretical points made in the text and to underscore the impact of various portions of the analysis on the calculation of lost profits. A list of some of the cases that have had a significant impact on lost-profit damage theory in the field of intellectual property is provided at the end of this chapter.

34.1 DEFINITION OF LOST-PROFIT DAMAGES

As previously noted in Chapter 1, the definitions of infringement damages differ slightly for patents, trademarks, and copyrights. Therefore, we must clarify those definitions to arrive at a definition of lost-profit damages.

34.2 PATENT INFRINGEMENT

Title 35, Section 284 of the United States Code (1970) states that: "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use of the invention by the infringer, together with interest and costs as fixed by the court." The focus of damages in the form of lost profits in a patent infringement matter is on the lost profits of the plaintiff (the patent holder), and not on the defendant (the infringer). In some cases, the profits of the infringer are considered as an indication of the profits that the patent holder would have earned had there been no infringement. It should be noted that the profits of the defendant are available as a measure of damages for the infringement of design patents.

Title 35, Section 289 of the code states that:

> Whoever during the term of a patent for a design, without license of the owner, (1) applies the patented design, or any colorable imitation thereof, to any article of manufacture for the purpose of sale, or (2) sells or exposes for sale any article of manufacture to which such design or colorable imitation has been applied shall be liable to the owner to the extent of his total profit, but no less than $250, recoverable in any United States district court having jurisdiction of the parties.
>
> Nothing in this section shall prevent, lessen, or impeach any other remedy which an owner of an infringed patent has under the provisions of this title, but he shall not twice recover the profit made from the infringement.

Lost-profit damages are based on an analysis of the additional amount of profits that the patent holder would have made but for the infringement. If the patent holder can show that absent the infringement, it would have made the sales made by the infringer, then it is entitled to the profits that it would have made on those additional sales.

> If in all reasonable profitability, the Patent Owner would have made the sales which the Infringer has made, what the Patent Owner in reasonable probability would have netted from the sales denied to him is the measure of his loss, and the Infringer is liable for that. [*Livesay Window Co. v. Livesay Industries, Inc.,* 251 F.2d 469, 471-72, 116 USPQ 167, 168-70 (5th Cir. 1958)]

34.3 TRADEMARK INFRINGEMENT

Title 17 of the United States Code, Section 1117 states that: "(a) the plaintiff shall be entitled to recover (1) defendant's profits, (2) any damages sustained by the plaintiff, and (3) the costs of the action. . . . In assessing profits the plaintiff shall be required to prove the defendant's sales only; defendant must prove all elements of costs or deduction claimed."

Trademark infringement has traditionally been satisfied by injunction without monetary award. When monetary damages are awarded, the amount can be based on:

- Defendant's profits
- Plaintiff's damages
- Compensation for corrective advertising
- Punitive damages
- Attorney's fees
- Costs

Unlike a claimant for patent damages, the plaintiff in a trademark action can receive the profits earned by the infringer for infringing activities. Plaintiffs in a patent case are limited to recovering only the profits that they failed to earn due to the infringement. In both cases the initial focus of damages is on profits.

34.4 COPYRIGHT INFRINGEMENT

Title 17 of the United States Code, Section 504 states that:

> (a) In General—. . . an infringer of copyright is liable for either (1) the copyright owner's actual damages and any additional profits of the infringer, as provided for by sub-section (b); or (2) statutory damages, as provided by sub-section (c).
>
> (b) Actual Damages and Profits—The copyright owner is entitled to recover the actual damage suffered by him or her as a result of the infringement, and any profits of the infringer that are attributable to the infringement, and are not taken into account in computing the actual damages.

> In establishing the infringer's profits, the copyright owner is required to present proof only of the infringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work.
>
> (c) . . . the copyright owner may elect, at any time before final judgment is rendered, to recover, instead of actual damages and profits, an award of statutory damages for all infringement . . . in the sum of not less than $250 or more than $10,000 as the court considers just.

Unlike a patent case, but similar to a trademark case, a copyright action allows the plaintiff to receive the profits earned by the defendant from his infringing activities. In addition, where the infringer's profits are less than the amount the plaintiff would have earned, then an additional amount can be awarded to the plaintiff. Plaintiffs in a patent case are limited to recovering only the profits that they would have earned absent the infringement. The same fundamental analyses discussed in this chapter can serve as the basis for quantifying patent, trademark, and copyright lost profits.

34.5 LOST PROFITS

Damages can be due to a combination of lost unit sales, lower unit sales prices, higher costs such as increased marketing costs, and/or lost sales on ancillary products that are typically sold with the patented product. Damages from lowered unit sales are typically caused by the competition due to the infringer providing customers with an alternative source of the patented product. The lost-profit calculation is based on the profits that the patent holder would have made from the sale of the units, but for the infringement, even if some of the components of the units were not patented. The patent holder can recover lost profits on the sale of products that include more than the patented feature. For example, the patent holder can include the sale of a kit in the damage calculation where only one of the components is patented. Lost profits are calculated on the selling price of the entire unit as adopted by the entire market value rule, as stated below:

> The entire market value rule allows for the recovery of damages based on the value of an entire apparatus containing several features, even though only one feature is patented. [*Lessona Corp. v. United States* 599 F.2d 958, 974, 202 USPQ 414, 439 (Ct. C. 1981)]

It should be noted that defining the lost unit might have a significant impact on the amount of damages. For example, if the alleged infringed unit is part of a set of products, determining damages on the individual unit instead of the entire set of products will cause a significant change in the lost-profit calculation. Typically, it will be in the patent holder's interest to have as broad a definition of the lost unit as possible, while it will be in the infringer's interest to limit the definition of a lost unit since that will reduce the lost profits per unit.

Lost profits can be awarded for the lost sales of ancillary or accessory products. These ancillary products are referred to as "convoyed sales." Convoyed products are typically sold together with the patented product. In order for the patent holder to claim damages in the form of lost profits on the convoyed sales, the same "but for" condition must be met. The patent holder must demonstrate that, but for the infringement, the patent holder would have sold the convoyed products, and after subtracting the appropriate costs, would have made the calculated lost profits. The convoyed products may not directly use the intellectual property in question and in fact may, in certain circumstances, be the larger portion of the lost sales.

Additional and often specialized analysis is required in order to prove that a sale would have been convoyed. Consider an example of a lawn mower with a patented feature that was infringed. The patent holder is claiming not only lost sales of lawn mowers

due to the infringement, but also lost sales of some grass catchers and trimmers. In order for the patent holder to demonstrate the positive relationship (both causal and quantitative) between lost sales of the lawn mowers and the grass catchers and trimmers, the following types of analyses might be useful:

- Trend analysis might be conducted to help demonstrate a relationship between the patented and the ancillary products, that is, between lawn mowers, grass catchers, and trimmers. The results of the trend analysis might show that for every 1,000 mowers sold, 400 grass catchers and 300 trimmers were also sold.
- Depending on the availability of data, the use of regression analysis might be an appropriate method.
- An understanding of the customer's buying decision is important in order to ensure that there is a causal link between the sales of the patented and the convoyed products. For example there might be a difference between first-time buyers and customers replacing an old or broken lawn mower.
- In addition, the product and marketing literature, coupled with an analysis of the incentives offered by the manufacturer to the sales force, might be extremely useful in developing a causal argument.
- A detailed invoice or purchase order analysis of the patent holder's and the infringer's sales is often the most effective way to link the sales of the infringing and convoyed products. In this example, the invoice analysis might understate the lost convoyed sales, because sales of grass catchers made on a different date—after the customer decided to buy the accessory—might not be captured in the analysis.

As an aside, it is interesting to note that the size and the profitability of the convoyed sales may have an impact on the size of the royalty that a potential licensee would be willing to pay to the patent holder. The interrelationship between the lost-profit calculation and the royalty calculation may be important in cases where the patent holder is claiming lost profits on a portion of the infringer's sales and a royalty on the remainder.

Lost profits can also be the result of product price erosion brought about by the infringer's competition. Price erosion may be in the form of a forced decrease in the price of the patent holder's product, in the face of the competition due to the actions of the infringer. In addition, the patent holder can claim price erosion if it was not able to raise prices, or maintain its historic rate of increase in price levels, in the face of the competition caused by the actions of the infringer. The price erosion per unit is applied to the patent holder's lost sales and the *actual historical* sales made by the patent holder during the entire period for which price erosion is being claimed. Because price erosion is applied to both the actual and the lost sales of the patent holder, it may represent the majority of the lost-profit damages claim.

The analysis of the sales price should look at the price of the patent holder's and the infringer's products before and after the time of infringement. This should be compared to the selling price of other similar products of the patent holder and other competitors, to show what noninfringing products sold at before and after the time of infringement. In addition, it is important to understand the marketing philosophy of the patent holder. For example, if the patent holder had a policy of not raising prices during a time period when competitors were steadily increasing prices, it may not be appropriate to claim price erosion during that time period. Lost profits should be calculated at the selling price that the patent holder would have charged had the infringement not occurred.

It is important to note that there are two components to the calculation: the price at which the patent holder would have sold the product but for the infringement, and the number of units that the patent holder would have sold at the higher selling price. A correct determination of the elasticity of demand is necessary in order to calculate the number of units in the price erosion calculation.

This chapter will not explain the intricacies in calculating price erosion, particularly regarding the determination of the correct number of units that are to be included as part of the price erosion calculation. The discussion here is intended to be more general. There are a number of issues that need to be accounted for in the determination of price erosion in order to ensure that damages are not speculative or overstated. They include:

- The establishment of a causal link between the actions of the infringer and the price erosion of the patent holder's patented product.
- An analysis of other market factors including competitive products, noninfringing alternatives, substitutes, and the role, if any, of the infringer in developing the market for the patented product.
- In certain cases it might be appropriate to apportion the actual price erosion between the actions of the infringer (part of the damages claim) and other factors that are not related to the actions of the infringer and would therefore be excluded from the damages claim.
- It is a fundamental economic principle that people buy more of a product at a lower price and less of a product at a higher price, holding all else constant. The impact of this principle can be quantified by measuring the slope of the demand curve over the relevant range of quantities.
- It is important to understand the impact of the price decrease on the actual and potential quantity demanded of the infringed product, in order not to overstate damages.
- An econometric determination of the elasticity of demand might be appropriate in order to estimate the number of units that are subject to price erosion.
- In addition, as stated above, it is important to understand the role of the infringer and competitive products and companies. In economic parlance, price erosion is a measurement of damages based on a movement along the demand curve. Competitive products and companies may have been instrumental in shifting the demand curve outward. For example, the infringer may have decreased prices and employed a channel of distribution not used by the patent holder to create demand for the product with a type or class of customers to whom the patent holder never historically marketed or sold. An infringer that sold the infringing product at a much lower price directly to consumers, where the patent holder only sold to the commercial market, is such an example.
- It is important to analyze and separate the impact of the price erosion from other potential causal links such as a different channel of distribution. If the patent holder would *not* have made the sale but for the infringement, then the patent holder is not entitled to lost profits and may only be entitled to a reasonable royalty.
- In certain instances there may be a case where the impact of the price erosion will be felt into the future, that is after the date of the injunction or the trial. It may be necessary to estimate how long it will take the patent holder to return to the pre–price erosion sales price.

A final note of caution regarding price erosion. The relative size of the price erosion component of damages has increased, and the courts are typically requiring an increased level of sophistication in the economic analysis for demonstrating a causal link and actually quantifying price erosion damages.

Higher production costs can stem from infringement. At certain levels of sales volume, significant economies of scale can be enjoyed. Since the infringement results in lower sales volumes, the patent holder may be denied the benefit of some of these economies of scale, which may result in higher production costs.

Economies of scale that the patent holder may be denied might include:

- Discounts on the purchase of various inputs and raw materials
- Production efficiencies and cost savings due to the use of batch processes and longer production runs
- Reduced manufacturing start-up and change-over costs due to longer production runs
- Cost savings due to the ability of the patent holder to run two or three shifts and thereby lower the per unit costs by spreading their fixed costs over a larger volume

Other costs that the patent holder might incur as a result of the infringement might include:

- Increased advertising costs needed to overcome the effects of the increased competition due to the infringement—increased advertising might also be necessary to overcome confusion by customers.
- The increased use of discounts, rebates, and warranties by the patent holder is another category of costs, although it is important not to double-count these costs if there is also a price erosion claim.
- Increased sales costs and expenses due to the infringement, such as the hiring of additional sales personnel and the diverting of managerial resources from other parts of the company to deal with the infringed product, may also be appropriate depending on the particular fact pattern that is being analyzed.

Lost-profit calculations are based on defining the amount of profits that would have been earned on each additional sale, but for the infringement. These amounts are traditionally calculated on an incremental basis, as will be illustrated later in this chapter. The same analysis is also applicable to isolating the profits of trademark and copyright infringers.

34.6 THE PANDUIT TEST FOR CALCULATING LOST PROFIT

In order for a patent holder to receive damages in the form of lost profits, the patent holder must satisfy a test adopted by Chief Judge Markey of the Court of Appeals for the Federal Circuit (CAFC), which requires the patent holder to prove that [*Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.,* 575F2d 1152, 197 USPQ 726 (6th Cir. 1978)]:

1. Demand existed for the infringed product.
2. Acceptable noninfringing substitute products were not available to satisfy demand.
3. The patent owner possessed the manufacturing and marketing capability to exploit demand.
4. Lost profits can be quantified.

Exhibit 34.1 is a graphical depiction of the Panduit test. As can be seen in the diagram, if any of the four parts of the Panduit test are not met, the patent holder is not able to get damages in the form of lost profits and is only entitled to damages in the form of a reasonable royalty. The rest of this chapter will walk through the Panduit test and discuss how the test has evolved as later case law has offered new interpretations and modifications.

Demonstrating that demand existed for an infringed product can be straightforward. If both the patent holder and the infringer have made sales of the product on a regular basis to informed customers, then demand is easy to show. Demand is often demonstrated by:

- Showing the levels and growth of sales of the patented product
- Mapping the inverse relationship between the patent holder's and the infringer's sales, that is, demonstrating that the sales levels or growth in sales of the patent holder's products declined as the infringer's sales grew
- Reviewing the infringer's business plans and product literature that may speak to the importance of the patented product
- In the absence of good data, consumer surveys can be useful to show that customers would buy the patented product in question if it were available to them.

It is important to note that the demand for the patented *feature* is the essence of the first prong of the Panduit test. If the infringer is able to show that there is no demand for the patented feature, either that consumers who purchased the infringing product were unaware of the patented feature or that the patented feature was not part of their buying decision, then the patent holder may fail the first prong of the Panduit test and damages may be reduced to a reasonable royalty.

The second prong of the Panduit test is the absence of acceptable noninfringing alternatives. It is here that much of the analysis and interpretation of Panduit has occurred, around the definition and proof of the three words "acceptable," "noninfringing," and "alternatives." The traditional interpretation of this part of Panduit has been that the patent holder must prove that there is a two-supplier market. A two-supplier market

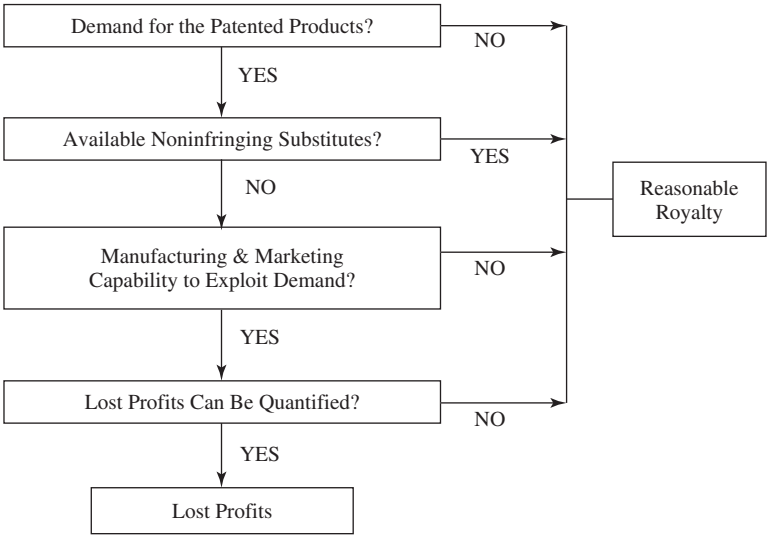

EXHIBIT 34.1 THE PANDUIT TEST FOR LOST PROFITS

implies that a customer or a potential customer would either have purchased the patent holder's product or the infringing product. Therefore, absent the infringement, all customers would have purchased the patent holder's product.

The patent holder traditionally has a narrow interpretation of what a consumer finds to be an acceptable alternative. Under the traditional Panduit analysis, the patented advantages are used as an indicator of consumer behavior. The patent holder proves that there are no acceptable noninfringing substitutes by showing that the alternatives are inferior and that they do not have the distinct features and benefits of the product that has the patented feature. The infringer attempts to show that there are many acceptable alternatives and that it is not possible to demonstrate with any reasonable degree of certainty that the patent holder would have sold its product absent the infringement.

Often the analysis hinges on the interpretation of the relevant market and what consumers were looking for when they purchased the infringing product, in order to predict what they would have done in the absence of the infringement. A broad market may exist, but a subcategory of the market or a niche market might be proved to exist for the patented product in question. In the niche market, alternative products may be unavailable. Similarly, alleged alternatives can often be shown as having less utility. In other instances, alleged alternatives may have a significantly higher price so that they are not viewed by the consumer as an alternative. Alleged substitutes might be shown to have higher maintenance costs or not have all the features and benefits that the patented product has. The alleged alternatives may be less reliable or not available in the same size or product configuration as the patented product. An alternative product is not acceptable if it does not have the same benefits as the patented feature. The infringer has to provide an acceptable answer to the question, "If there are acceptable noninfringing alternatives, why did the infringer use the patent holder's intellectual property in order to make and sell its infringing product?"

In fact, the Federal Circuit has explained and clarified the meaning of an acceptable noninfringing substitute:

> However, the mere existence of a competing device does not necessarily make the device an acceptable substitute. A product on the market which lacks the advantages of the patented product can hardly be termed a substitute acceptable to the customer who wants those advantages. Accordingly, if purchasers are motivated to purchase because of particular features available only from the patented product, products without such features—even if otherwise competing in the market place—would not be acceptable noninfringing substitutes." (*Standard Havens Products, Inc. v. Gencor Industries, Inc.*, 953 F.2d 1360, 1373)

An analysis of advertising, sales, and product literature and materials may be helpful in developing an analysis of acceptable noninfringing alternatives. Advertising materials are typically quick to promote new product features to attract customers. Indirectly, an analysis of advertising materials can show that customers purchased the infringing product because of the infringing features. Such an analysis also makes it difficult for an infringer to argue that customers did not know about the patented feature.

Often in the case of a dispute where one or both of the products are new, particularly in the consumer product sector, both companies have engaged in extensive market research. Market research and preference testing of products at or around the date of the product launch (conducted to test acceptance and understand what the drivers are in the sale of the product) can be extremely useful in developing an analysis of consumers' preferences and the utility of the patented feature of the products in dispute. These documents may be extremely useful in developing an analysis of acceptable noninfringing alternatives.

Even if an acceptable noninfringing substitute is proven to exist, the patent holder can still argue that it would have captured some of the sales of the infringer and therefore it is

still entitled to some damages in the form of lost profits. An important question becomes, "What would the customers have done if the infringing product had not been on the market?" Some of the customers would have purchased the acceptable noninfringing substitutes. Some still might have purchased the patent holder's product. It is then necessary to quantify what share the patent holder would have obtained in the absence of the infringement. As explained later in this chapter, recent case law has dealt with this issue. In this case the market shares of the patent holder and the infringer in the relevant product market are used to determine the infringing units that are part of the lost-profit calculation.

The third prong of Panduit is capacity. A showing of manufacturing and marketing capacity and capability requires the patent holder to prove that the infringed sales could have been made, and made within the relevant time period. The complexity of the analysis is fact-specific. In an extreme situation, the determination of capacity may require a multidisciplinary approach involving the damage expert with support from an engineer or someone with a marketing background in the specific industry. The analysis necessary to determine capacity may include a number of factors such as:

- The relative number of lost units compared to the historic sales of the patent holder. The larger the volume of lost sales claimed by the patent holder compared to its historic sales volume, the more difficult it may be to demonstrate capacity.
- The size and effectiveness of the sales and distribution network that the patent holder has in place compared with what it would need in order to make the lost sales volume.
- Channels of distribution of the actual historic sales may differ from those channels where the infringer made the infringing sales. The patent holder may need to demonstrate that it had the ability to make sales through these alternate channels of distribution in order to prove marketing capacity.
- It may be necessary for the patent holder to increase production capacity. The patent holder would need to demonstrate the ability (financial and technical) to increase production within the required time period. In addition, it may be necessary to adjust the calculation of the incremental profit margin to reflect the additional investment by the patent holder in increased capacity.
- In certain industry sectors, such as pharmaceuticals, increasing production capacity requires certification and approval from government agencies such as the Food and Drug Administration. These approvals may increase the cost or time required before the patent holder can increase production.
- Analysis of the cost and availability of certain key raw materials may be necessary in order to demonstrate that the patent holder had the ability to manufacture the lost sales that are being claimed in the lost-profit calculation.

The fourth prong in the Panduit test is the actual calculation of lost profits, which is explained in more detail in Section 34.9. Lost profits do not have to be calculated with absolute precision.

In order to calculate damages based on events that never actually took place, the general standard of proof is one of "reasonable probability." Reasonable probability is somewhere in the middle of the spectrum of opinion; it is neither unfounded speculation nor absolute precision. Examples of how the courts have interpreted reasonable probability include:

"In proving his damages, the patent owner's burden of proof is not an absolute one, but rather a burden of reasonable probability" *Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065, 219 USPQ 670 (Fed. Cir. 1983).

"In general, the determination of a damage award is not an exact science. The trial court must best approximate the amount to which the patent owner is entitled." *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 863, 226 USPQ 402 (Fed. Cir. 1985).

"The amount of lost profits awarded cannot be speculative but the amount need not be proven with unerring precision." *Bio-Rad Laboratories, Inc. v. Nicolet Instrument Corporation*, 739 F.2d 604, 616, 222 USPQ 654 (Fed. Cir.) cert. Denied, 469 U.S. 1038 (1984).

In addition, it should be remembered that the courts have held that "when the amount of damages cannot be ascertained with precision, any doubts regarding the amount must be resolved against the infringer." (*Lam Inc.*, 718 F.2d at 1065). In jury cases, "awards unless the product of passion and prejudice, are not easily overturned or modified on appeal." [*Weinar v. Rollform, Inc.*, 744 F. 2d 797, 808, 223 USPQ 369, 375 (Fed. Cir. 1984)]. As a practical matter, since the determination of what is "probable" and/or "reasonable" is subjective and difficult, the relative credibility of the damage experts is vital.

Damages in the form of lost profits may be expressed as an identity in equation form as either:

$$\text{Lost profits} = \text{Lost revenues} - \text{Incremental costs} \qquad \text{(Eq. 34.1)}$$

or

$$\text{Lost profits} = \text{Lost revenues} \times \text{Incremental profit margin} \qquad \text{(Eq. 34.2)}$$

where:

Lost revenues are the lost units multiplied by the price per unit

Incremental costs are those costs necessary to make and sell an additional unit and

The incremental profit margin is defined as the profit left after the deduction of those costs necessary to make and sell an additional unit, expressed as a percentage of the unit price of the product

It is possible to theoretically divide the lost profit identity into two parts: the "but for" lost sales or revenues, and the incremental profit margin. Section 34.7 provides a brief overview of some of the major decisions since Panduit that had an impact on the theory of damages through refinements in the interpretation of the determination of the "but for" condition. Section 3.8 focuses on the determination of the correct incremental profit margin.

34.7 CALCULATING LOST PROFIT AFTER PANDUIT

The "but for" question articulated in *Aro* and the analytical criteria outlined in the four-pronged *Panduit* test remain as the basic framework for the determination of damages in the form of lost profits in patent infringement matters. Case law and damage theory have evolved since Panduit, with many commentators arguing that there has been a lowering of the threshold for claiming lost profits and a tilting of the standard in favor of the patent holder.

This section will provide a brief overview of some of the major cases and highlight their contribution to damage theory in patent infringement matters. Where possible, the cases and their contributions will be contrasted to Panduit without offering any commentary on the issue of whether the courts are changing the threshold or balance in favor of the patent holder.

(a) STATE INDUSTRIES V. MOR-FLO INDUSTRIES. In *State Industries Inc. v. Mor-Flo Industries Inc.*, 883 F.2d 1573 (Fed. Cir. 1989) the court modified the second prong of the Panduit test: Acceptable noninfringing substitute products were not available to satisfy

demand. Before *State Industries*, the traditional approach was to require that there be a two-supplier market—in other words, that there was an absence of noninfringing substitutes. As the Federal Circuit notes, *State Industries* was "the first time we have considered whether lost profits can be based on market share." (*State Industries*, 833F.2d at 1577)

After successfully proving infringement State Industries claimed lost profits on the lost sales that they asserted were attributable to the infringing activity of Mor-Flo. State Industries obtained lost profits on lost sales in proportion to their market share and a reasonable royalty on the balance of the infringing sales. While *State Industries* marks a dramatic change in the interpretation of the second prong of Panduit, the CAFC still retained the essential analytical framework of Panduit:

> A standard way of proving lost profits, first announced in *Panduit Corp. v. Stahlin Bros. Fibre Works*, is for the patent owner to prove: "(1) demand for the patented product, (2) absence of noninfringing substitutes, (3) his manufacturing and marketing capability to exploit the demand, and (4) the amount of lost profit he would have made." The district court relied heavily on this test and we have accepted it as a nonexclusive standard for determining lost profits. With only slight modification we think it fits here and confirms the district court's judgment (Id. at 1577).

State Industries holds that in a situation where there are two or more competitors in addition to the patent holder, the patent holder may be awarded lost profits on infringing sales for at least its market share. It appears that *State Industries* allows the patent holder to bypass the second prong of Panduit when the patent holder is able to establish its market share and focus the analysis on the other three prongs of the test. The court modifies Panduit by recognizing that market share is an important factor in the analysis of the "but for" question. It is possible for the patent holder to assert and recover lost profits in a market where there are other competitors besides the infringer.

The CAFC affirmed the application of the market share test articulated by the district court, but the test was only to be used as a substitute for one of the prongs of the Panduit test. The court therefore implied that the market share test was consistent with Panduit.

State Industries changes the analysis of the "acceptable" part of the noninfringing argument. Under the traditional Panduit approach, the analysis focuses on the patented feature; only products that have the same patent features and benefits are regarded as acceptable. The patent holder proves that noninfringing alternatives are not acceptable by virtue of the fact that they do not have the patented features and that the consumer would therefore not have purchased those products in a world where the infringing product was not available. The market share approach broadens the scope of the analysis to include the analysis of consumer behavior, competition, competitors, and the nature of the market. Determining acceptability is now typically more than an analysis of the patented feature. It should be noted that the patented feature is still a central issue in the determination of lost profits, as it is covered under the first prong of Panduit as part of the analysis of the demand for the patented product.

(b) BIC LEISURE PRODUCTS V. WINDSURFING INTERNATIONAL. In *BIC Leisure Products v. Windsurfing International Inc.*, 761 F. Supp. 1032, 19 USPQ 2d 1992 (S.D.N.Y. 1991), the court again refines the second prong of Panduit. In revisiting the second prong of Panduit, the court took the opportunity to go further down the road of economic analysis and recognized that Panduit 1, the demand for the patented product, and Panduit 2, the absence of noninfringing substitutes, are related.

BIC Leisure Products, Inc. ("BIC") manufactured and sold sailboards and infringed on a sailboard technology patent held by Windsurfing International, Inc. ("Windsurfing"). There were at least 14 other competitors in the sailboard market during the 3 years

of infringement, and most of them used technology licensed from Windsurfing. Windsurfing had a market share of 29.2%, 25.6%, and 13.6% during the infringement period and claimed and was awarded by the district court lost profits in accordance with its market share in the "sailboard market" and its established royalty on its licensees' share of the "sailboard market."

At the trial BIC argued that there were in fact two different markets for sailboards: the market for the relatively high-priced "One-Design" boards sold by Windsurfing, and the lower-priced entry market where BIC and Windsurfing's licensees sold their boards. BIC's argument was not that Windsurfing was not entitled to its market share under the second prong of Panduit. The BIC position was that since it and Windsurfing competed in different markets, Windsurfing did not pass the first prong of Panduit.

On appeal, the CAFC reversed the award of lost profits. It appears that the CAFC based their opinion on the facts that:

1. Windsurfing's sailboards typically sold for 65 to 80% more than BIC's.
2. "Demand for sailboards is relatively elastic" particularly at the entry level. This means that consumers are very price sensitive at the entry level—a 1% increase in the price of entry-level boards will cause a decrease of more than 1% in the number of boards demanded.
3. "BIC's customers demonstrated a preference for sailboards priced around $350, rather than One-Design boards priced around $600."

The CAFC concluded that Windsurfing failed the "but for" test and stated that "without BIC in the market, BIC's customers would have likely sought boards of the same price range."

The court appears to reject the market share interpretation of the second prong of Panduit based on specific evidence as to the characteristics of the various sailboards. BIC had a lighter hull design that allowed for a faster more maneuverable board than Windsurfing's One-Design board. The fact that there were Windsurfing licensees in the market that were competing at prices similar to BIC's was an important factor in the court's decision. Because there was a substantial delay between the liability and damages phases of the trial, the court was able to benefit from a pre- and post-injunction "experiment." "Windsurfing's sales continued to decline after the district court enjoined BIC's infringement. . . . According to the record, the principal beneficiary of BIC's exit appears to be O'Brien." O'Brien was a Windsurfing licensee whose price was between Windsurfing's and BIC's.

BIC does not invalidate the market share approach articulated in *State Industries*, which modifies the second prong of Panduit. Windsurfing fails to get to the second prong of Panduit. The court rejects the lost-profit award of damages based on Windsurfing's market share because the court holds that Windsurfing fails to prove that it was in the same market as BIC and therefore does not pass the "but for" test.

(c) RITE-HITE CORPORATION V. KELLEY COMPANY, INC. In *Rite-Hite Corporation v. Kelley Company, Inc.*, 629 F. Supp. 1042, 231 USPQ 161 (E.D. Wis. 1986), 35 USPQ2d 1065 (Fed. Cir. 1995), the CAFC broadened the scope and interpretation of the "but for" rule that was traditionally used in Panduit.

Rite-Hite, the holder of US Patent 4,373,847 (the "'847 patent"), manufactured industrial equipment, including devices that secure vehicles to loading docks during loading and unloading. Two vehicle restraints made by Rite-Hite were at issue: a manual version

(MDL-55) and an automatic version (ADL-100). The MDL-55 incorporated technology in the '847 patent; the ADL-100 was *not* covered by the '847 patent. In addition, Rite-Hite also manufactured a nonpatented docking bridge called a leveler.

Kelley Company ("Kelley") manufactured and sold vehicle restraint systems in direct competition with Rite-Hite under the trade name "Truk Stop." While all three restraint systems were employed to accomplish essentially the same objective, Kelley's Truk Stop restraint system competed predominantly against Rite-Hite's ADL-100. The district court found Kelley's Truk Stop vehicle restraint to infringe the '847 patent and awarded lost profits to Rite-Hite on lost sales of MDL-55 restraints, ADL-100 restraints, and the nonpatented levelers.

On appeal, Kelley contended that the patent statute does *not* provide for lost-profit damages on lost sales of items not covered by the patent-in-suit, that is, the ADL-100. In addition, Kelly argued that there can be no damages on lost sales of the nonpatented dock levelers, since the leveler sales were not tied to demand for the '847 invention.

The CAFC addressed two issues that had a major impact on the theory of lost-profit damages in patent infringement matters.

1. Are lost-profit damages recoverable on nonpatented items if those items compete directly with the infringing product?
2. To what extent should the "entire market value rule" include nonpatented items?

(i) Lost Profits on Nonpatented Items. The test historically relied upon by the courts to determine lost-profit damages for patent infringement is the "but for" test. The CAFC noted that the Supreme Court has interpreted "damages adequate to compensate for the infringement" (in the words of 35 USC 284) to mean full compensation. It held that the balance between full compensation and the reasonable limits of liability encompassed by general principles of law could best be viewed in terms of reasonable, objective foreseeability. The court stated:

> If a particular injury was or should have been reasonably foreseeable by an infringing competitor in the relevant market, broadly defined, that injury is generally compensable absent a persuasive reason to the contrary. (op. at 1070)

Application of the aforementioned decision to this case, the CAFC agreed that but for the infringement of the '847 patent, Rite-Hite would have made additional sales of both the MDL-55 and the ADL-100 restraints. The CAFC affirmed the lower court's ruling, and included the ADL-100 restraints in the lost profit award:

> Here, the only substitute for the patented device was the ADL-100, another of the patentee's devices. Such a substitute was not an 'acceptable, non-infringing substitute' within the meaning of Panduit because, being patented by Rite-Hite, it was not available to customers except from Rite-Hite. . . . Rite-Hite therefore would not have lost the sales to a third party. (op. at 1071–72)

The court further stated that:

> If, on the other hand, the ADL-100 had not been patented and was found to be an acceptable substitute, that would have been a different story, and Rite-Hite would have had to prove that its customers would not have obtained the ADL-100 from a third party in order to prove the second factor of Panduit. (op. at 1072)

The court emphasized that: "Panduit is not the sine qua non for proving 'but for' causation. If there are other ways to show that the infringement in fact caused the patentee's lost profits, there is no reason why another test should not be acceptable" (op. at 1071).

(ii) Collateral Sales. The second issue stemmed from the lower court's award of lost profits on Rite-Hite's nonpatented levelers. Rite-Hite had claimed lost profits on these collateral sales based on the "entire market value rule," which asserts that damages may be recovered for an entire device or apparatus if it can be shown that the patented features were the basis for the demand for the entire apparatus.

In past decisions the court had ruled that individual components need not be physically connected, but must constitute a functional unit. Additionally, the court had discussed the unpatented items' financial and marketing dependence on the patented items. In this action, the CAFC clarified those past rulings, stating that:

> The facts of past cases clearly imply a limitation on damages, when recovery is sought on sales of unpatented components sold with patented components, to the effect that the unpatented components must function together with the patented component in some manner so as to produce a desired end product or result. All the components together must be analogous to components of a single assembly or be parts of a complete machine, or they must constitute a functional unit. Our precedent has not extended liability to include items that have essentially no functional relationship to the patented invention and that may have been sold with an infringing device only as a matter of convenience or business advantage. (op. at 1073)

The court found that the concurrent sales of restraints and levelers were done for reasons related to marketing and construction scheduling. In the court's opinion, since the restraints and levelers did not function together, the entire market value rule did not extend to the levelers. As a result, lost profits on lost sales of levelers were not recoverable, and the CAFC vacated the lower court's award of damages based on lost sales of levelers.

(iii) Implications. *Rite-Hite* has two major implications on damage theory. Lost-profit damages need not be confined to lost sales on patented products only. Rather, damages on nonpatented items for which "but for" causation was shown were recoverable. *Rite-Hite* is a broader articulation of the "but for" condition necessary for all lost-profit damages. The general rule for determining actual damages to a patentee that is itself a patentee that is itself producing the patented item is to determine "the sales and profits lost to the patentee because of infringement" (*Rite-Hite*, 56 F.3d at 1545). To recover lost profit damages, "the patentee must show a reasonable probability that "but for" the infringement, it would have made the sales that were made by the infringer" (Idem).

The *Rite-Hite* case's second implication is that the standard for claiming convoyed sales has been clarified and appears to be more stringent. In order to claim damages on collateral or convoyed sales, the patentee must tie in the loss of the convoyed sales to the infringement of the patent. It is not enough merely to show that the collateral and patented sales were related in time or place; both function and causation were required.

34.8 INCREMENTAL PROFITS

The previous sections of this chapter, particularly sections 34.6 and 34.7, have focused on the theory of lost-profit damages. The theory deals with what the patent holder is entitled to—both as a matter of law and as a matter of economic principles—in order to answer Justice Brennan's question posed at the start of the chapter: "Had the Infringer not infringed, what would Patent Holder have made?" Or, to paraphrase: But for the infringement by the defendant, how much more would the plaintiff have made? The remainder of the chapter focuses on the steps necessary to quantify the "how much more." It is important to remember that an inability by the patent holder to actually calculate the amount of lost profits may mean that the patent holder is unable to pass the fourth prong of Panduit and that damages may be reduced to a reasonable royalty.

Lost profits are a function of unit volume, selling price, and costs. Assume that the amount of lost sales has been identified, and that the price that would have been charged is also easily identified because both the infringer and plaintiff charged approximately the same price, and there are no claims of price erosion. The lost-profit damages can be determined as the incremental profits that would have been earned on the lost sales. The method is referred to as the incremental income method [*Paper Converting Machine Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 22 (Fed. Cir. 1984)]. The focal point of this analysis is to identify the costs and expenses that would have been incurred while making and selling the additional units. The costs that should be deducted from the lost sales are only those that vary with the changes in the sales volume at issue. Such costs are typically called incremental costs or variable costs. When variable costs are deducted from the lost-sales revenue, the amount of lost profits due to the infringement is derived. In fact, the calculation of damages in the form of lost profits, which is the subject of this entire chapter, should really be called the calculation of lost *incremental profits*.

The following equations are some basic identities that are useful in understanding the relationship among profits, revenues, and costs.

Profit is a function of revenue and cost such that:

$$\text{Profits} = \text{Revenues} - \text{Costs} \qquad \text{(Eq. 34.3)}$$

Where revenue is a function of unit price and unit quantity such that:

$$\text{Revenue} = \text{Price} \times \text{Quantity} \qquad \text{(Eq. 34.4)}$$

And costs may be divided into two categories so that:

$$\text{Costs} = \text{Fixed costs} + \text{Variable Costs} \qquad \text{(Eq. 34.5)}$$

Referring to Equation 34.4, it is possible to define lost revenue as:

$$\text{Lost Revenue} = \text{Price} \times \text{Lost Quantity} \qquad \text{(Eq. 34.6)}$$

Combining Equations 34.3, 34.4, and 34.5, it is possible to express profits in the following manner:

$$\text{Profits} = (\text{Price} \times \text{Quantity}) - (\text{Fixed costs} + \text{Variable costs}) \qquad \text{(Eq. 34.7)}$$

Since incremental profits are determined after the subtraction of variable costs, it is possible to define incremental profits as:

$$\text{Incremental Profits} = (\text{Price} \times \text{Quantity}) - \text{Variable costs} \qquad \text{(Eq. 34.8)}$$

It is possible to define lost incremental profits in Equation 34.9 by combining Equations 34.6 and 34.8 such that:

$$\text{Lost Incremental Profits} = (\text{Price} \times \text{Lost quantity}) - \text{Variable costs} \qquad \text{(Eq. 34.9)}$$

(a) DEFINITION OF VARIABLE COSTS. Variable costs are those expenses of doing business that are directly related to sales volume. More sales mean higher total variable costs. Variable costs are sometimes referred to as incremental costs, because incremental profits are defined as revenues less variable costs. All costs are variable in the long run, but the focal point for lost-profit calculations is the expenses and costs that vary for the volume of lost sales at issue over the relevant time period. If a certain cost category does not change with the increase in the sales volume calculated in the lost sales analysis of the lost-profit calculation, it may be regarded as a fixed cost for purposes of the analysis and should be excluded from the calculation.

(b) DEFINITION OF FIXED COSTS. Fixed costs do not change with changes in the sales volume. Regardless of sales volume, certain costs remain constant. Other costs are fixed over a defined range of sales volume and then change in a discrete manner. For example, rent may be fixed over a defined sales volume, but as the sales volume increases past a certain point, the company may need to expand, thereby increasing their rent costs.

Some costs are semifixed or semivariable. Semivariable cost is those cost categories that have two components. A semivariable cost category will have one component that changes (increases/decreases) with changes in sales volume, and have another component that is fixed and does not vary with changes in sales volume. An example of a semivariable cost is the cost of the company's sales force, where the sales force is paid both a base and a commission. As long as the number of salespeople does not vary, the cost of the sales force is a semivariable. In this example, the base, or salary component of the sales force cost will not change with changes in the sales volume, while the commission component will vary directly with changes in the sales volume according to the commission formula that the company uses to pay their sales force.

Some costs may have what is referred to as a step function, which is fixed over a certain range of sales volume with discrete "steps" or "jumps" in the cost at certain sales volume levels. An example of a step-function cost is a computer system at a company. Increases in sales volume over a certain range will not result in any changes in the cost of the computer system, so that over that range, the computer system will behave like a fixed cost. However, at a certain sales volume level, the computer system will not have sufficient capacity and the system will have to be upgraded or replaced. Since computer systems have discrete capacity and price characteristics, the cost of the computer system will increase in a stepwise function and then continue to behave like a fixed cost until the next system capacity constraint is reached.

Exhibit 34.2 shows the response of total fixed costs and total variable costs to increases in the sales volume. Exhibit 34.3 shows the response of a semivariable cost and a step-function cost to increases in sales volume.

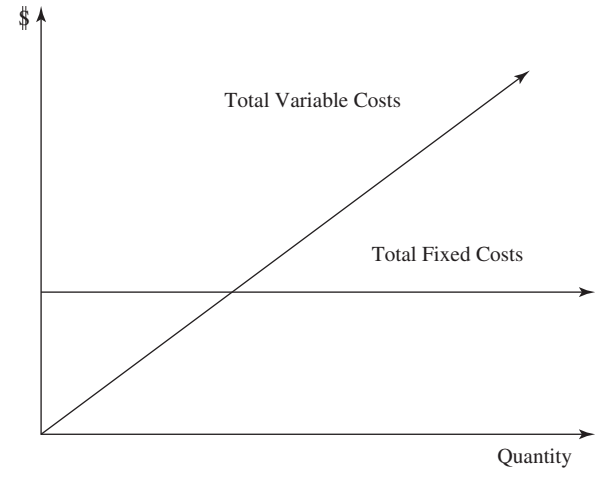

EXHIBIT 34.2 TOTAL VARIABLE AND TOTAL FIXED COSTS

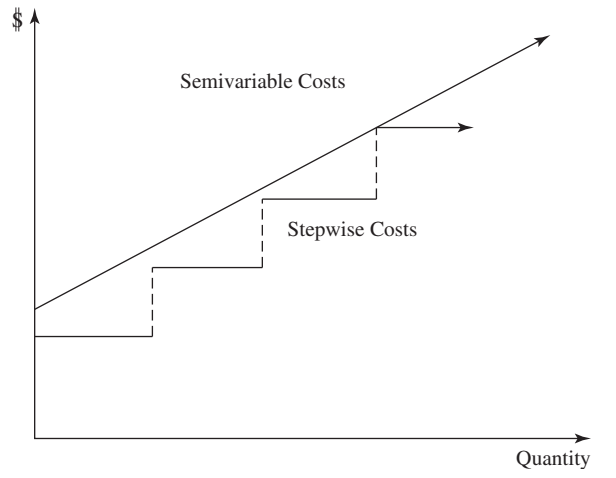

EXHIBIT 34.3 SEMIVARIABLE AND STEPWISE COSTS

34.9 PROFIT AND LOSS STATEMENTS

A profit and loss statement, also called an income statement, summarizes a business unit's revenues, costs, and profits for a defined period of time. A business unit may be a company, a division within a company, or a particular product line sold within a division. A defined period of time for which there is an income statement might be a month, a quarter, or an entire year. Often the internal accounting system of a company generates income statements that compare either the actual results for a time period versus the same time period for the previous year, or the actual results versus the expected or budgeted results. These internal financial statements, budgets, and forecasts are often very useful in assisting with the determination of which costs are fixed and which are variable.

The format is to list the revenues at the top of the income statement, and then subtract all the costs, typically divided into different categories, and show the profits for that particular business unit at the bottom of the page. A typical simplified profit and loss statement is shown next, in Exhibit 34.4.

Profit & Loss Statement	
Sales	$1,000,000
Manufacturing Costs	500,000
Gross Profits	500,000
Selling Expenses	100,000
Marketing Expenses	150,000
Research Expenses	50,000
Administration Expenses	50,000
General Overhead Expenses	50,000
Operating Profits	$ 100,000

EXHIBIT 34.4 PROFIT AND LOSS STATEMENT

Each category of the income statement is described in more detail in the following sections.

(i) Sales. Sales represent the revenue earned by the company during a particular time period. Sales or revenue may be further divided into gross sales or net sales. Net sales are gross sales less product returns, refunds, and other discounts that the company may have paid in order to sell the products or services to their customers. Simply put, sales equals product units sold in a time period multiplied by the price at which the units were sold in the same time period.

(ii) Manufacturing Costs. These are basically the costs associated with buying raw materials and transforming them into a finished product. This category is made up of amounts paid for the material inputs necessary for making the product, the manufacturing labor that is used to make those inputs, and the costs associated with the manufacturing. Manufacturing may include both fixed and variable costs. For example, it may include both the labor of actually making the product and the cost of supervisors. The category may also include depreciation expenses for the manufacturing plant and equipment and property taxes due on the manufacturing assets. Manufacturing costs are the total amount associated with making the product or service that is reflected in the lost-profit analysis. This category of expenses in the income statement is often referred to as the *cost of sales* or *the cost of goods sold (COGS).*

(iii) Gross Profits Equal to Net Sales Less Cost of Goods Sold. Gross profits are the amount that remain after manufacturing costs are subtracted and before any selling, general, or administrative costs are subtracted. The gross profit margin (gross profits expressed as a percentage of sales) provides an indication of the manufacturing efficiency. It does not, however, reflect the ultimate profit success of a product, service, or company. Many other important efforts required to get a product to market are not accounted for at the gross profit level.

(iv) Selling Expenses. These expenses are paid to keep sales efforts on track. They can include sales commissions, sales staff base salaries, sales office expenses, travel funds, and all other costs of the direct efforts aimed at moving products or services from company inventories into consumer hands. Marketing expenses support advertising on television, radio, magazines, and newspapers. These expenses also reflect the costs to create, write, produce, direct, and record advertising messages. Packaging design is another expense that often finds its way into this expense category along with the costs of market research and consumer surveys. Research expenses reflect activities of the company aimed at developing new products and enhancing old ones. These expenses are not limited to those associated with new inventions. Continuous product development is often needed to keep pace with changing economic, environmental, competitive, and sociological forces.

(v) General and Administrative Expenses. These are mundane, but important, overhead costs for activities that support the core business of a company. They include expenses associated with income tax preparation and compliance, financial recordkeeping, insurance policies, human resources administration, management information services, control of accounts payable and receivable, and other logistical support activities. Depreciation expenses associated with fixed plant investments, other than manufacturing assets, are also often included in this category. Property taxes for nonmanufacturing facilities are also included in general and administrative expenses.

(vi) Operating Profits. To arrive at operating profits, subtract all expenses, other than manufacturing costs, from gross profits. The result is the amount of profits generated from a business activity before income taxes are subtracted.

(vii) Depreciation. This expense is calculated based on the remaining useful life of the equipment that is purchased for business purposes. It is a noncash expense that allocates the original amount invested in fixed assets. Depreciation is calculated to account for the deterioration of fixed assets as they are used to produce, market, sell, and deliver goods, and administer the process of generating sales. The depreciation allowance estimates the "using up" of assets before calculating the amount of income taxes due.

It is important to note that there is no line item on an income statement that reads "Incremental Profits." Typically the incremental profit margin is lower than the gross profit margin and higher than the operating margin. In certain cases, often where the lost-sales quantity is small relative to the actual historic sales levels of the patent holder, the incremental margin may be the same as the gross profit margin.

The calculation of the incremental profit margin requires a determination of which costs are fixed and which are variable over a known increase in sales volume. This determination is fact-specific. For example, different lost sales scenarios in the patent holder's damage calculation may cause certain costs to be classified as fixed in one scenario and variable in another, which would require different incremental profit margins in the two scenarios. Section 34.10 provides a general discussion of the nature of the costs in the income statement and should be viewed as a yardstick to determine the specific analysis that needs to be performed in each individual case.

34.10 FIXED AND VARIABLE COSTS

Each expense category of a profit and loss statement is a mixture of variable and fixed expenses.

(a) MANUFACTURING COSTS. *Raw materials and freight* are directly related to the number of units being produced. More finished products mean more raw materials are needed for creating products. The freight charges associated with receiving raw materials would likewise reflect the added materials. Large-order discounts might come into play if the number of infringed units is substantial. At certain volumes some raw materials can be obtained at discounts. If the number of infringed units is very large, the cost of raw materials, per unit, could be slightly lower than what is indicated by an initial analysis. In order for such a discount to make a significant difference to lost-profit calculations, a large volume of infringed units must be involved. Nonetheless, raw material costs are variable.

Subassembly components and freight are also directly related to manufacturing volumes. Manufacturers often have product components and subassemblies produced by others, which are then integrated into final assembly. As with raw materials, the amounts spent are directly related to the volume of finished goods produced. Freight expenses associated with receiving these components also increase as more are delivered. Fixed expenses can be found in this category. The costs to design subassemblies and prepare specification sheets for outside manufacturers would not increase with higher volume, but these expenses are generally variable.

Manufacturing utility costs have fixed and variable components. Some of the power costs are basic for just keeping the lights on. Other costs are very sensitive to variable production. Whether one is using oil, gas, coal, or electricity, furnaces must be heated and conveyors must run. More production takes more energy. Higher volumes require more manufacturing utility expenses.

Production labor wages and benefits expenses will ultimately vary with production. Increased volume may require another production shift, which will require more workers. A slight increase in volume might be handled without more hiring, but it is likely

that overtime would be required. Overtime increases production salaries but not necessarily the amount of benefits. However, overtime hours usually involve premium pay scales. Regardless, more volume will cause higher expenses for production workers.

Supervisory labor wages and benefits expenses follow the pattern of production worker expenses. If the ratio of production workers to supervisors is 10 to 1, then added production workers may require more supervisors and all the attendant costs. As small volume increases occur, this expense category can remain fixed, but supervisory activities can only be stretched within narrow limits.

Quality control staff wages and benefits expenses may be controlled for slight volume increases, but more production volume requires more testing. This must be accomplished by overtime or added shifts. Hence, more volume will likely require more quality control wage expenses. One component that will remain fixed in this category is the amount associated with development and design of the quality control tests and standards. This expense should not fluctuate with added volume. For the most part, quality control staff activities increase with higher volume.

Quality control testing costs will follow the same variable cost pattern as quality control staff costs. Quality control often requires the use of testing materials that cannot be reused. Added production volume will require more testing, which will require the purchase of more quality control testing materials. Quality control often requires destruction of a finished product to accomplish a test. A sample of each production run must be destroyed, and this costs money. More production volume requires more units to be destroyed.

Licensed manufacturing intellectual property royalties can be variable where royalties are paid on production or sales volume. The licensed intellectual property may be separate from the property that is subject to the lawsuit in question, but nevertheless, it is still a production expense. A royalty on the sales of units produced will usually grow with added volume. If licensed technology is obtained at a fixed rate (an atypical situation), then added volume will not cause an increase in this expense. More likely however, is that higher volume will include higher royalty expenses. Care is needed in this calculation. Licenses sometimes include variable royalties that change with the attainment of milestones. At certain volume levels royalty rates can be increased or decreased. Most likely, added volume will cause licensed technology or trademark royalty expenses to increase.

Manufacturing asset property taxes are usually fixed. Added volume will not cause property taxes to increase.

The *manufacturing asset depreciation* expense is usually fixed. Depreciation is usually calculated by income tax formulas that do not have any association with production volume. Obviously production machinery will be used up more quickly by putting more product through the equipment, but depreciation expenses are not usually based on such considerations. Like a car, equipment has a finite life. More miles per year will wear out a car faster than fewer miles. The problem is that a very complicated study is required to establish per unit of production depreciation schedules, and few companies conduct such analyses. If such a study is completed, there isn't any assurance that the results would be that much different from the depreciation expense as determined by the income tax formula. From a practical point of view, depreciation expenses are fixed.

Environmental protection and scrap costs can vary with production. Increased manufacturing activity creates more waste and more scrap. Environmental protection for some processes requires the purchase of raw materials that are used to process waste. Waste removal of scrap is often based on a bulk or weight charge. More production means more waste, more environmental protection activities, more scrap, and higher expenses with added volume.

(b) RESEARCH EXPENSES. Research and development is ongoing at many companies. New inventions lead to new products. New inventions also lead to new production materials and methods. The substantial expenses associated with research are many: highly compensated researchers, administrative staffs separate from the rest of the company, special research facilities, specialized equipment, prototype small-scale manufacturing plants, property taxes, and utility expenses associated with the research facility. Research activities also require the use of raw materials as new products and production techniques are analyzed. Huge amounts are spent on research but they rarely have a significant relationship to increased volume of existing products. The research activities associated with products in commercial production are mostly complete. Research activities are associated with future products and future production techniques. These activities are usually based on fixed budgets established by executive management. More production volume generally does not require greater research expenses.

(c) MARKETING EXPENSES. *Product packaging design expenses* do not vary with added sales. Once the package design has been completed, additional expenses are not required. More volume requires the manufacture of more packages because each product must be packaged, but this cost is captured in the variable manufacturing expenses. The design work doesn't increase with added sales.

Advertising campaign development and production involves creating messages and designing commercials. Also in this category is the production of messages for different advertising media. Television commercials must be filmed and radio messages must be recorded. Newspaper ads must be designed and billboard pictures must be photographed. All of this is usually conducted in accordance with a set budget that generally does not vary with added sales.

Advertising placement for radio, television, newspaper, magazine, and billboards is another aspect of advertising that does not vary with added sales volume. The expenses indeed vary according to the frequency of advertisement appearances, but this has nothing to do with the volume of sales. A budget is usually established each year. It may be exceeded but not as a result of added volume. Event sponsorship is also usually based on a fixed budget. (However, golf tournament sponsorship might possibly increase when more sales are generated.)

Consumer surveys and market research are a continuing activity for most firms that sell consumer goods. Consumer tastes must be understood so that new products can be fashioned to address the desires of customers. This type of information is also used for improvement of existing products. Market research studies the activities of the competition and the strength of their products. Added sales volume does not normally cause more surveys and research to be conducted. These activities are usually conducted according to a fixed budget.

Display racking can vary with higher sales volume. If infringement caused the loss of distribution locations, then the infringed party didn't have to spend the money required to provide the lost distributors and retail outlets with display racks. More sales could require more display racks for stores that carry the product and for stores that would have been customers if not for the infringement. At certain levels of increased sales volume, more display racks are required.

(d) GENERAL OVERHEAD EXPENSES. *General overhead* expenses are usually fixed costs involving primarily the salaries and benefits for personnel involved in management information, insurance management, human resources, accounting, taxation, purchasing, and engineering. These staff functions generally do not vary according to the amount of production and sales enjoyed by a company. However, engineering functions can sometimes be directly related to additional sales. Some companies sell big-ticket customized

products to other companies. The sale of color printing presses to newspapers requires a significant amount of engineering input. The presses must be specifically customized according to the location needs of the buyer. Conveyor and inserting systems associated with newspaper production also must be specially designed. Large-ticket sales of customized equipment require detailed analysis from engineering personnel just to prepare bid documents. If the contract is awarded, then more engineering expenses are associated with customized production of the equipment and its installation. Depending on the industry and product, engineering can be a variable or fixed expense.

Another variable component of general expenses can come from the accounting department. Customer credit checks are often involved with big-ticket sales. Equipment manufacturers sell equipment on installment plans or offer financing from a finance division. In such cases the expenses associated with credit analysis increase with higher sales volume.

Executive personnel salary and benefit expenses can present an interesting dilemma. Some executives are paid bonuses based on overall corporate performance. While a few additional units of sales aren't going to make much difference, a large increase in sales could contribute to higher bonuses. Further complications are introduced by compensation programs that pay top executives big bonuses as company performance plunges, à la General Motors. (A penetrating investigation is needed for this category of expense.) Generally, a substantial amount of added sales volume must be involved before executive compensation becomes a variable expense.

Office asset property taxes are usually fixed just like manufacturing asset property taxes. Added volume will not cause office asset property taxes to increase.

The *office asset depreciation* expense is usually fixed. Depreciation is usually calculated by income tax formulas that do not have any association with production volume. Obviously increased use of office equipment will cause it to be used up more quickly, but depreciation expenses are not generally based on such considerations. From a practical point of view, depreciation expenses on office assets are fixed.

(e) SELLING EXPENSES. *Sales staff base salaries* tend to be fixed but commission expenses directly reflect the volume of sales. Added sales will generate higher commission expenses. Some commission programs involve graduated schedules. As certain milestones are reached commission payouts increase. The first $500,000 of sales might not provide for any commission. A 5% commission on sales over $500,000 might then kick in, with a 7.5% payout on sales over $1,000,000. The amount of sales that can be handled by each salesperson is limited. At some point more salespeople will be needed. A significant increase in sales will require more people to take orders, handle accounts, and visit and monitor retail displays. For the most part, a higher sales volume increases selling expenses.

Travel costs for sales staff can also vary with added sales volume. Selling big-ticket equipment to companies requires more visits to customer locations. Consumer product sales require more visits to retailers and distributors. The expenses might involve only added car miles but could also involve international travel involving airfare, hotels, meals, and travel sundries.

Shipping freight expenses increase as more product is shipped to more customers. Sometimes the freight expense is charged to the customer. Sometimes it is absorbed as a cost of making the sale. Either way, more sales volume will require more delivery expenses, and these costs should be considered as variable expenses.

Promotions and discount coupons vary with sales. Consumer product companies offer deals: Buy one, get one free. Buy one, get the second at half-price. These offers cost money. Each time a coupon is redeemed, money is spent. More sales can mean more

coupons are redeemed and promotional expenses rise. Care is needed when analyzing this expense category. Sometimes these expenses can be planned to cap at a budgeted amount regardless of the amount of sales volume. When infringed units are added to the lost-profit equation, the promotional expense budget should be checked to ensure that the budget cap is properly included in the calculations.

Exhibit 34.5 summarizes the general character of expenses as either fixed or variable expenses. Although special circumstances will always exist, the table can serve as guidance for the deposition of cost accountants and other financial managers.

Expense Category	Reaction to Increased Volume
Manufacturing Costs:	
Raw materials and freight	Variable
Subassembly components and freight	Variable
Production utilities	Variable
Production labor wages and benefits	Variable
Quality control testing costs	Variable
Licensed manufacturing technology royalties	Variable
Environmental protection and scrap costs	Variable
Supervisory labor wages and benefits	Variable
Quality control staff wages and benefits	Variable
Manufacturing assets property taxes	Fixed
Manufacturing assets depreciation	Fixed
Research Expenses	Fixed
Marketing Expenses:	
Product packaging designs	Fixed
Advertising campaign development	Fixed
Advertising production	Fixed
Radio time	Fixed
Television time	Fixed
Newspaper space	Fixed
Magazine space	Fixed
Billboard space	Fixed
Event sponsorship	Fixed
Consumer surveys	Fixed
Market research	Fixed
Display racking	Variable
General Overhead Expenses:	
Executive personnel salaries and benefits	Fixed
Office assets property taxes	Fixed
Office assets depreciation	Fixed

EXHIBIT 34.5 GENERAL CHARACTER OF EXPENSES

Expense Category	Reaction to Increased Volume
Salaries and benefits for personnel in:	
Management information	Fixed
Insurance	Fixed
Human Resources	Fixed
Accounting	Fixed
Taxation	Fixed
Purchasing	Fixed
Engineering	Variable
Office utilities	Fixed
Customer credit analysis	Variable
Selling Expenses:	
Sales staff base salaries	Fixed
Sales staff or distributor commissions	Variable
Travel costs for sales staff	Variable
Shipping freight	Variable
Promotions and discount coupons	Variable

EXHIBIT 34.5 GENERAL CHARACTER OF EXPENSES *(CONTINUED)*

Each industry has its own character of expenses. Sometimes fixed expenses in one business can be variable for another. The character of expenses depends on the nature of the industry. Consumer products have one set of variable expenses, and big-ticket equipment producers have another. A careful analysis and thorough deposition of the infringer's personnel can properly identify variable and fixed expenses. The same analysis and questioning should also be conducted with personnel working for the plaintiff. Each expense category should be explored with an open mind. The urge to make assumptions about the character of expenses should be suppressed.

34.11 AN EXAMPLE OF INCREMENTAL PROFITS

Just a slight change in the allocation of fixed and variable costs can have a powerful effect on damages calculations. Exhibit 34.6 shows a calculation of operating profits for a company that sells 10,000 units of a product each year. Under the heading Base Case, total revenues for the company are shown as $10 million; each of the 10,000 units sells for $1,000. Operating profit is the amount that remains after all expenses associated with making, selling, and delivering the units are subtracted from the total amount of revenues derived from the units. Each category of expense has been divided for this example into variable and fixed expenses. Some of the expense categories are dominated by variable expenses, while other categories are dominated by fixed costs.

Research and development expenses in Exhibit 34.6 are all considered fixed, at the annual amount of $500,000. Additional units of sales are not expected to have an effect on R&D expenses. As discussed earlier, the research and development that is ongoing most likely has very little to do with the current products being manufactured and sold.

The fixed manufacturing expenses in Exhibit 34.6 are shown to be $1.5 million, while each unit produced requires $350 of variable manufacturing costs.

Marketing expenses are shown to be heavily dominated by fixed costs of $1.75 million with variable costs of $25 for each unit produced.

General and administrative expenses are also dominated by fixed costs of $1,000,000. Variable costs per unit for this category are $20.

INCREMENTAL PROFITS		
		Base Case
Units		10,000
Sales price per unit		$1,000
Total Revenues		$10,000,000
Manufacturing Costs		
Variable per unit	$350	3,500,000
Fixed per unit		1,500,000
Total Manufacturing Costs		5,000,000
Research & Development Costs		
Variable per unit	$0	0
Fixed per unit		500,000
Total Research & Development Costs		500,000
Marketing Expenses		
Variable per unit	$25	250,000
Fixed per unit		1,750,000
Total Marketing Expenses		2,000,000
General and Administrative Expenses		
Variable per unit	$20	200,000
Fixed per unit		1,000,000
Total General and Admin. Expenses		1,200,000
Selling Costs		
Variable per unit	$30	300,000
Fixed per unit		900,000
Total Selling Costs		1,200,000

EXHIBIT 34.6 INCREMENTAL PROFITS

Total Revenues	10,000,000
Total Variable Costs	4,250,000
Total Variable Costs per unit	425
Total Fixed Costs	5,650,000
Total Costs	9,900,000
Total Costs per unit	990
Operating Profit	100,000

EXHIBIT 34.6 INCREMENTAL PROFITS *(CONTINUED)*

Selling costs are also shown to be dominated by fixed costs of $900,000. This would apparently indicate that sales personnel are compensated with substantial salaries and small amounts of incremental commission. In some industries, the reverse is true, and selling commissions are emphasized. Sales personnel are paid a small salary but receive substantial commissions for each unit sold.

Total fixed costs for all expense categories in Exhibit 34.6 are $5,650,000 and total variable costs associated with the production, sale, and delivery of 10,000 units are $4,250,000. Subtracting the total fixed and variable costs from the total revenues of $10,000,000 leaves $100,000 of operating profit.

Suppose that 2,500 units of sales could have been sold in addition to the 10,000 already noted in Exhibit 34.6. Suppose that infringement has been proven on a valid patent. Lost-profit damages are calculated in Exhibit 34.7. The fixed costs in each expense category have already been covered. The expenses that would be associated with producing, selling, and delivering the additional 2,500 units are only the total variable costs. Exhibit 34.7 shows the operating profits for the example company with the additional 2,500 units in comparison to the original calculation from Exhibit 34.6.

In Exhibit 34.7, fixed manufacturing costs are $1.5 million for both the Base Case and Added Units columns. The variable manufacturing costs are higher for the second column because additional units cost more to make. Variable manufacturing costs are $4,375,000 for the Added Units column. The amount is $1,375,000 higher than that of the Base Case variable manufacturing units, representing the $350 manufacturing cost per unit multiplied by the additional 2,500 units.

The total costs of research and development are the same for the Added Units column because no additional R&D costs are associated with the higher production volume.

Fixed marketing expenses stay at $1,750,000, but the variable marketing expenses have increased from $62,500 to $312,500 for the Added Units column.

General and administrative expenses are dominated by fixed costs of $1,000,000 which do not change with the added volume, but the variable component of this expense category rises by $50,000 ($20 for each of the additional 2,500 units).

The fixed component of selling expenses stays at $900,000 but the variable component rises to $375,000 due to the added costs of selling the additional units.

The total fixed costs at the higher production level are unchanged from the 10,000 unit production level. Both cases show total fixed costs of $5,650,000. The total variable costs are higher, based on the incremental costs associated with making, selling, and delivering an extra 2,500 units. Total variable costs for the Added Units case equals

$5,312,500. Instead of having total fixed and variable costs of $9,900,000, the Added Units case brings total fixed and variable costs to $10,962,500. When these total costs are subtracted from the total revenues from 12,500 units (10,000 Base Case units plus 2,500 Added units), the operating profit soars to $1,537,500. An additional 2,500 units, a 25% increase in sales, improved operating profits by a factor of 1,537.5. Just 2,500 additional units brought an additional $1,437,500 of profit to the bottom line.

INCREMENTAL PROFITS WITH 2,500 ADDED UNITS

		Base Case	Added Units
Units		10,000	12,500
Sales price per unit		$1,000	$1,000
Total Revenues		$10,000,000	$12,500,000
Manufacturing Costs			
Variable per unit	$350	3,500,000	4,375,000
Fixed per unit		1,500,000	1,500,000
Total Manufacturing Costs		5,000,000	5,875,000
Research & Development Costs			
Variable per unit	$0	0	0
Fixed per unit		500,000	500,000
Total Research & Development Costs		500,000	500,000
Marketing Expenses			
Variable per unit	$25	250,000	312,500
Fixed per unit		1,750,000	1,750,000
Total Marketing Expenses		2,000,000	2,062,500
General and Administrative Expenses			
Variable per unit	$20	200,000	250,000
Fixed per unit		1,000,000	1,000,000
Total General and Admin. Expenses		1,200,000	1,250,000
Selling Costs			
Variable per unit	$30	300,000	375,000
Fixed per unit		900,000	900,000
Total Selling Costs		1,200,000	1,275,000

EXHIBIT 34.7 INCREMENTAL PROFITS WITH 2,500 ADDED UNITS

Total Revenues	10,000,000	12,500,000
Total Variable Costs	4,250,000	5,312,500
Total Variable Costs per unit	425	425
Total Fixed Costs	5,650,000	5,650,000
Total Costs	9,900,000	10,962,500
Total Costs per unit	990	877
Operating Profit	100,000	1,537,500
Incremental Profit from 2,500 additional units		1,437,500

EXHIBIT 34.7 INCREMENTAL PROFITS WITH 2,500 ADDED UNITS *(CONTINUED)*

Incremental profits can also be calculated as shown below:

Added Units	2,500
Price	$1,000
Incremental Revenues	$2,500,000
Incremental Revenues	$2,500,000
Incremental Expenses:	
Manufacturing @ $350 each	875,000
Research & Development	0
Marketing @ $25 each	62,500
General & Administrative @ $20 each	50,000
Selling @ $30 each	75,000
Total Incremental Expenses	1,062,500
Total Incremental Profit	$1,437,500

Now suppose that the variable cost portion of each expense category was improperly estimated. Suppose that fixed expenses were less than originally thought and variable expenses were higher than originally thought. In the Base Case, a reallocation of expenses between fixed and variable doesn't matter. Total expenses, fixed and variable, are still $9.9 million. When subtracted from total revenues of $10 million, operating profit is still $100,000 for the Base Case. But a substantial difference becomes evident when incremental profits are calculated. Exhibit 34.8 shows that a slight reallocation of expenses between fixed and variable classification reduces the incremental profits to $987,500.

With variable manufacturing costs at $400 per unit, variable marketing expenses at $80 per unit, variable general and administrative costs at $55 per unit, and variable selling costs at $70 per unit, Exhibit 34.6 shows that the incremental profit drops to $987,500. Thus, higher variable costs reduce incremental profits.

Conversely, higher fixed costs (lower variable costs) increase incremental profits. In the most extreme case, if all costs were fixed, then the total variable costs for each additional

unit would equal $0 and the incremental profit for each unit would be equal to the selling price for each unit—$2,500. The entire selling price would fall to the bottom line. Detailed information from infringing financial managers and cost accountants is vital to defining a proper allocation of fixed and variable costs.

INCREMENTAL PROFITS WITH 2,500 ADDED UNITS

		Base Case	Added Units
Units		10,000	12,500
Sales price per unit		$1,000	$1,000
Total Revenues		$10,000,000	$12,500,000
Manufacturing Costs			
Variable per unit	$400	4,000,000	5,000,000
Fixed per unit		1,000,000	1,000,000
Total Manufacturing Costs		5,000,000	6,000,000
Research & Development Costs			
Variable per unit	$0	0	0
Fixed per unit		500,000	500,000
Total Research & Development Costs		500,000	500,000
Marketing Expenses			
Variable per unit	$80	800,000	1,000,000
Fixed per unit		1,200,000	1,200,000
Total Marketing Expenses		2,000,000	2,200,000
General and Administrative Expenses			
Variable per unit	$55	550,000	687,500
Fixed per unit		650,000	650,000
Total General and Admin. Expenses		1,200,000	1,337,500
Selling Costs			
Variable per unit	$70	700,000	875,000
Fixed per unit		500,000	500,000
Total Selling Costs		1,200,000	1,375,000

EXHIBIT 34.8 INCREMENTAL PROFITS—REVISED ALLOCATION OF FIXED AND VARIABLE COSTS

Total Revenues	10,000,000	12,500,000
Total Variable Costs	6,050,000	7,562,500
Total Variable Costs per unit	605	605
Total Fixed Costs	3,850,000	3,850,000
Total Costs	9,900,000	11,412,500
Total Costs per unit	990	913
Operating Profit	100,000	1,087,500
Incremental Profit from 2,500 additional units		987,500

EXHIBIT 34.8 INCREMENTAL PROFITS—REVISED ALLOCATION OF FIXED AND VARIABLE COSTS *(CONTINUED)*

34.12 FIXED COSTS AREN'T ALWAYS FIXED

Fixed expenses only maintain their character within a certain range of sales volume. For example, at certain levels of sales volume, more manufacturing buildings will be needed. This entails more machinery, more administrative people for accounting, more insurance for the new buildings, more computers for the added records generated, larger workforces, and expanded layers of supervision. The theory of variable and fixed expenses is quite valid within certain boundaries of sales volume. However, once the limits are exceeded, the analysis can take on expanded complexities.

Economic recession may cause many companies to have overcapacity. In many cases, production volume can be increased by substantial amounts without adding much in the way of fixed costs. As economic activity increases, the possibility exists that expenses generally characterized as fixed will need special attention.

34.13 SUMMARY

Lost profits are a function of volume, price, and costs. The character of expenses is very important for calculating lost profits. Understanding the nuances of fixed and variable expenses is important for making a lost-profit case. This chapter discussed the different expenses involved with business and categorized variable and fixed expenses. In this chapter an example of a lost-profit calculation provided a demonstration of the significant swing that can occur from misallocating variable and fixed expenses.

The following list reviews some of the major cases that have damage theory implications in intellectual property and particularly patent infringement cases. Important concepts and quotations from many of these cases appear in this and other chapters of the book. This list is intended to provide the advanced reader who wishes to review the case law with a road map of some of the seminal cases. The following is not intended to be a comprehensive list of all intellectual property cases with damage theory implications.

LIST OF INTELLECTUAL PROPERTY CASES WITH IMPORTANT DAMAGE THEORY IMPLICATIONS

Georgia-Pacific Corp. v. U.S. Plywood Corp. 318 F. Supp. 1116, 6 USPQ 235 (S.D.N.Y. 1970)

Panduit Corp. v. Stahlin Brothers Fibre Works 575 F2d 1152, 197 USPQ 726 (6th Cir. 1978)

State Industries Inc. v. Mor-Flo Industries Inc. 883 F.2d 1573 (Fed. Cir. 1989)

BIC Leisure Products, Inc. et al. v. Windsurfing International, Inc. 761 F. Supp. 1032, 19 USPQ 2d 1992 (S.D.N.Y. 1991)

Rite-Hite Corporation v. Kelley Company, Inc. 629 F. Supp. 1042, 231 USPQ 161 (E.D. Wis. 1986), 35 USPQ 2d 1065 (Fed. Cir. 1995)

King Instruments v. Perego 737 F. Supp. 1227

Standard Havens Products, Inc. v. Gencor Industries Inc. 953 F.2d 1360

Aro Manufacturing Co. v. Convertible Top Replacement Co. 377 US 476, 507, 141 USPQ 681, 694 (1964)

Minco Inc. v. Combustion Engineering 95 F.3d 1109

Minnesota Mining & Mfg. Co. v. Johnson & Johnson Ortho-pedics, Inc. 976 F.2d 1559

TWM Mfg. Co., Inc. v. Dura Corp. 789 F.2d 895

Hartness International, Inc. v. Simplimatic Engineering Co. 819 F.2d 1100

BASF Corp. v. Old World Trading Co. 41 F.3d 1081

Gillette Co. v. Wilkinson Sword, Inc. 1992 WL 30938

Waits v. Frito-Lay, Inc. 978 F.2d 1093

U-Haul International Inc. v. Jartran Inc. 793 F.2d 1034

ALPO Petfoods, Inc. v. Ralston-Purina Co. 997 F.2d 949

Micro-Motio Inc. v. Exac Corp. 19 USPQ 2d 1001

Pfizer Inc. v. International Rectifier Corporation et al. 218 USPQ 586

2Pesos, Inc. v. Taco Cabana 505 U.S. 763

Livesay Window Co. v. Livesay Industries, Inc. 251 F.2d 469, 471–72, 116 USPQ 167, 168–70 (5th Cir. 1958)

Lessona Corp. v. United States 599 F.2d 958, 202 USPQ 414, 439 (Ct. C. 1981)

Lam, Inc. v. Johns-Manville Corp. 718 F.2d 1056, 219 USPQ 670 (Fed. Cir. 1983)

King Instrument Corp. v. Otari Corp. 767 F.2d 853, 226 USPQ 402 (Fed. Cir. 1985)

Bio-Rad Laboratories, Inc. v. Nicolet Instrument Corporation 739 F.2d 604, 222 USPQ 654 (Fed. Cir.) cert. Denied, 469 U.S. 1038 (1984)

Fonar Corp. v. General Electric Co. 107 F.3d 1543; 902 F. Supp. 330; 118 S. Ct. 266

Merrill Hebert v. Lisle Corp. 99 F.3d 1109 (1996)

CHAPTER 35

ROYALTY RATES AND THE GEORGIA-PACIFIC FACTORS

When infringement has been shown, a patentee is entitled to "damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer" 35 U.S.C. § 284 (1994). In *Stickle v. Heublein, Inc.*, the court said, "The amount of the royalty should be that amount which adequately compensates for the infringement.[1]

In *Georgia-Pacific Corp. v. United States Plywood Corp.*,[2] the court listed fifteen factors that it considered important for deriving a reasonable royalty. These factors have been widely adopted for use in reasonable royalty determination. These factors are typically considered in the context of the patentee and infringer engaging in a hypothetical negotiation for a license of the patent in suit. The fifteen factors listed by the court are listed and discussed in this chapter.[3]

35.1 FACTORS FOR DERIVING A RESPONSIBLE ROYALTY

(a) THE ROYALTIES RECEIVED BY THE PATENTEE FOR THE LICENSING OF THE PATENT IN SUIT, PROVING OR TENDING TO PROVE AN ESTABLISHED ROYALTY. When the patentee has licensed the patent in suit to others, very useful information is provided about the rate that might be used for calculating damages. In some cases one license can be enough to establish a royalty rate for the patent in suit. Some industries have limited participants. A license given to only one of them can sometimes show the value of the patent in suit. Other times, more licenses are required to cause a royalty rate to be considered as established.

The Federal Circuit remarked that in order to establish a royalty rate, it must be paid by such a number of persons "as to indicate a general acquiescence in its reasonableness." *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1078 (Fed. Cir. 1983), quoting *Rude v. Westcott*, 130 U.S. 152, 165 (1889).

Royalty rates that were negotiated during settlement of actual or threatened litigation are mostly discounted because their licensing rates may have been influenced more by the desire to avoid litigation costs than by the true value the parties placed on the invention [*Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1164 n. 11 (6th

1. See *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1562, 219 USPQ2d 377, 386 (Fed. Cir. 1983).
2. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970), *modified*, 446 F.2d 295 (2d Cir. 1970), *cert. denied*, 404 U.S. 870 (1971).
3. The District Court in *Georgia-Pacific* indicated that in theory, "there is no formula by which these factors can be rated precisely in order of their relative importance."

Cir. 1978)]. Such license agreements are not necessarily admissible under Rule 408 of the Federal Rules of Evidence, which provides: Evidence of (1) furnishing or offering or promising to furnish, or (2) accepting or offering or promising to accept, a valuable consideration in compromise or attempting to compromise a claim that was disputed as to either validity or amount, is not admissible to prove liability for or invalidity of the claim or its amount. Evidence of conduct made in compromise negotiations is likewise not admissible.

Sometimes a history of licensing can be impaired by infringement. In *Susan Maxwell v. J. Baker, Inc.* the instructions to the jury included the following: "Maxwell contends that she was forced to offer licenses based on a diminished royalty because she felt that there was a widespread and open disregard of her patent rights. J. Baker, on the other hand, contends that the patent had not been disregarded and that Maxwell's offers were consistent with her existing marketing program. If you should find that the disregard of the patent forced Maxwell to seek a decreased royalty, you may determine that the rate offered by Maxwell was not a true measure of a reasonable royalty." In this instance the court indicated that a license containing a royalty rate offered to others in an industry might not be considered an established rate.

Even when the patents in suit have been licensed and royalty rates have been paid by third parties, additional analysis is sometimes needed to give great weight to the royalty rates that address this factor.

(b) THE RATES PAID BY THE LICENSEE FOR THE USE OF OTHER PATENTS COMPARABLE TO THE PATENT IN SUIT. In addition to the rates paid by the licensee for other patents, the rates paid by other industry participants for comparable patents can be a useful indication of the royalty rate for calculating damages. Royalty rates paid only by the hypothetical licensee can be too limiting, and this limitation seems to serve no useful purpose. The hypothetical licensee may not have licensed any other patents, while others in the industry may be active licensees. Similar patented technology that is licensed by independent third parties for use in the same industry can have relevance for determining a royalty rate for the patents in suit.

(c) THE NATURE AND SCOPE OF THE LICENSE, AS EXCLUSIVE OR NONEXCLUSIVE, OR AS RESTRICTED OR NONRESTRICTED IN TERMS OF TERRITORY OR WITH RESPECT TO THOSE TO WHOM THE MANUFACTURED PRODUCT MAY BE SOLD. This factor can be interpreted to require that the concluded royalty rate for damages should reflect characteristics of the license that the two parties in suit would be expected to negotiate. When analyzing the licenses referred to in factors 1 and 2, the nature of the licenses should also be considered. Most often the basis for a reasonable royalty rate is nonexclusive.

A nonexclusive license may not be appropriate for the damages calculation where the hypothetical licensor and licensee would negotiate an exclusive agreement. Typically, exclusive licenses involve a higher royalty rate than nonexclusive licenses. This observation, however, is difficult to quantitatively support. A comparison of the rate at which a patent is licensed under an exclusive agreement to the rate at which the same patent is licensed nonexclusively is not usually possible. One licensing instance, however, does provide support for this contention. The following story was reported in a past issue of *Licensing Economics Review.*

> Molecular Biosystems, Inc. (MBI) announced that it has amended its supply and license agreement with E. I. du Pont De Nemours & Company which covers proprietary nucleic acid probe technologies that are owned by MBI. The recently renegotiated agreement was originally

established in April 1986. Previously du Pont had an exclusive license, but under the new agreement, will only retain a non-exclusive right to these technologies. MBI will continue to manufacture nucleic acid probe agents for du Pont as it did under the previous agreement. The royalty rate on du Pont's net sales was lowered from 5.5% to 4% to reflect the change of du Pont's licensing rights from exclusive to non-exclusive. This represents a reduction in the royalty rate of 27%.

Vincent A. Frank, President and Chief Executive Officer of MBI said, "The new structure enables MBI to maximize the potential of its market opportunities while, at the same time, custom tailoring MBI's relationship with du Pont to best fulfill the needs of both companies."[4]

Generally nonexclusive license agreements serve as the basis for addressing this factor.

(d) THE LICENSOR'S ESTABLISHED POLICY AND MARKETING PROGRAM TO MAINTAIN ITS PATENT MONOPOLY BY NOT LICENSING OTHERS TO USE THE INVENTION OR BY GAINING LICENSES UNDER SPECIAL CONDITIONS DESIGNED TO PRESERVE THAT MONOPOLY. A higher royalty rate can be justified when this condition is met. A formal written policy does not usually exist, but this condition can be established by considering the actions of the patentee with regard to the number and type of licenses they typically negotiate. The implication of this factor, in some cases, is that the patent holder would not license the patents in suit under any conditions. The *Georgia-Pacific* factors, however, force a hypothetical negotiation between the parties in the suit. A conflict between the actual negotiating posture of the patentee and the hypothetical negotiation is created by this factor. This dilemma will be discussed more fully under factor 15.

(e) THE COMMERCIAL RELATIONSHIP BETWEEN THE LICENSOR AND THE LICENSEE, SUCH AS, WHETHER THEY ARE COMPETITORS IN THE SAME TERRITORY IN THE SAME LINE OF BUSINESS, OR WHETHER THEY ARE INVENTOR AND PROMOTER. This factor has caused significant debate. The knee-jerk reaction to this factor typically leads to a conclusion that an inventor (patentee) that is dealing with a company would settle for a lower royalty rate than a patentee who was an industry participant. The reason cited is that the inventor is not in a position to make or sell a patented product and thus has less negotiating leverage. A more detailed analysis can sometimes bring this reaction into question. If the patent is useful to only one company, then an inventor may find itself in a limited bargaining position. When several companies compete in an industry, the inventor has a better bargaining position. The inventor can use the corporate competitors against each other to gain a bargaining advantage. This can be viewed as eliminating the fact that the inventor cannot compete, thereby allowing the inventor to gain the maximum royalty rate possible. Consideration should also be given to the goals and objectives of an inventor. Many companies engage in research and licensing for their livelihood. The fact that they do not manufacture and sell products does not mean that they are likely to negotiate substandard royalty rates. In fact, they are interested in maximizing their profits from inventing by obtaining the highest royalty rate possible. Such companies are not likely to negotiate a substandard royalty rate because they are not industry participants. Consequently, this factor can lead to a knee-jerk reaction that is sometimes inappropriate.

(f) THE EFFECT OF SELLING THE PATENTED SPECIALTY IN PROMOTING SALES OF OTHER PRODUCTS OF THE LICENSEE, THE EXISTING VALUE OF THE INVENTION TO THE LICENSOR AS A GENERATOR OF SALES OF ITS NONPATENTED ITEMS, AND THE EXTENT OF SUCH DERIVATIVE OR CONVOYED SALES. This factor addresses the instances where some patented products generate sales of other company products that are

4. *Licensing Economics Review* (March 1991), page 4.

not covered by the patent. To the extent that this is true, the concluded royalty rate should reflect this factor. Marketing materials of the infringer often discuss this factor when convoyed sales are expected. Sometimes budgets and planning documents show specific sales increases for convoyed sales.

In *Deere & Co. v. Int'l Harvester Co.*, 710 F.2d 1554, 1558-1559 (Fed. Cir. 1983), the lower court, in determining a reasonable royalty, explained that the sales of the patented product facilitated sales of a more important and more profitable machine (collateral items). According to the district court, in considering the importance of the collateral products, the infringer would have paid a substantial percentage of its net sales on the infringing product as a royalty, "even exceeding its expected profit on [its infringing corn heads], to protect [the collateral noninfringing product's] sales and profits." For more information, refer to *Deere & Co. v. International Harvester Co.*, 218 USPQ 403, 407 (C.D. Ill. 1982). The Federal Circuit affirmed.

(g) THE DURATION OF THE PATENT AND THE TERM OF THE LICENSE. This factor is not always as important as you might think. A long patent life can leave a licensee with few options for using the patented invention. Waiting for expiration of the patent may force the licensee to be out of the market for too long. This can have disastrous consequences to a strategic plan. In such cases a high royalty rate may be warranted. At the same time, a high royalty may be acceptable where a short patent life exists. A licensee may find a high royalty rate acceptable for a short period of time until the patent expires. In this instance, the licensee can stay in the market without having to agree to a high long-term expense in the form of a royalty rate.

(h) THE ESTABLISHED PROFITABILITY OF THE PRODUCT MADE UNDER THE PATENT, ITS COMMERCIAL SUCCESS, AND ITS CURRENT POPULARITY. Established profitability may not exist for some infringing products. Early in the life cycle of products, profits can be sacrificed to gain market share. Huge advertising expenses can eliminate profits during the initial introduction of a patented product. Such expenditures are usually spent to capture market share. Later, the advertising and promotional expenses are reduced and profits can become substantial. As a result, a patented product may not have an established level of profits but can still be valuable and still deserve a high royalty rate. In other cases sales reports or consumer research can demonstrate the commercial success and current popularity of a patented product. Such information should be viewed in the context of the industry and market niches that the product serves. A few thousand units of sales can be a great success for some products, but a disaster for other types of products.

(i) THE UTILITY AND ADVANTAGE OF THE PATENT PROPERTY OVER THE OLD MODES OR DEVICES, IF ANY, THAT HAD BEEN USED FOR WORKING OUT SIMILAR RESULTS. Technical information is the first place to look when addressing this factor, but consumer research can also provide clues about the superiority of the patented product over previous versions. In some instances, the patented property is an incremental improvement over an older method or device. A differential profit calculation can provide a possible indication of a reasonable royalty rate. The difference between the profits of the product (or other commercial exploitation) before the patented invention was introduced and the product profits afterward can indicate a reasonable royalty rate. This can be especially true where a patented invention has been used to improve a continuous process.

(j) THE NATURE OF THE PATENTED INVENTION, THE CHARACTER OF THE COMMERCIAL EMBODIMENT OF IT AS OWNED AND PRODUCED BY THE LICENSOR; AND THE BENEFITS TO THOSE WHO HAVE USED THE INVENTION. This factor is often addressed by considering the patented invention with respect to its overall commercialization. Is it a stand-alone product, or is it part of a larger item? Higher royalties can sometimes be associated with product-defining inventions as opposed to inventions that simply add enhancements to existing products. However, this does not necessarily mean that an enhancing feature should command a low royalty rate where the feature can be shown to have caused higher sales or profits for the improved product.

(k) THE EXTENT TO WHICH THE INFRINGER HAS MADE USE OF THE INVENTION, AND ANY EVIDENCE PROBATIVE OF THE VALUE OF THAT USE. Evidence that supports this factor can be wide-ranging. Sales, profits, convoyed sales, stock price increases, and other economic benefits can sometimes be attributed to the patents in suit. Many of these possibilities are specifically addressed by other *Georgia-Pacific* factors. Areas not specially covered can be introduced by this factor. In some cases the patent in suit can simply improve a company's prestige. Prestige alone may not be directly profitable, but an improved image in the eyes of customers can have an overall benefit to the company. One caveat—the degree to which this exists can sometimes be difficult to quantify.

(l) THE PORTION OF THE PROFIT OR SELLING PRICE THAT MAY BE CUSTOMARY IN THE PARTICULAR BUSINESS OR IN COMPARABLE BUSINESSES TO ALLOW FOR THE USE OF THE INVENTION OR ANALOGOUS INVENTIONS. Rarely do customary profit allocations exist for an industry. Some industries have vague rules of thumb, but they are seldom directly applicable to a specific case. Most of the time, the information derived from considering the other factors dominates.

(m) THE PORTION OF THE REALIZABLE PROFIT THAT SHOULD BE CREDITED TO THE INVENTION AS DISTINGUISHED FROM NONPATENTED ELEMENTS, THE MANUFACTURING PROCESS, BUSINESS RISKS, OR SIGNIFICANT FEATURES OR IMPROVEMENTS ADDED BY THE INFRINGER. A reasonable royalty would typically allow for profits to be attributed to earning a return on other assets used in commercializing the infringing product. Instances can exist, however, where all profits might be paid as a royalty because of other economic benefits that a licensee expects from use of the invention (see previous discussion on convoyed sales). The analytical approach can be useful in addressing this factor, as can an investment rate of return analysis. This factor allows for profits to be earned by the infringer after allowing for the reasonable royalty rate.

(n) THE OPINION AND TESTIMONY OF QUALIFIED EXPERTS. This factor is pertinent to the court and/or jury and is presented by the report and testimony of an expert.

(o) THE AMOUNT THAT A LICENSOR (SUCH AS THE PATENTEE) AND A LICENSEE (SUCH AS THE INFRINGER) WOULD HAVE AGREED UPON (AT THE TIME THE INFRINGEMENT BEGAN) IF BOTH HAD BEEN REASONABLY AND VOLUNTARILY TRYING TO REACH AN AGREEMENT; THAT IS, THAT AMOUNT WHICH A PRUDENT LICENSEE—WHO DESIRES, AS A BUSINESS PROPOSITION, TO OBTAIN A LICENSE TO MANUFACTURE AND SELL A PARTICULAR ARTICLE EMBODYING THE PATENTED INVENTION—WOULD HAVE BEEN WILLING TO PAY AS A ROYALTY (WHILE MAKING A REASONABLE PROFIT) AND WHICH AMOUNT WOULD HAVE BEEN ACCEPTABLE BY A PRUDENT PATENTEE WHO WAS WILLING TO GRANT A LICENSE. This factor is the basis for considering the information collected to address the previous 14 factors. For

coming to a reasonable royalty rate conclusion, the question becomes, "What royalty rate would the two parties in suit come to if they were sincerely trying to reach a license agreement and had the information available to them that addresses the previous 14 factors?" The answer to this question establishes an indication of a reasonable royalty rate to use for calculating damages.

Underlying assumptions are imposed on the negotiating parties about the patents in suit and the allegedly infringing commercial activity. The first assumption has to do with validity of the patents. The hypothetical negotiators are to negotiate with the understanding that both parties know for certain that the patents in suit are valid and enforceable. This is unlike a license negotiation that occurs outside the context of an infringement lawsuit. Typically, negotiating parties may spend a great deal of time and effort arguing over the validity and enforceability of the patents to be licensed. Such negotiations can sometimes result in a compromise that is addressed by a lower royalty rate. The second assumption imposed on the negotiation has to do with the commercial activity that initiated the suit. The negotiators are to negotiate with the understanding that both parties know for certain that the commercial activity of the defendant infringes the patents in suit. This is also unlike a license negotiation that occurs outside the context of an infringement lawsuit. Typically, the negotiators spend a great deal of time and effort arguing about the commercial activity and whether it actually infringes the subject of the licensing negotiations. Even if the parties agree that the patents are valid and enforceable, the licensee may have strong arguments that bring infringement into question. Here, too, such negotiations can sometimes result in a compromise that is addressed by a lower royalty rate. For the *Georgia-Pacific* hypothetical negotiation, these elements of the negotiation are established and not open for interpretation.

Typically the negotiation is assumed to take place at the date when infringement first began. This usually means the date at which commercial exploitation of the infringed property started. So, the hypothetical licensor and licensee are assumed to be voluntarily locked in a room with information that addresses the first 14 factors. A rigid interpretation of this scenario suggests that the information to be used by the negotiating parties is limited to that which was available at the time of the hypothetical negotiation. In this scenario, the parties would be assumed to negotiate at the date of first infringement, using only information that would be available at the date of first infringement. Under this scenario if high sales growth, huge profits, and dominant market share were not realized from exploitation of the infringed property until years after the first infringing sales, then this information would not be considered as part of the negotiation. Very often infringement lawsuits take place years after the first date of infringement, and much information becomes available that might not have been available at the hypothetical negotiation date. Many of the answers to the 14 previously discussed factors could be different, depending on the date of the negotiation. As an example, profit expectations that might have existed at the hypothetical negotiation date may have been long ago proved as incorrect. Or, active licensing of the patent in suit may have been accomplished since infringement began. In fact, an established royalty rate may actually exist by the trial date but not at the time of the hypothetical negotiation. Many courts have addressed this problem by allowing the use of information that became available after the date at which the hypothetical negotiation takes place. In one case, information about actual profits was allowed for consideration [*Deere & Co. v. International Harvester Co.*, 710 F2.d 1555, 1558 (Fed. Cir. 1983)]. Such information is allowed into the negotiation if the parties could have reasonably anticipated it at the time of the hypothetical negotiation date. Of course this can lead to arguments about what information could

have been reasonably anticipated and what information was beyond the imagination of the negotiating parties. Recently, this problem was addressed by allowing all information to be used in the hypothetical negotiation.

In *Susan Maxwell v. J. Baker* the jury instructions included the following statement by the court, "In determining a reasonable royalty, you are to imagine that a hypothetical negotiation took place between J. Baker and Maxwell at or about the time that J. Baker first infringed the patent. You must assume that Maxwell was willing to grant a license and that J. Baker was willing to accept one. . . . In determining the result of such a hypothetical negotiation, you may consider facts and events that occurred after the alleged infringement began, even though they would not have been known to the parties at the time of the hypothetical negotiation. . . . ."[5] This instruction allowed for all information to be used in the negotiation, regardless of whether it could have been anticipated by the negotiating parties.

Many argue that the patentee would not offer a license under any circumstances and that this underlying assumption is unrealistic. Nonetheless, the framework established under *Georgia-Pacific* insists that the two parties to the suit be hypothetically placed in a situation where they must come to terms under which the plaintiff would have licensed the infringed property to the defendant. This can conflict with the information that addresses factor 4. Instances exist where the patentee claims that a license would not have been granted under any circumstances, yet factor 15 forces a hypothetical negotiation. Reconciliation can only be accomplished by giving considerable weight to the patentee's position (as addressed by factor 4) and concluding a higher royalty rate than might otherwise be concluded. Evidence to support an economic advantage for the patentee from taking this position is important to support an upward royalty rate conclusion.

35.2 SUMMARY

The *Georgia-Pacific* factors provide a framework for determining a royalty rate for use in calculating damages. Not all of the factors provide exact quantification of an answer, but they are an excellent starting point for qualifying the value of the patent in suit.

The *Georgia-Pacific* factors are fundamental to establishing a reasonable royalty rate. Other methods are useful for refining the final answer, but these 15 factors are the traditional starting point for royalty rate–base damages.

5. United States Court of Appeals for the Federal Circuit, 95-1292,-1293, -1355, *Susan M. Maxwell v. J. Baker, Inc.*

CHAPTER 36

THE ANALYTICAL APPROACH

The analytical approach is a method for deriving a reasonable royalty. It has characteristics that can lead to an appropriate conclusion. The analytical approach determines a reasonable royalty as the difference between profits expected from infringing sales and a normal industry profit level. The analytical approach can be summarized by the following equation:

Expected Profit Margin – Normal Profit Margin = Royalty Rate (Eq. 36.1)

In *TWM Mfg. Co., Inc. v. Dura Corp*., 789 F.2d 895, 899 (Fed. Cir. 1986), a royalty rate for damages was calculated based on an analysis of the business plan of the infringer prepared just prior to the onset of the infringing activity. The court discovered the profit expectations of the infringer from internal memorandums written by top executives of the company. Internal memorandums showed that company management expected to earn gross profit margins of almost 53% from the proposed infringing sales. Operating profit margins were then calculated by subtracting overhead costs to yield an expected profit margin of between 37% and 42%. To find the portion of this profit level that should be provided as a royalty to the plaintiff, the court considered the normal profits earned in the industry at the time of infringement. These profit levels were determined to be between 6.6% and 12.5%. These normal industry profits were considered to represent profit margins that would be acceptable to firms operating in the industry. The remaining 30% of profits were found to represent a reasonable royalty from which to calculate infringement damages. On appeal, the Federal Circuit affirmed.

An important characteristic of this royalty method, as used by the court for this case, is the emphasis placed on the profit expectations associated with using the intellectual property at the time of the infringement. Actual profits realized during infringement were decided to be irrelevant in this case. If instead of infringing, a royalty had been negotiated as part of a license, the licensee would have considered the amount they expected to earn from exploiting the intellectual property while negotiating the amount of royalty they would be willing to pay. The focus of negotiations would be on profit expectations. Actual profits would not be considered because actual profits would not have been earned, since sales activities would not have begun at the time of the negotiations. Some courts allow profitability information after the date of infringement to be introduced as a consideration for determining a reasonable royalty, as previously discussed in Chapter 35.

Another important characteristic of the analytical approach is the search for a benchmark level of earnings that infringers should be allowed to keep before any excess profits are allocated to the intellectual property owner. Unlike a lost-profit calculation, a reasonable royalty allows some level of profits to remain with the infringer/licensee.

36.1 NORMAL INDUSTRY PROFITS

A difficulty with the analytical approach centers on answering the question, "What is normal?" Many companies in the same industry, offering the same types of products to the same types of customers, can show wide swings in profit margins. Presented in Exhibit 36.1 are the net profit margins for six companies that compete in the same industry, selling similar products to similar types of customers. The profit margins range from a low of 0.2% to a high of 11.4%. The average for the six companies is 6.5%. The average increases to 9.4% if Beauticontrol Cosmetics and Helene Curtis are eliminated from the average.

It can also be difficult to find agreement on what constitutes normal profit margins for an individual company. Different subsidiaries, divisions, and even product lines within the same company can display wide swings in profitability. Many large companies have a portfolio of businesses. Some of the product offerings are mature products that enjoy large market shares but contribute only moderate profit margins because of selling price competition. Other product offerings are emerging products that have great potential for profits and market share but won't deliver earnings contribution until a later date. Still other products of the same diversified company might contribute huge profits because of a technological advantage but only from exploitation of a small market niche. Shown in Exhibit 36.2 are the annual earnings from three different products of a hypothetical company called Diversified Company.

Cosmetics Companies

Company	Profit Margin
Aloette Cosmetics	8.2%
Avon Products	8.6%
Beauticontrol Cosmetics	0.2%
DEP Corporation	9.4%
Helene Curtis	1.2%
Jean Philippe Fragrances	11.4%

EXHIBIT 36.1 NET PROFIT MARGINS FOR SIX COSMETICS COMPANIES

Diversified Company Product Line Profitability (millions)

Product Offering	Annual Sales	Total Earnings	Profit Margin
Mature Product	$1,429	$86	6%
High Tech Product	516	77	15%
Emerging Product	333	10	3%
Total	$2,278	$173	7.6%

EXHIBIT 36.2 ANNUAL EARNINGS FROM DIFFERENT PRODUCTS

The overall profitability of the company is 7.6%, calculated as the total earnings of $173 million divided by the total sales of $2.278 billion. The overall profitability of the company may not be appropriate for use as a normal industry profit margin for any one of the individual product lines. Each product line shows a profit margin that is very different from the profitability of the overall company. Even use of the individual profit margins can be inappropriate. In the case of the Emerging Product, the low profit margin may be the result of continued research and aggressive marketing. These early-stage expenses drain current profitability but will hopefully be recouped from higher profits in the future. As a result, the normal industry profits for the Emerging Product will not be defined until much later.

It has been argued that the overall profitability of the company represents the normal amount that should be used in the analytical approach. Such a practice would unfairly penalize a company that practices diversification. Suppose that Diversified Company infringed the patents of another company with a product in its High-Tech Product category. Suppose further that the infringing product delivered a profit margin of 20%. Using the 15% profit margin as the industry standard would leave a royalty award of 5% for the plaintiff, but using the overall company profit of 7.6% would raise the royalty rate to 12.4%. Diversified Company would be inappropriately penalized for practicing diversification. If they had never started the other two product lines, then the royalty rate award would be the lower 5%. Careful analysis is required to properly use the analytical approach.

The analytical approach can be very useful. It is based on information timely to the infringement. It attempts to allocate the profits earned from intellectual property exploitation between the infringer and infringed. Unlike a lost-profit calculation, a reasonable royalty would leave the infringer, at least in a licensing context, with some sort of profit adequate to compensate the infringer for business investment and risks. The analytical approach is especially useful if a normalized standard industry profit can be properly derived; this can be difficult but is not impossible. The analytical approach can provide an order-of-magnitude indication of a reasonable royalty. The analytical approach can be improved, however.

36.2 A MORE COMPREHENSIVE ANALYTICAL APPROACH

Missing from the analytical approach is consideration of the amount of complementary assets required for exploitation of the subject intellectual property. A unique intellectual property might require significantly more investment in manufacturing assets than is typical for an industry. Consequently, the industry standard profit margin might be inappropriate. From another viewpoint, the industry profit requirement for commercializing specific intellectual property requiring massive fixed asset investment might be higher than the profits typically required in a specific industry. This could easily happen if new intellectual property is being introduced into an industry not accustomed to capital-intensive activities.

The analytical approach loses sight of the balance sheet. Profits are important but they are not independent of investment in complementary business assets. Otherwise everyone with an idea would be in business. The profit and loss statement is derived from the management of the investment in the assets reported on the balance sheet. Exploitation of intellectual property requires the integration of different types of resources and assets. Intellectual property by itself rarely spews forth money. The equation of commercialization

requires working capital, fixed assets, intangible assets, and intellectual property, as previously discussed. A more comprehensive version of the analytical approach can sometimes be utilized, enhanced to the extent that the profits to be allocated between the infringer and infringed reflect the dynamic relationship between profits and the amounts invested in the complementary assets. When balance sheet information is available, an investment rate of return analysis (discussed in Chapter 7) can be used to support the royalty rate derived from the analytical approach.

36.3 HYPOTHETICAL EXAMPLE

Presented in Exhibit 36.3 are the profit margin expectations of Exciting Biotech, Inc. associated with commercialization of a new patented drug therapy. By subtracting the enhanced operating profit margins from an industry *norm*, the portion of profits that can be attributed to proprietary technology are isolated as a royalty rate.

Presented in Exhibit 36.4 are the operating profit margins for a group of generic drug companies that arguably are producing commodity products. The products are competitively priced, mass produced, and widely distributed, and they provide their makers with slim profit margins in comparison to proprietary products. The profit margins were derived from information downloaded from the Disclosure database on public corporations via CompuServe. Adjustments were incorporated into the operating profit margins to attempt to isolate the profits derived from the operations of the selected companies. Adjustments were made to eliminate income and expenses associated with nonoperating assets and nonrecurring events when possible. Interest expenses were also eliminated. As a group, the average profit margins of these companies can be looked at as the commodity profit margin for the generic drug industry. In this case we have looked to estimate a *normal* or *commodity* profit margin by looking at the operating profit margins of companies in the business of manufacturing and selling generic drugs. The operating profit margins of several large generic drug manufacturers are presented in Exhibit 36.4. The profit margins of the companies are derived from participation in the drug industry without the benefit of patent protection.

The analytical approach indicates a royalty rate of 39% as calculated by subtracting the 23% generic drug company profit margin from the 62% profit margin expected by Exciting Biotech, Inc. from commercialization of the new proprietary invention.

U.S. New Product Revenue Forecast—1996
Exciting Biotech, Inc.
($millions)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Primary Market Revenues	0	0	100	300	400	550	600	625	650	675
Net Income Before Tax	-25	0	80	150	225	350	375	385	395	400
Profit Margin	deficit	0%	80%	50%	56%	64%	63%	62%	61%	59%

Average Profit Margin 98–05 62%

EXHIBIT 36.3 EXCITING BIOTECH, INC. PROFIT MARGIN EXPECTATIONS

Generic Drug Company
Average Operating Profit Margins

Company	Profit Margin	Period Averaged
Barr Labs	10.50%	90–95
Biocraft Labs	10.70%	89–95
Copley Pharmaceuticals	38.60%	89–94
VAX Corp.	15.20%	89–94
Mylan Labs	31.20%	89–95
Pharmaceutical Resources	16.00%	92–94
Purepac nc.	28.00%	91–94
Watson Pharmaceuticals	34.00%	89–94
Group Average	**23.03%**	

The group average gives equal weight to each company average. Company averages are not weighted by volume.

Operating profit margins were calculated as: net sales *minus* cost of goods sold and selling and administration expenses, *before* research and development and interest expenses.

The primary source of the financial information used to calculate the profit margins was the Disclosure computer database accessed through Compuserve.

The average operating profit margins reported here were calculated for the years indicated in column 3 to reflect profits most relevant to the hypothetical negotiation date. The periods selected were based on the availability of data and the adjustment of loss years in order to reflect a normalized level of profits for each generic drug company.

The average for Barr Labs reflects adjustments for elimination of profits associated with the Tamoxifen product and costs associated with nonrecurring events.

The average for IVAX reflects adjustments for eliminating nondrug product lines.

The average for Pharmaceutical Resources excludes years prior to 1992 due to losses associated with restructuring Par Pharmaceuticals.

Information about the profits of Purepac, Inc. prior to 1991 are not meaningful because the company was in a start-up mode.

EXHIBIT 36.4 OPERATING PROFITS FOR GENERIC DRUG COMPANIES

36.4 GENERIC DRUG PRICING

Additional information that supports this level of royalty rate is developed from considering the price differential between proprietary drugs under patent protection and the same product sold as a generic drug after patent protection expires. The primary difference is the loss of patent protection. The following information indicates the enormous value of patent protection.

In a story about drug pricing, *Business Week* reported that the patent protection for the ulcer drug Tagamet is about to expire and "Mylan Laboratories is planning a clone of

Tagamet for half the price."[1] This represents a 50% discount off the price of the product while under patent protection. In the same story *Business Week* said, "Gross margins for generics are 50 percent to 60 percent, vs. 90 percent to 95 percent for branded products. . . ." The profit differential indicates a royalty rate under the analytical approach of between 30% and 45%.[2]

Business Week also discussed a new strategy being followed by the proprietary drug companies.[3] Faced with huge market share losses when a proprietary drug loses patent protection, these companies are introducing their own versions of generic copies of their proprietary drugs. *Business Week* said, "The majors often price generics at only 10 percent to 25 percent less than the brand-name price, while generics ideally should be half [50%] the full price."

Forbes reported that patent protection for Naprosyn, a $500 million (1992 annual sales) arthritis drug made by Syntex, expired in December 1993.[4] Prior to the loss of patent protection, the company introduced in October 1993 a generic version of the drug to try to ease the loss of its market share. A few months after the launch of Syntex's generic version, five other generic drug companies entered the market. *Forbes* said, "Soon the generics were selling at one-tenth [10%] of Naprosyn and had over 80 percent of the market." A royalty rate of 90% is indicated by this information.

Pharmaceutical Business News, a medical and health industry publication, reported, "Generic drugs typically cost 30 percent to 50 percent less than their brand-name counterparts."[5]

Chemical Marketing Reporter, a pharmaceutical industry publication, reported, "Industry analysts agree that brands will continue to be new drug innovators and generics will provide off-patent copies at one-fifth [20%] to one-half of the price [50%]."[6]

36.5 SUMMARY

The analytical approach is a viable model for deriving a royalty rate, but in many cases it should be used with other models to obtain support for the answer it provides.

1. "A Big Dose of Uncertainty—An industry plagued by high costs faces health-care reform," *Business Week* (January 10, 1994), p. 85.
2. Ibid.
3. "The Drugmakers vs. The Trustbusters," *Business Week* (September 5, 1994), p. 67.
4. "Drug wars," *Forbes* (August 29, 1994), p. 81.
5. "Market forces usher in a golden age of generic drugs," *Pharmaceutical Business News* (November 29, 1993), published by Financial Times Business Information, Ltd., London, UK.
6. "Into the mainstream (greater cooperation between generic drug and name-brand drug makers)," *Chemical Marketing Reporter* (March 9, 1992), Schnell Publishing Company, Inc.

CHAPTER 37

DISCOUNTED CASH FLOW ANALYSIS

A variation of the investment rate of return analysis can be used for royalty rate derivation. This method makes use of a discounted cash flow analysis that converts a stream of expected cash flows into a present value. The conversion of expected cash flows is accomplished by using a discount rate reflecting the risk of the expected cash flows. In addition to the benefits associated with using an investment rate of return analysis, the discounted cash flow analysis also reflects the:

- Time period during which economic benefits will be obtained
- Timing of capital expenditure investments
- Timing of working capital investments
- Timing and amount of other investments in intellectual property and intangible assets not associated with the subject technology

The basis of all value is cash. The net amount of cash flow thrown off by a business is central to corporate value. Net cash flow—also called free cash flow—is the amount of cash remaining after reinvestment in the business to sustain continued viability of the business. Net cash flow can be used for dividends, charity contributions, or diversification investments. Net cash flow is not needed to continue fueling the business. Aggregation of all future net cash flows derived from operating the business, modified with respect to the time value of money, represents the value of a business.

A basic net cash flow calculation is depicted below:

NET SALES minus
MANUFACTURING COSTS equals (Eq. 37.1)
GROSS PROFITS
GROSS PROFITS minus
RESEARCH EXPENSES and
MARKETING EXPENSES and
GENERAL OVERHEAD EXPENSES and
ADMINISTRATION EXPENSES and
SELLING EXPENSES equals
OPERATING PROFITS
OPERATING PROFITS minus
INCOME TAXES equals
NET INCOME
NET INCOME plus

DEPRECIATION equals
GROSS CASH FLOW
GROSS CASH FLOW minus
ADDITIONS TO WORKING CAPITAL and
ADDITIONS TO FIXED PLANT INVESTMENT equals
NET CASH FLOW

Sales represent the revenue dollars collected by the company from providing products or services to customers. Net sales are the amount of revenues that remains after discounts, returns, and refunds.

Manufacturing costs are the primary costs associated with making or providing the product or service. Included in this expense category are expenses associated with labor, raw materials, manufacturing plant costs, and all other expenses directly related to transforming raw materials into finished goods.

Gross profit is the difference between net sales and manufacturing costs. The level of gross profits reflects manufacturing efficiencies and a general level of product profitability. It does not, however, reflect the ultimate commercial success of a product or service. Many other expenses important to commercial success are not accounted for at the gross profit level. Other expenses contributing to successful commercialization of a product include:

- Research expenses associated with creating new products and enhancing old ones
- Marketing expenses required for motivating customers to purchase the products or service
- General overhead expenses required to provide basic corporate support for commercialization activities
- Selling expenses associated with salaries, commissions, and other activities that keep the product moving into the hands of customers

Operating profits reflect the amount left over after nonmanufacturing expenses are subtracted from gross profits.

Income taxes are expenses of doing business and must be accounted for in valuing any business initiative.

The depreciation expense is calculated based on the remaining useful life of equipment that is purchased for business purposes. It is a noncash expense that allocates the original amount invested in fixed assets. Depreciation is calculated to account for the deterioration of fixed assets as they are used to produce, market, sell, and deliver goods, and administer the process of generating sales. Depreciation accounts for the "using up" of assets. It is called a noncash expense because the cash associated with the expense was disbursed long ago at the time that fixed assets were purchased and installed. The depreciation expense is subtracted before reaching operating profit so that income taxes will reflect depreciation as an expense of doing business.

Gross cash flow is calculated by adding the depreciation expense, previously subtracted to calculated operating income, back to the after-tax income of the company. Gross cash flow represents the total amount of cash that the business generates each year.

Additions to working capital and additions to fixed plant investment are investments in the business required to fuel continued production capabilities.

Net cash flow is everything that remains of gross cash flow after accounting for reinvestment into the business for fixed plant and working capital additions.

Value is derived from the net cash flows by converting the expected amounts into a present value using discount rates that reflect investment risk and time value of money, as previously discussed in Chapter 7.

Note that interest expenses are not part of this analysis. In considering the value of intellectual property, and the royalty rate that should be associated with it, the means by which it is financed has nothing to do with its value. This model is looking to capture the cash flows that the intellectual property can generate from the market place. A debt burden should not be part of such an analysis. If you think of a new car, the price of the car (its value) is the same regardless of how the buyer will finance it. Another example is income-producing real estate. The value of the property is based on the net rental income that the property generates before financing costs. Think of a highly leveraged property. If a property is leveraged to such an extent that no net income is produced because of high interest expenses, it does not mean that the property has zero value. The property might actually be generating fabulous cash flow that is absorbed by a poor financial structure.

In damages analysis we are looking to identify the amount of economic benefit that the infringer wrongly took. Thus, the damages analysis should calculate such benefits free of interest expenses. The fact that an infringer used the wrongly taken economic benefits for interest expenses should not excuse the infringer from compensating the infringed. When someone steals a car for a joyride but claims that driving the car was not any fun, he or she should not be excused from paying restitution.

37.1 PHARMAPROD COMMODITY CORP. VALUE

Consider the discounted cash flow analysis presented in Exhibit 37.1 as a simple example of using discounted cash flow analysis for royalty rate derivation. Exhibit 37.1 represents the future net cash flows for PharmaProd Commodity Corp. as it currently operates. The sales, expenses, and earnings for the company reflect the commodity-like nature of the business. Product prices are under pressure from strong competition, translating into low profitability. Strong competition also severely limits the opportunity for the company to achieve any substantial growth in the future. The present value calculation contained in Exhibit 37.1 shows a value for the company at $10,118,000 using a discount rate of 13%. The calculation of the value of the company includes the present value of the net cash flows expected after year 11. Constant growth, reflecting inflation and minimal volume growth into perpetuity is captured in the final year discount rate factor used in year 11. The $10.1 million value equals the aggregate value of all the assets of the company. This amount indicates that the company has earned its required weighted average cost of capital and an excess present value of $10,118,000.

PharmaProd Commodity Corp. is planning to embark on a major business initiative with the introduction of a new product using new technology and thus changing itself into New PharmaProd Corp. It will continue to offer its commodity product but also add a new proprietary product to its offerings. The technology will be licensed from another company. Exhibit 37.2 represents the present value of the company including the net cash flows from the existing operations of the company and the net cash flows from the new product initiative. Additional sales, manufacturing costs, and expenses are reflected in the analysis. Also, the additions to working capital and fixed assets required for the new product commercialization effort are reflected. Also reflected in the analysis are the research and development expenses needed to prove the technology and obtain FDA

YEAR		1	2	3	4	5	6	7	8	9	10
Sales		25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales		12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
Gross Profit		12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
Gross Profit Margin		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Operating Expenses:											
General & Administrative		3,000	3,090	3,183	3,278	3,377	3,478	3,582	3,690	3,800	3,914
Research & Development		0	0	0	0	0	0	0	0	0	0
Marketing		2,500	2,575	2,652	2,732	2,814	2,898	2,985	3,075	3,167	3,262
Selling		5,000	5,150	5,305	5,464	5,628	5,796	5,970	6,149	6,334	6,524
Operating Profit		2,000	2,060	2,122	2,185	2,251	2,319	2,388	2,460	2,534	2,610
Operating Profit Margin		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Income Taxes		760	783	806	830	855	881	907	935	963	992
Net Income		1,240	1,277	1,316	1,355	1,396	1,437	1,481	1,525	1,571	1,618
Net Profit Margin		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Cash Flow Calculation:											
+ Depreciation		19	38	59	79	101	123	146	169	193	218
– Working Capital Additions		140	150	155	159	164	169	174	179	184	190
– Capital Expenditures		175	188	193	199	205	211	217	224	231	238
Net Cash Flow		944	978	1,026	1,076	1,128	1,181	1,235	1,291	1,349	1,408
Discount Factor	13%	0.9413	0.8330	0.7372	0.6524	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value		888	815	757	702	651	603	558	517	478	4,149
Net Present Value		***10,118***									

EXHIBIT 37.1 PHARMAPROD COMMODITY CORP. BUSINESS ENTERPRISE VALUE

YEAR	1	2	3	4	5	6	7	8	9	10
Sales	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
New Product Sales	100	1,000	4,000	8,000	10,000	11,000	12,100	13,310	14,641	15,080
New Product Cost of Sales	35	350	1,400	2,800	3,500	3,850	4,235	4,658.5	5,124	5,278
Gross Profit	12,565	13,525	15,861	18,859	20,569	21,641	22,791	24,025	25,351	26,112
Gross Profit Margin	50.1%	50.6%	52.0%	53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
Operating Expenses:										
General & Administrative	3,012	3,210	3,663	4,238	4,577	4,798	5,034	5,287	5,557	5,724
Research & Development	5,000	1,500	0	0	0	0	0	0	0	0
Marketing	2,510	2,675	3,052	3,532	3,814	3,998	4,195	4,406	4,631	4,770
Selling	5,020	5,350	6,105	7,064	7,628	7,996	8,390	8,811	9,262	9,540
Operating Profit	(2,977)	790	3,042	4,025	4,551	4,849	5,171	5,521	5,901	6,078
Operating Profit Margin	–11.6%	3.1%	11.5%	14.7%	16.2%	16.7%	17.3%	18.0%	18.6%	18.6%
Income Taxes	(1,131)	300	1,156	1,530	1,729	1,842	1,965	2,098	2,242	2,310
Net Income	(1,846)	490	1,886	2,496	2,822	3,006	3,206	3,423	3,659	3,768
Net Profit Margin	–7.4%	1.9%	7.1%	9.1%	10.0%	10.4%	10.7%	11.1%	11.6%	11.6%
Cash Flow Calculation:										
+ Depreciation	368	387	408	428	450	472	495	518	542	567
– Working Capital Additions	160	330	755	959	564	369	394	421	451	278
– Capital Expenditures	3,665	188	193	199	205	211	217	224	231	238
Net Cash Flow	(5,303)	360	1,346	1,766	2,503	2,898	3,090	3,296	3,520	3,820
Discount Factor 13%	0.9413	0.833	0.737	0.652	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value	(4,992)	300	992	1,152	1,445	1,481	1,397	1,319	1,246	11,253
Net Present Value	***15,593***									

EXHIBIT 37.2 NEW PHARMAPROD CORP. BUSINESS ENTERPRISE VALUE WITH LICENSED TECHNOLOGY

approvals.[1] As a result of the new business initiative, the present value of the company increases to $15,593,000.[2] The higher value reflects the added revenues and earnings of the new product at the higher profit margins of the new product. A comparison of Exhibits 37.1 and 37.2 shows that research, marketing, working capital additions, and fixed asset additions are all higher, and by more than just a proportional share of the higher sales forecasts. This is especially true for the early years in the discounted cash flow analysis because the new product initially does not contribute significant sales volume but definitely has expenses.

37.2 NEW PHARMAPROD CORP. ROYALTY RATE

What royalty rate should the company pay for use of the new product technology? The highest amount of royalty the company should be willing to pay for the licensed technology is shown in Exhibit 37.3. A royalty of 10.9% of the sales associated with the new product represents a royalty expense to New PharmaProd Corp. and yields a present value of $10,118,000—the initial value of the company. At this royalty rate, the company has earned a return on the additional investment required to commercialize the new product technology and not a penny more. A royalty rate of less than 10.9% would increase the value of the company by allowing New PharmaProd Corp. to keep a portion of the excess cash flow generated by the licensed intellectual property.

Note that a payment greater than a 10.9% royalty rate would cause the value of the company to drop below the initial $10,118,000. In such a case, the company would be in a worse value condition than if it had never instituted the new business initiative.

37.3 LOST VALUE

A discounted cash flow analysis can be used to calculate damages where value has been forever lost. As an example, consider a patent attorney malpractice case where a plaintiff is suing an attorney for missing an important filing date and forever losing a chance to obtain patents in Europe. The amount of damages can be estimated from analyses similar to those presented in Exhibits 37.1 and 37.2. The first discounted cash flow analysis would derive a value for the business assuming the European patents had been properly attained. The second analysis would derive a value using the scenario that European patents did not exist, and as a result the second analysis would show lower cash flows and value. The difference in value is the damages caused by the patent attorney.

"Before and after" cash flow projections can be difficult to construct. In some cases, there might not be any hope of developing a European business without the patents that were lost. In such cases the value indicated by the differential calculation will be significant. In other circumstances a small diminution in European cash flows due to the lost patent protection may be all that results, causing a small loss in value.

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1. The time span for many pharmaceutical projects is greater than depicted in this example. For illustrative purposes a short time span has been used.
2. For simplicity the same discount rate of 13% has been used. The introduction of the new product initiative might warrant increasing the discount rate as the risk of the company is increased with the introduction of a new product.

YEAR		1	2	3	4	5	6	7	8	9	10
Sales		25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619
Cost of Sales		12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310
New Product Sales		100	1,000	4,000	8,000	10,000	11,000	12,100	13,310	14,641	15,080
New Product Cost of Sales		35	350	1,400	2,800	3,500	3,850	4,235	4,658.5	5,124	5,278
Gross Profit		12,565	13,525	15,861	18,859	20,569	21,641	22,791	24,025	25,351	26,112
Gross Profit Margin		50.1%	50.6%	52.0%	53.4%	53.9%	54.1%	54.3%	54.5%	54.7%	54.7%
Operating Expenses:											
Royalty	**10.9%**	**11**	**109**	**437**	**873**	**1,092**	**1,201**	**1,321**	**1,453**	**1,598**	**1,646**
General & Administrative		3,012	3,210	3,663	4,238	4,577	4,798	5,034	5,287	5,557	5,724
Research & Development		5,000	1,500	0	0	0	0	0	0	0	0
Marketing		2,510	2,675	3,052	3,532	3,814	3,998	4,195	4,406	4,631	4,770
Selling		5,020	5,350	6,105	7,064	7,628	7,996	8,390	8,811	9,262	9,540
Operating Profit		(2,988)	681	2,605	3,152	3,460	3,648	3,850	4,068	4,303	4,432
Operating Profit Margin		–12.0%	2.6%	9.8%	11.5%	12.3%	12.6%	12.9%	13.2%	13.6%	13.6%
Income Taxes		(1,135)	259	990	1,198	1,315	1,386	1,463	1,546	1,635	1,684
Net Income		(1,853)	422	1,615	1,954	2,145	2,262	2,387	2,522	2,668	2,748
Net Profit Margin		–7.4%	1.6%	6.1%	7.2%	7.6%	7.8%	8.0%	8.2%	8.4%	8.4%
Cash Flow Calculation:											
+ Depreciation		368	387	408	428	450	472	495	518	542	567
– Working Capital Additions		160	330	755	959	564	369	394	421	451	278
– Capital Expenditures		3,665	188	193	199	205	211	217	224	231	238
Net Cash Flow		(5,310)	292	1,075	1,225	1,826	2,154	2,271	2,396	2,529	2,799
Discount Factor	13%	0.9413	0.833	0.7372	0.6524	0.5773	0.5109	0.4521	0.4001	0.3541	2.9459
Present Value		(4,998)	243	793	799	1,054	1,100	1,027	958	895	8,247
Net Present Value		***10,118***									

EXHIBIT 37.3 NEW PHARMAPROD CORP. BUSINESS ENTERPRISE VALUE WITH LICENSED TECHNOLOGY AND A ROYALTY PAYMENT

37.4 SUMMARY

Considering the importance of intellectual property, a comprehensive analysis that reflects revenues, profits, expenses, and investment is justified to isolate the income attributed to intellectual property and to form the basis for royalty rate negotiations.

CHAPTER 38

MARKET-DERIVED ROYALTY RATES

Indications of reasonable royalties can sometimes be derived from market transactions, but care is required. The amount at which independent parties licensed similar intellectual property can provide an indication for a reasonable royalty. In fact, a large part of establishing infringement damage has been testimony presented by experts. These experts cite the royalty rates contained in licenses of similar intellectual property that were negotiated between unrelated parties and, relying on these precedents, conclude a proxy royalty rate for calculating infringement damages.

Market transactions considered useful for deriving reasonable royalties are usually between unrelated parties where intellectual property is the focal point of the deal. When a market transaction centers on intellectual property similar to the infringed property, the royalty terms of the transaction may be appropriate for application to the infringed property. Transactions most often cited as useful indications for reasonable royalties are license agreements that disclose the compensation terms for similar property.

Suppose that a personal shaving product has been enhanced by a safety feature that prevents the blades from ever nicking or cutting the consumer's face or legs. Suppose that the feature is patented, valid, and infringed. A reasonable royalty for use in fixing damages might be determined by looking at the amount of royalty paid by other shaving manufacturers for similar safety features. Unfortunately, such agreements are nearly impossible to discover. Very often license agreements involving similar intellectual property just do not exist. When such agreements are actually discovered, there isn't any guarantee that the parties involved will be eager to disclose specific details that would be useful for comparative purposes. Even if all of the specific details of a comparable transaction can be discovered, many hurdles remain before the market transaction can be considered as a reliable indication of a reasonable royalty for application to a specific infringement case.

Many aspects of market transactions should be studied before it can be concluded that a specific transaction represents a reasonable royalty for use in a specific infringement case. The remainder of this chapter considers the appropriateness of using the royalty terms of similar licenses as a proxy for infringement damages when analyzing similar intellectual property licenses.

38.1 INTERNAL LICENSES ARE OFTEN SELF-SERVING

Multinational corporations often transfer intellectual property to foreign subsidiaries. Parent companies often own keystone intellectual property and their subsidiaries hold licenses allowing them to use the property. These licenses are referred to as internal licenses. Many of the royalty terms in these types of transactions are structured to shift income into jurisdictions with lower income tax burdens. Hence, the royalty rate may not

reflect the economic contribution of the intellectual property. Instead it may be more reflective of differential corporate income tax rates between a multinational corporate parent and a foreign subsidiary. Various tax authorities in many countries, including the United States, are clearing the cloud hanging over these international transfers. Tax specialists around the world are diligently looking at internal licenses for the reasonableness of royalty rates. As a result, the royalty rates between international related parties are becoming more arm's-length.

38.2 RELEVANT TIME PERIOD

When analyzing stock purchases, investors don't give much consideration to the price paid for stocks 20 years, 10 years, 5 years, or even a year ago. Considerations that are fundamental to pricing common stock include earnings growth prospects, expectations for economic growth, competitor analysis, inflation trends, and a myriad of other expectations about the future, all of which affect future cash flows to investors. The future is the focal point. Expected cash flows determine the amount that investors will pay for a stock. The price paid for a stock in the past is an interesting notation but has little to do with a current pricing analysis. The same is true when corporations engage in mergers and acquisitions. The prices at which businesses are exchanged seldom relate to amounts at which prior transactions were consummated.

When considering the purchase of an investment real estate property, a lot of analysis goes into determining the price to offer. Included are consideration of prevailing interest rates, inflation, rental income, operating expenses, property taxes, and income taxes. All of these considerations are analyzed from the perspective of quantifying future expectations about profits and return on investment. Very little, if any, consideration is given to the price at which the property has historically changed hands. Manhattan Island was purchased from the original owners for $24 worth of novelty trinkets. Historic transaction prices are interesting footnotes but not usually relevant for current transaction pricing.

It is no different for intellectual property. A reasonable royalty must be based on future expectations that both the licensee and the licensor individually possess and that eventually converge as negotiations reach a conclusion. Reasonable royalties must be determined with an eye to the future. The amount paid years ago for licensing intellectual property may not be relevant in light of changing industry conditions.

When considering *aged* royalty rates as a proxy for damages, also consider the fundamental industry, economic, and cultural changes that have occurred since the signing of the comparable license, and consider how the past conditions compare with those in the present.

38.3 FINANCIAL CONDITION OF BOTH LICENSING PARTIES

When one of the parties in a similar license is desperate to complete the transaction, the amount paid for the license is clouded. A nearly bankrupt licensor may not have enough time to shop for the best offer and could leave a significant amount of money on the negotiating table. On the other hand, a manufacturing company with obsolete technology may find itself going out of business without access to new technology. This may force them to agree to extraordinary terms, at least temporarily.

A fair and reasonable royalty is best determined in an environment where both of the negotiating parties are on equal footing. Both parties should have the option to walk

away from the deal. When ancillary forces are compelling one of the negotiating parties to capitulate to the demands of the other, then a fair and reasonable royalty may not be indicated in such a license agreement. An important question to consider is: "Were both parties on equal footing when the proxy royalty rate was negotiated?"

38.4 RELEVANT INDUSTRY TRANSACTIONS

Some licenses may involve property that is similar to the infringed property but licensed for use in a different industry. To be useful for infringement damages, a proxy royalty rate must have been negotiated for similar property that is used in a similar industry.

Each industry has its own set of unique economic forces. Some, such as consumer electronics, are highly competitive. Others, like airlines, are oligopolies. Some industries are sensitive to interest rates (construction). Others are not (food). Some industries are under strong pressure from foreign producers (apparel). Others are only regionally competitive (gravel quarries). All of these factors drive the profitability and growth prospects of the industry participants. These factors also impact the amount of economic benefits that intellectual property can contribute to a commercial operation, which directly relates to the royalties that can be considered reasonable.

A world-class trademark could contribute as much as, or even more than, 30% of sales as direct economic benefits when used in its core industry. Coca-Cola might be an example of a trademark that could possibly command a double-digit royalty if it were licensed for use in the soft drink industry. However, the use of the Coca-Cola trademark on sports clothing couldn't possibly command such a royalty. The vast amount of competition for sports clothing and the low profit margins in the apparel industry would drive the royalty downward into single digits. A royalty from a deal that licensed the Coca-Cola trademark into the apparel industry would be useless as a proxy for an appropriate royalty to use in licensing the same trademark in the soft drink industry. Licenses should be carefully analyzed for industry relevance.

(a) INTERNATIONAL TRANSACTIONS. In developing nations where intellectual property protection is weak, the amount paid for a license would likely be far less than in developed nations where intellectual property rights are protected and respected. This assumes that an intellectual property owner would even consider allowing for the use of its property in such countries. A low rate in developing nations reflects the fact that protection of the property may not be realistic, regardless of what the license agreement says.

Economic factors in many countries are also different, so the royalties that can be supported in various countries differs. Consequently, license agreements in different countries might possess different royalty rates for the same intellectual property, none of which may be relevant for infringement damages calculations. Foreign licenses must be compared to those in countries with comparable economic prosperity to be useful for infringement damages.

(b) INTELLECTUAL PROPERTY REMAINING LIFE. The discussion in Chapter 35, under *Georgia-Pacific*, factor 7 section g also is pertinent here. Overall, the term of the license is not always related to the level of the royalty rate.

(c) COMPLEMENTARY ASSET INVESTMENT REQUIREMENTS. Regardless of remaining economic life, a significant investment in complementary assets will affect the royalty negotiation. Intellectual property that is associated with a product that delivers a 40% operating profit is a wonderful property indeed. A very high royalty might be warranted. But if this same intellectual property requires a billion dollar up-front investment, royalty amounts may not be as stellar.

(d) NONMONETARY COMPENSATION. Compensation for the use of intellectual property can take many different forms. Sometimes cash alone is the basis of licensing compensation—a cash payment is made by the licensee and no further payments are required. Lump sum payments with additional running royalties are another example of license compensation. Running royalties alone are another example. Sometimes the licensor gets a royalty and also an equity interest in the licensee's company. Sometimes the licensor gets only an equity interest. License agreements can also call for the licensee to share technological enhancements, as grant-backs, with the licensor. In return, the licensee might demand a lower royalty rate because a portion of the licensor's compensation will be in the form of access to enhancements of the original property.

For infringement damages a reasonable royalty is usually specified as a running royalty with no other forms of compensation. For similar license agreements to be used as a proxy for damages, the form of license compensation must be on a like-kind basis. A trademark license might call for an up-front payment of $1 million plus a running royalty of 5% of sales. The up-front payment might represent several percentage points of running royalty in some circumstances. Without an up-front payment the license might have called for a running royalty of 6%, instead of 5%. In deriving a reasonable royalty rate for damages, the entire compensation package of a similar license must be translated to an amount that presents a running royalty as the sole form of license compensation. This conversion can be very difficult when licenses call for cross-licensing of technology. The problem then becomes determining the value of the technology exchanged and representation of the value as a running royalty rate. Proxy licenses must be looked at for like-kind compensation.

(e) EXCLUSIVITY. What should the basis of reasonable royalties be regarding the aspect of exclusivity? Typically, higher royalty rates are associated with license agreements providing the licensee with exclusive rights to use the intellectual property. Exclusive rights to use a keystone intellectual property place the licensee in a superior position. If the intellectual property provides highly desirable utility, then premium prices can be demanded for the product. Competitors cannot counter with the same product without risking infringement, and the exclusive licensee will earn superior profits. Such an arrangement is worth higher royalty payments. DuPont renegotiated a license involving worldwide and exclusive rights to a drug patent. They changed the agreement to a nonexclusive basis. As a result the royalty dropped from 5.5% of sales for exclusive rights to 4% of sales for nonexclusive rights.

38.5 GOVERNMENTAL REGULATIONS

Foreign licenses and their royalty rates may be inappropriate for use as a basis for a damages royalty. Foreign governments sometimes intervene in the amount of royalty that can be charged to technology transfers. Government-established royalties very often have little to do with the economic contribution of intellectual property. The royalties are more

likely the result of international trade and taxation policies. Foreign governments may also require that a certain portion of product manufacturing be conducted in host countries. Final assembly may be all that is required, or perhaps significant portions of fundamental manufacturing must be done in the host country. Labor laws may be more restrictive. Many of the regulations could be different from those of the country in which infringement took place. These regulations will affect the profitability of the foreign licensee and impact the amount that is available for royalty payments. Political instability could make privatization a real possibility and, along with the loss of a private business, the licensed technology could also be expropriated. All of these foreign government characteristics affect the profitability that can be attained with licensed property and the risk of the licensee's investment. All of these conditions affect the royalty. As a result, a royalty associated with a foreign licensing transaction may not be appropriate for use in establishing a reasonable royalty for a domestic transaction.

38.6 ARE THE INDEPENDENT PARTIES REALLY INDEPENDENT?

Independent parties that negotiate a license for intellectual property similar to the infringed property are not always as independent as they seem. Even when the two companies are separate corporations, the royalty rate that is being considered as a proxy for infringement damages may be clouded.

Strategic alliances are becoming more prevalent. Corporations are realizing that they cannot independently become masters of the many different and complex technologies that they need. Many corporations are involved in joint ventures, licenses, distribution agreements, services agreements, and other arrangements that make them into partners, at least on a limited basis. It is common for corporations to have a number of alliances with different corporations. Merck & Co. is involved with different joint ventures that include separate partnerships with Johnson & Johnson and DuPont. Also becoming common are corporations that have several different alliances with the same company.

When one independent company has several alliances with another independent company, are they still really negotiating at arm's length? One specific license agreement may not be independent of others that also exist between the two parties. One specific license agreement, containing a royalty rate that is being considered as a proxy for infringement damages, may have been negotiated as part of a package of license agreements. The negotiated royalty may have been a trade-off for other points of negotiation in other areas of their relationship. A favorable royalty may have been granted to one of the parties in exchange for a trade-off regarding a completely different strategic alliance in which the same parties participate. Licenses that are to serve as similar transactions for establishing infringement damages are most useful when truly independent parties negotiated in their own self-interests.

38.7 OUTCOME OF AN INFRINGEMENT LAWSUIT

Licenses to be used as a proxy for infringement damages may arise from the outcome of an unrelated infringement lawsuit. The infringer may find itself permanently enjoined from using the intellectual property. Looking around for alternative intellectual property, the infringer may find that the intellectual property it is barred from using is the best alternative. If the plaintiff is willing, a license deal may be struck allowing the infringer to once again use the intellectual property. This type of proxy for infringement damages may be some of the best market evidence available for establishing

infringement damages. Such an agreement could safely be assumed to have been negotiated between two parties negotiating in their own self-interests, with both being fully aware of all relevant facts, including alternative intellectual property (as was probably brought out in great detail during the infringement trial). The infringer, now turned would-be licensee, could walk away from a license deal, but instead negotiates a license for the intellectual property.

38.8 SUMMARY

Establishing reasonable royalties for calculating infringement damages is often accomplished by looking at the royalty terms specified in licenses involving similar intellectual property. Many aspects of the license agreement must be analyzed for the royalty provision to be a useful proxy.

CHAPTER 39

TRADEMARK DAMAGES

Monetary relief is generally based on damages suffered by the plaintiff trademark owner, or the unjust enrichment garnered by the infringer. Estimating the monetary damages (or the amount of profit that an infringer should disgorge) resulting from trademark infringement is a difficult process, perhaps not so much because the law is unclear but rather because the circumstances and results of infringement can vary so widely. The same uncertainties surround the quantification of damage to a trademark caused by dilution or false advertising.

The infringement of a patent raises questions that are more clearly understood: Is the patent valid or not? Is the patent embodied in the infringer's product or not?

If the patent is valid, and firmly ensconced in the infringer's product, then damages are due the patent owner. Those damages are measured by the owner's lost profits (or a reasonable royalty as a surrogate).

The questions that must be answered in trademark infringement elicit varied responses that usually do not create a clear path to damage quantification. At one extreme, a counterfeiter simply adopts the trademark of another verbatim, and uses it on identical-appearing goods or services. In this case, we might assume that damages would be clearly defined, but this may not be so. As an example, what is the economic impact, if any, on Rolex from the sale by a counterfeiter of $35 knock-offs? It is unlikely that a bona fide customer for a Rolex watch was diverted in this sale. A $1,900 knock-off might be another story. At the same time, widespread and persistent counterfeiting denigrates a trademark, even if the buyers of the counterfeit goods are not deceived as to their source. In addition, it is clearly wrong for the counterfeiter to profit by this illegal use of another's property, and the seller of the $35 watch undoubtedly enjoys sales higher than otherwise because he or she has purloined a prestigious design and mark.

This example illustrates one of the practical problems in determining what, if anything, should happen to an infringer as a result of his or her actions. In some cases, it is most difficult, if not impossible, to quantify the damages of infringement to the mark's rightful owner. Should there then be no recompense to the owner or penalty imposed on the infringer? A basketball referee might call this the "no harm, no foul" approach. Yet, if someone uses a field on my farm for a flea market, my property has been trespassed upon, even if it is left in pristine condition after the fact. That person has profited by the unauthorized use of my property and should be required to settle up somehow. Some action also needs to be taken to deter other would-be entrepreneurs from doing the same thing. It is clear that some action against an infringer is required even if there is no quantifiable damage to the mark's rightful owner.

When the evidence indicates that damage has occurred, it may still be a difficult task to quantify trademark damages, since there are *degrees* of damage due to the many and varied ways that one can usurp the identity and goodwill of another. To use an automotive meta-

phor, trademarks are more often dented than stolen. If our car is stolen and dismantled and the parts sold all over the western hemisphere, we are not likely to have much disagreement with our insurance carrier over the extent of damage. It is when we suffer a fender bender that the problem becomes difficult to resolve. Some trademark examples can illustrate this:

Someone uses a logo *similar* to ours, or with our color(s), or adopts a *few words* from our phrase or slogan on a product that is *different* from ours.

Someone uses an obvious parody of our trademark in a way that *we find* to be disparaging, derogatory, or degrading.

Someone engages in false advertising that is obviously aimed at our trademark.

A giant corporation usurps (we think) some element of our trademark so that we appear to be infringing on *them* (reverse confusion).

Someone uses our trademark on shoddy goods that are priced so differently from ours that they are in an entirely separate market.

Someone uses an element of our trademark on their goods or services, with the result that *some* consumers are confused, *to some degree*, about the origin of those goods or services.[1]

These examples illustrate the degrees of subjectivity that can exist even in evaluating the existence of trademark infringement, and that carries over into the quantification of equitable monetary relief.

39.1 COUNTERFEITING

Within the frame of reference just noted, counterfeiting, as a form of infringement, may offer the most similarity to the binary patent infringement situation. Various sections of the law define counterfeiting as using a "reproduction, counterfeit, copy or colorable imitation of a registered mark," or the use of a "spurious mark which is identical with, or substantially indistinguishable from, a registered mark." Counterfeiting is one form of obscenity that is easy to define and recognize.

Counterfeiting is a criminal offense in many of the developed nations of the world, even though, as we previously noted, the direct economic damage to the rightful trademark owner may be negligible (in terms of lost sales and profits). Certainly, however, the ill-gotten gains of the counterfeiter should be forfeited, with penalties.

> As Congress well knew in beefing up the legal sanctions for counterfeiting trademarks in 1984 … the sale of counterfeit merchandise has become endemic—perhaps pandemic. … Treble damages are a particularly suitable remedy [when the violation is surreptitious] … confiscating … profits in cases in which he is caught will leave him with a net profit from infringement.[2]

Counterfeiting can be detrimental to the health and well-being of a trademark, since it is highly unlikely that a counterfeiter is going to produce and sell better-performing, higher-quality goods than the originals. If the counterfeit goods are believed to be genuine by the buyer (because of appearance, price, or marketplace), then the ensuing "quality disappointment" undoubtedly will tarnish the mark in the mind of that buyer unless he or she realizes what has happened.

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1. As Tom Field observes, there is a "noise level" in communications that results in some level of confusion on just about anything. (Thomas G. Field Jr., Professor of Law, Franklin Pierce Law Center.)

2. *Louis Vuitton S.A. v. K-Econo Merchandise*, 692 F Supp 906,8 USPQ2d 1609 (N.D. III. 1988), rev'd sub nom. *Louis Vuitton S.A. v. Lee*, 875 F2d 584, 10 USPQ2d 1935 (7th Cir. 1989).

According to a recent newspaper article, the International Anticounterfeiting Coalition (IAC) estimates that counterfeit products resulted in $200 billion in lost sales for U.S. companies in 1994.[3] This is a 300-plus-% increase over their 1987 estimate of $60 billion. As reported by IAC, cut-rate prices go hand in hand with counterfeit goods:

Rolex watch	$4,000	vs.	$15–35
Chanel scarf	300	vs.	10
Guess jeans	60	vs.	25
Nike t-shirt	17	vs.	16

Most legal action is directed at retailers who are served with injunctions or from whom counterfeit goods are seized. It would be more effective to put larger targets, such as wholesalers or manufacturers, out of action, but they are more difficult and more expensive to pursue.

The newspaper article relates the story of Hunting World, a luxury goods retailer, whose owner decided that "enough was enough" and now spends $6 million each year protecting its brands. A substantial amount, to be sure, but understandable when compared with the $100 million in lost sales suffered by the company in 1992, before its vigorous program was instituted. In a raid on two factories in Italy early in 1995, one-half million counterfeit articles were seized, bearing not only the Hunting World trademark, but those of Gucci, Cartier, and Ralph Lauren as well.

On August 9, 1995, the Anticounterfeiting Consumer Protection Act of 1995 was passed. Intended to strengthen the 1984 Anticounterfeiting Act, it extends the scope of federal authorities that can take part in law enforcement and seizure activities, and extends damages that can be claimed by the owner of a counterfeited brand. One wonders if this is enough, given the magnitude of worldwide manufacturing capabilities and the availability of advanced technology, which can create a veritable flood of extremely difficult to detect counterfeit merchandise.

The Economic Impact Task Force of the International Trademark Association (INTA) has reported that counterfeiting is especially severe among INTA members in the apparel, consumer products, food/restaurant products, personal care products, pharmaceutical, and sporting goods/toy industries.

Within our focus on the economic aspects of monetary relief, the counterfeiting situation carries with it the same requirements to quantify damages to the plaintiff and/or profits of the infringer. Whatever number flows from that analysis is subject to mandatory trebling.

39.2 THE LAW RELATING TO MONETARY RELIEF

Trademark infringement disputes are most often resolved by the courts using injunctive relief ("you are doing wrong, stop it"). Injunctive relief is often employed in cases of unintentional infringement where there has been no harm to the trademark owner. It is also employed in cases where there may be great harm to the trademark owner. These situations usually come up clearly and quickly on the owner's "radar screen," and action is taken immediately. Prompt injunctive relief before damage occurs can be an appropriate resolution. The use and form of injunctive relief is a matter for the courts and does not concern our discussion.

3. "Retail Fact, Retail Fiction," by Andrea Adelson, *New York Times* (September 16, 1995), p. 31.

On many occasions, disputes are settled by the parties, as when Burlington Coat Factory Warehouse Corp. agreed in a settlement with Burlington Industries, Inc. to modify its advertising to make it clear that it was not part of Burlington Industries.

The courts have considerable latitude, under the law, in granting monetary relief.[4] That is, a court may award up to three times the amount of otherwise determined damages, increase or decrease profits theoretically without limit (except as bounded by the principles of equity), according to the facts of the case. Usually, this is done when the infringer acted willfully and with "reckless disregard to the trademark owner's rights." As with the award of costs and/or attorney's fees to the prevailing party, this is a matter for the court, and does not concern our discussion of the economic support for monetary relief in trademark infringement. We will focus on quantifying the result of actions, however innocent or malevolent their motivation.

As to monetary relief, the Lanham Act tells us:

> When a violation of any right of the registrant of a mark registered in the patent and trademark office, or a violation under section 43(a), shall have been established in any civil action arising under that Act, the plaintiff shall be entitled … subject to the principles of equity, to recover (1) defendant's profits, (2) any damages sustained by the plaintiff, and (3) the costs of the action. The court shall assess such profits and damages or cause the same to be assessed under its direction. In assessing profits the plaintiff shall be required to prove defendant's sales only; defendant must prove all elements of cost or deduction claimed. In assessing damages the court may enter judgment, according to the circumstance of the case, for any sum above the amount found as actual damages, not exceeding three times such amount. If the court shall find that the amount of the recovery based on profits is either inadequate or excessive the court may in its discretion enter judgment for such sum as the court shall find to be just, according to the circumstances of the case. Such sum in either of the above circumstances shall constitute compensation and not a penalty. The court in exceptional cases may award reasonable attorney fees to the prevailing party.[5]

(a) DEFENDANT'S PROFITS. This is perhaps the murkiest measure of monetary relief because of the lack of guidance in the law. There seems, as an example, to have been a trend toward the concept that evidence of willfulness or bad faith on the part of the infringer is necessary before an award of the infringer's profits should be made. The Second Circuit reasoned that:

> we believe that this requirement [willful deception] is necessary to avoid the conceivably draconian impact that a profits remedy might have … [because] … an accounting may overcompensate for a plaintiff's actual injury and create a windfall judgment at the defendant's expense.[6]

We will not dwell on the willfulness issue, though, as we will discover, it tends to cloud the issue as to how profits should be calculated. However, the "windfall judgment" concept raises another interesting question—What if the plaintiff's business does not have the productive capacity to fully serve the market? Would an accounting of the defendent's profits then represent such a windfall? If we return to the example wherein the flea market operator used our field without our permission:

- Clearly, we suffered no monetary damage—the field or crops were not harmed.
- The flea market operator profited, however, by the use of our property.
- Arguably, the flea market operator should give us a share of his profits, but how much?

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4. Many use this term generically to describe money awards whether they are based on plaintiff damages, defendent's profits, or other measures.
5. 15 U.S.C. sect. 1117(a).
6. *George Basch Co. v. Blue Coral Inc.*, 968 F2d 1532, 23 USPQ2d 1351 (2d Cir.), cert denied, 113 S Ct. 510 (1992).

- Perhaps the operator had three markets going that day. We would only be entitled to the profits from the one that used our field.
- What do we mean by "profits"?
- Some of his profits were due to his skill as a flea market organizer—are we entitled to those?
- At the least, he should have paid us a fair rent for the field—is that the amount of profits to which we are entitled?

While it may seem straightforward, even the quantification of the defendant's profits may be difficult. To put this task in perspective, let us examine the sample income statement shown in Exhibit 39.1.

We note that the law stipulates that the plaintiff needs only to prove the *amount* of the defendant's sales. It is up to the defendant to prove the elements of expense that should be deducted in arriving at "profits." If the defendant fails to meet this burden of proof, the court may award to the plaintiff the infringer's entire gross revenue.[7]

Let us start at the bottom of the income statement and evaluate the various possible measures of defendant's profit. We will assume, for this purpose, that this income statement reports only the financial results relating to the infringing product or service.

Net Income. While this might be presented by the defendant as a proper measure of profits, is it appropriate in the case of infringement? This is open to question, because expenses of running the infringer's business, such as income taxes, may or may not be judged deductible from a profits measure.

Pretax Net Income. Using this level of income removes the tax issue, but we can observe that this measure of profits is reduced by the amount of interest expense of the defendant as well as by other expenses that may not be specifically related to the infringing product. One must deal with the question of whether profits associated with the alleged infringement should be influenced by the manner in which the defendant has chosen to capitalize its business, or by unrelated income or expenses.

Net Operating Income. This measure eliminates some issues, but even this level of income is affected by the magnitude of selling, general expenses, and administrative expenses. These are highly variable and could, for example, be quite high if the alleged infringer was breaking into a new market with the infringing mark. That would, at the least, reduce this measure of damages and could even eliminate it. It is not unusual to have no or negative net operating income in the circumstance of market penetration activities. Should a profits calculation result in "zero" in that case?

Gross Sales	$10,000,000
Less: Returns	50,000
Net Sales	9,950,000
Cost of Goods Sold	6,500,000
Gross Profit	3,450,000
Selling, General, and Administrative Expense	1,250,000
Net Operating Income	2,200,000
Interest Expense	400,000
Other Income (Expense)	(250,000)
Pretax Net Income	1,500,000
Income Taxes	620,000
Net Income	$880,000

EXHIBIT 39.1 SAMPLE INCOME STATEMENT

7. *Harley-Davidson, Inc. v. Selectra International Design, Ltd.*, 855 F Supp 275 (ED Wisc. 1994), vacted 861 F Supp 754 (ED Wisc 1994).

Gross Profit. From an accounting and economic perspective, measuring profits at this level perhaps makes the most sense. It is unlikely that someone would enter into a business in which the gross profit was marginal or negative. That could be the case with a new product if there was a very steep learning curve associated with its production, or if there were great economies of scale in the production process that had to be achieved over time, but it would not be very common. In addition, if the alleged infringer was enjoying greater than normal profits by selling a generic product (with generic costs) at a price made premium by the use of a purloined trademark, the gross profit would capture this benefit.

(b) PROFIT-MEASURING COMPLEXITIES. It should be clear, from the preceding discussion, that profits measurement cannot be accomplished by some simple formula, and that the facts of a specific case must be carefully considered. The ideal starting point in a calculation of infringing profits would be an income statement based on the sales of *only* the infringing goods or services. This is unlikely to be available in real life, so we may be faced with the task of creating such an income statement (or at least the parts of it that we deem relevant) from the information that is available.

(c) ISOLATING THE RELEVANT INCOME STREAMS. The example in Exhibit 39.1 represents a stand-alone income statement for the infringing product or service. That is not typical. A small company is not likely to have accounting systems in place to permit such a segregation. A large company is likely to have financials by product line, but these will contain many allocations of expense that cloud the determination of profits by product or service.

Even if a product line income statement is available, the infringing item may have had only limited geographical or retailer distribution. This requires further subdivision of the data. This process is one of defining the relevant markets.

(i) Expense Allocations. In a multiproduct business, many expenses such as those associated with treasury, legal, accounting, research, or corporate advertising functions are not reported on a product line basis and must be allocated to each product according to some formula. Such a formula may be based on elements such as sales revenue, number of employees, square footage of production facilities, capital employed, accounts receivable, or any combination of these. Expense allocations in a large organization may be made more complex by being multilevel. Some expenses may be allocated among several products within a product line. At the same time other expenses are allocated to a product based on its place in a division, subsidiary, or business segment. Expenses may be allocated based on legal entities that are quite different from operating groups.

Our approach is generally to reduce these allocations to their "lowest common denominator" so that we can reassemble them selectively, using those we find appropriate, and discarding the others.

(ii) One-Time or Out-of-Period Events. One must also be aware of the presence of costs resulting from one-time or unusual events. As an example, if a manufacturing plant is closed, the costs of closing as well as ongoing expenses associated with the discontinued operation (such as rent payments until a lease expires) may be allocated to the surviving operations. Obviously these would not be appropriate expenses to reflect in a determination of a defendant's profits. A casualty loss or accounting adjustment are other examples. One must also be sensitive to adjustments made for events that took place before the period of infringement.

(iii) Accounting Issues. Another conceptual issue that must be addressed is whether expenses should be based on *incremental* or *fully absorbed costs*. Financial statements are typically expressed on the basis of fully absorbed costs. Simply stated, this means

that each accounting entity, whether a product, product line, division, or segment, must bear its share of allocable expenses.

For example, assume that our infringement situation involves a manufacturing plant designed to make chocolate chip cookies. These cookies are a distinctive brand—the plant is operating at 75% capacity and the brand is profitable. The decision is made to introduce a line of cookies with nuts instead of chocolate chips. This is the infringing product. The nut cookie brand uses the remaining 25% plant capacity. On a fully absorbed accounting basis, the nut cookie brand must bear 25% of the plant costs, even though no additional employees were hired and no new machinery was installed. The chocolate chip cookie brand that formerly bore all of the plant costs becomes even more profitable because the nut cookies are absorbing some costs.

The essential question is whether the profits of the infringing nut cookies should be calculated as if there were only minimal manufacturing costs (because it was an incremental product), or whether they should be assumed to bear their share of total manufacturing costs. The difference could be substantial. The nut cookies, accounted for on an incremental basis, would get a free ride on the plant costs and might appear to be extremely profitable. There have been many debates as to whether infringer's profits should be measured on an incremental or fully absorbed basis.

These accounting complexities are made even more difficult by the fact that different courts have interpreted profits quite differently. Barber[8] describes two prevailing generalities:

> One view is that only those expenses which directly relate to the infringing product are deductible. Under this approach, only direct costs, such as cost of goods and direct labor, are typically deducted, and deduction of a proportional amount of overhead expenses will not be allowed unless defendant can show that such expenses increased due to production of the infringing product. This is the approach taken in the Third, Fifth, Seventh, and Eleventh Circuits.[9]
>
> The second view allows for a deduction of a portion of the defendant's general expenses, such as overhead, operating expenses, and federal income taxes. This more liberal approach is recognized in the Second, Fourth, and Ninth Circuits.[10]

In an excellent article on the subject of monetary relief in trademark infringement cases, Koelemay[11] describes three profits calculation methodologies:

> Under the differential cost or marginal cost rule, deductions are allowed only for expenses that would not otherwise have been incurred "but for" the manufacture and sale of the infringing product. No deductions for fixed costs and overhead... would ordinarily be allowed.... This rule

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8. William G. Barber, "Recovery of Profits Under the Lanham Act: Are the District Courts Doing Their Job?" *The Trademark Reporter*, Vol. 82 TMR, p. 141.

9. We have reproduced Mr. Barber's notes: *Century Distilling Co. v. Continental Distilling Co.*, 205 F2d 140, 98 USPQ 43 (CA 3 1953), cert denied 346 US 900, 99 USPQ 490 (1953) at 147, 98 USPQ 43 (court applied what it called the "differential cost or marginal profit theory"); *Maltina Corp. v. Cawy Bottling Co. Inc.* 613 F2d 582, 205 USPQ 489 (CA 5 1980) at 586–87, 205 USPQ 489 (only those costs which "actually relate" to the infringing product are deductible; *Ruolo v. Russ Berrie & Co.* 886 F2d 931, 12 USPQ2d 1423 (CA 7 1989), cert denied 110 S Ct 1124 (1990) ("variable costs" are deductible, "fixed costs" are not); *Playboy Enterprises, Inc. v. P.K. Sorren Export Co. Inc. of Florida*, 546 F Supp 987, 998, 218 USPQ 795 (SD Fla 1982) (following *Maltina*).

10. We have reproduced Mr. Barber's notes: *W.E. Basset Co. v. Revlon, Inc.*, 435 F2d 656, 168 USPQ 1 (CA 2 1970), modfg 305 F Supp 581, 163 USPQ 466 (SDNY 1969) at 665, 168 USPQ 1; *Warner Bros., Inc. v. Gay Toys, Inc.*, 598 F Supp 424, 428–29, 223 USPQ 503 (SDNY 1984) (applying "full absorption approach" of accounting and rejecting "incremental approach"); *Polo Fashions, Inc. v. Craftex, Inc.*, 816 F2d 145, 149, 2 USPQ2d 1444 (CA 4 1987) (court allowed deduction of total costs, but indicated that under different circumstances it might allow only marginal costs); *O'Brien International, Inc. v. Mitch*, 209 USPQ 212 (ND Calif 1980) (equating profits with "net taxable income"; court also held that a willful infringer may not deduct income taxes, citing *L.P. Larson, Jr., Co. v. William Wrigley, Jr., Co.*, 277 US 97, 48 S Ct 449, 72 L Ed 800, 1928).

11. James M., Jr. Koelemay, "A Practical Guide to Monetary Relief in Trademark Infringement Cases," *The Trademark Reporter*, Vol. 85, No. 3 (May–June, 1995), pp. 288–289.

> results in the largest recovery for the trademark owners.... Many recent trademark and patent decisions favor this approach. This approach has also been used for calculating the plaintiff's lost profits on lost sales.[12]
>
> Under the direct assistance rule, all expenses which directly assisted in the manufacture and sale of the product can be deducted, including some items of overhead. This rule has also enjoyed wide support.[13]
>
> Under the fully allocated cost rule, all expenses properly allocable to the product under generally accepted accounting principles are allowed.[14]

We have not included the voluminous footnote references to this excerpt contained in Mr. Koelemay's article. In a following section of his work, Mr. Koelemay lists specific expense items along with cases relating to their deductibility. The reader seeking additional guidance should refer to this source.

Obviously, a great uncertainty introduced by the courts is the use (without explanation) of different profit measures in order to make the profits award an amount that comports with the court's opinion of the unjust enrichment garnered by the defendant (influenced by thoughts of willful and deceptive conduct). It is almost as if the courts start at the bottom of the income statement for the infringing product (net income) and move up towards gross profit (or adopt incremental versus fully absorbed accounting) to the degree that they feel necessary to punish or deter the infringer. This may be equitable in the overall, but it complicates the task of quantifying the economic impact of an infringement in some objective way.

We could provide a schedule or chart that shows how various courts have applied the concept of awarding infringer's profits. A matrix of cases and courts would provide a hint of acceptable behavior vis-à-vis how to make the calculation, based on past decisions. Such a matrix might not, however, be helpful in the long run. We tend to think of these situations in terms of an expert witness, called upon to opine, in an objective way, about the monetary effect of some action (i.e., trademark infringement). If the decision about what to deduct or what accounting system to use is guided only by past decisions, the exercise becomes rote and will ignore the specifics of the case at hand. If we are to attempt judgment relative to the degree of "willfulness or deception" exhibited by the infringer, and inject that into the quantification, the task becomes almost impossible.

We can envision providing to the court more than one profits calculation with clearly defined underlying assumptions relative to expenses included and excluded, but we do not believe that the expert should attempt to factor in the perceived motives or behavior of the parties involved. That, as Horace Rumpole would say, "is for the jury to decide."[15]

There is another area of contention in which the law and valuation principles touch, and that relates to the value of closely held (nontraded) common stock. Most of the enterprises in the world are privately held, and the value of their stock may be called into question by heirs, spouses, partners, and various taxing bodies. These valuation issues have perplexed owners and the courts for years, and there is a large body of case law as a result. We have, on occasion, been at odds with our valuation professional colleagues about the importance of these many court decisions on the subject. Some of our colleagues carefully monitor decisions and craft their valuations based on these decisions.

The valuation profession has perfectly good theoretical bases that are sufficient guidance for formulating and presenting our conclusions in court. If we merely do the arithmetic that

12. This would appear to be equivalent to gross profit on an incremental accounting basis.
13. This might equate to a net operating income measure with at least some element of full absorption accounting.
14. This appears to equate to net income under fully absorbed accounting principles.
15. The barrister hero of many books by John Mortimer.

follows the trail of previous court decisions, we are abdicating our responsibility to bring case-specific facts and theories to the courtroom to assist the court in bringing equity to a difficult situation.

(d) DAMAGES SUSTAINED BY THE PLAINTIFF. Quantifying damages that may have been sustained by the plaintiff is a task that may include a calculation of sales (and profits) lost as a result of the infringement (profits diverted to the infringer, or lost due to price reductions or expense increases to counteract infringing competition), royalties foregone because the infringer did not enter into a license, or the cost of repairing damage to the plaintiff's trademark. These measures generally comport with more common damages quantification, based on the difference in the value of a business before and after some event. In this case we focus on the value of the plaintiff's trademark and goodwill before and after the infringing event.

(i) Plaintiff Lost Profits. If the defendant has launched a product or service that is directly competitive with the plaintiff's, the quantification of lost profits may be relatively clear. This situation ought to result in some deterioration of the plaintiff's sales (and presumably, profits). It may be necessary to make an analysis of sales trends and market share in order to measure the effect of the infringing competition, but this would be the key. Consideration may also have to be given to price cuts or other concessions that were given by the plaintiff in order to maintain sales levels in the face of this competition. The essence of the exercise, however, is to measure the plaintiff's position before the infringement and compare it with the plaintiff's business after the infringement, eliminating the possible effects of unrelated exogenous influence.

In the quantification of lost profits, many of the concepts previously discussed (as they related to measuring the infringer's profits) come into play. The objective is to isolate the financial performance of the affected plaintiff product or service before and after the infringement, in order to measure the infringer's economic impact. The same tasks may have to be undertaken to accomplish this isolation.

When the infringing product or service in the marketplace is unrelated to that of the plaintiff, evidence of lost sales is unlikely to be found, and a reasonable royalty or remedial action remedy may be more appropriate, or the infringer's profits may be judged to be a more appropriate measure of monetary relief.

(ii) Reasonable Royalty. The Lanham Act does not mention the use of reasonable royalty as a measure of monetary relief, as does Title 35, Section 284 of the United States Code (1970) relative to patent infringement damages. While many practitioners and courts are unconvinced about the appropriateness of this measure,[16] it has been presented and found acceptable on occasion.[17]

The essence of this method of estimating plaintiff damages is the royalty that would have been received by the plaintiff, had the defendant negotiated a license agreement before the infringement began. We discuss trademark royalty rates elsewhere, as they would be on an arm's-length basis. There are those who might argue that the royalty rate

16. *Playboy Enterprises, Inc. v. Baccarat Clothing Co.*, 692 F 2d 1274-1275, 216 USPQ 1083 (9th Cir. 1982). The court reversed an award of $12,750 (based on a 5% royalty) in favor of a profits recovery of $120,000, commenting "… an award of little more than nominal damages would encourage a counterfeiter to merely switch from one infringing scheme to another … [and] this would fail to serve as a convincing deterrent … to … trademark piracy."

17. See the discussion relative to *Sands, Taylor & Wood Co. v. Quaker Oats Co.* at the end of this chapter.

used in damages awards should be higher than that evident in the market in arm's-length transactions, because the infringer should be penalized for not seeking a license in the first place. This is logical and has precedent, but we question whether it should be in the province of the expert to suggest to the court the magnitude of this punitive element. The expert should provide the court with an opinion of what would have been required in the marketplace.

This is not a trivial task, because true market transactions are few, the information about them is scarcer still, and knowledge about the degree of comparability is rarer yet. The biggest difficulty that we see is the difference between market royalty rates (which are payments for *full* use of property in some market segment) and a royalty rate that would be appropriate for whatever *partial rights* the infringer may have usurped. In theory, market royalty rates would be most appropriate in a counterfeiting situation, where the infringer has taken all of the rights to mark, as an unauthorized licensee. In most infringements, as we discussed previously, only *some* elements of the mark have been usurped, and market royalty rates may not therefore apply.[18]

It may well be necessary, even desirable, to fashion a royalty using investment rate of return principles, which should yield a royalty rate that reflects the economics of the specific infringing transaction.

(iii) Repairing the Plaintiff's Damage. An alternative measure of plaintiff damages is what it would cost to repair whatever damage has been done to the plaintiff's business or trademark. This is basically an insurance concept—to "make whole" the policyholder. A popular measure by this standard seems to be the cost of corrective advertising. It is assumed that the plaintiff, by employing advertising, can reverse whatever confusion exists in the mind of the buying public by advertising directed to that end. It is very difficult to estimate, with any degree of precision, the cost of such advertising. The amount awarded for corrective advertising has, on occasion, been based on the plaintiff's actual expenditures and has also been based on the defendant's advertising expenditures. Pricing the necessary advertising is not so much of a problem as estimating *how much* of *what type* of advertising is necessary to accomplish the objective. One rule of thumb (apparently from Federal Trade Commission litigation) is that 25% of the infringer's advertising expenditures will do the job. We are unaware of the theoretical origins of this concept.

Obviously, if there is confusion in the marketplace about the origin of goods or services because of infringement, advertising is a tool that can be used to correct it. How much advertising, its type, and cost will vary widely, depending on the amount of confusion, the kind of confusion, and the economic impact of the confusion. It seems to us that it ought to be incumbent on the plaintiff to provide evidence that advertising is the most appropriate "repair," and in addition, the type and cost of such advertising. We can conceive of a situation in which corrective advertising might cause more confusion in the marketplace rather than less.

It may well be that the damage to the plaintiff is the loss of distributors, retail outlets, manufacturers' representatives, shelf space, and the like. A plaintiff may have lost revenues related to ancillary services connected to the infringed product, or may be liable for future claims (or the cost of defending itself against such claims) against infringing products out in the marketplace. Advertising is not a curative in this case. It may be necessary to add sales staff and incur other marketing costs in order to regain a former position.

18. See the discussion relative to *Bandag, Inc. v. Al Bolser's Tire Stores, Inc.* at the end of this chapter.

39.3 CONFUSION

Superimposed on all of this is the concept of confusion as it relates to the trademark as an identifier of the source of goods or services in the marketplace. Allen[19] notes several factors that have been used by the courts to analyze the existence of confusion—the strength of the plaintiff's trademark, the similarity of the parties' trademarks, the similarity of the parties' products, the similarity of the advertising media utilized by the parties, the defendant's intent in adopting his or her mark, the existence of actual confusion, and the degree of care exercised by purchasers in making their purchasing decision. An interesting examination of the confusion issue took place in the courts relative to the design of a golf course.

For those golfers who long to play the 18th hole on Doral's "Blue Monster," a trip to Miami may not be necessary. They can deal with the nerve-racking decision about what to hit on that long and landing-critical second shot in Humble, Texas, at the Tour 18 golf course. That wedge, 9-, 8-, 7-, or 6-iron shot to the island green on the 17th at the TPC Course (Sawgrass) can depend on the strength of Texas winds now.

Not that Doral is particularly happy about the situation, or Shinnecock Hills, the Master's course at Augusta, or Merion. Led by the owners of Pebble Beach Golf Course, Pinehurst, and Harbour Town, litigation is under way in Houston[20] to determine whether the replica holes at Tour 18 are a trademark infringement and whether there has been a dilution in the value of the trademarks belonging to the famous golf courses. Actually, the question to be decided may be one of trade dress. Trade dress of a golf hole? It all sounds strange, but is understandable when one assumes the position of the famous course owner. Years of toil and expense have gone into the creation of their reputation and the desire of millions of golfers to play a "signature hole." The three protagonists are all courses which the public can play. Merion and Augusta National are not included in the suit. They are private courses whose revenues would not be affected by Tour 18.

Does the Tour 18 course dampen the enthusiasm of millions of golfers to play the famous signature holes, or whet it? Our friend and well-known golf writer Jim Finegan leans toward the latter position, saying that playing a signature hole at Tour 18 may provide a "taste of the thrills that await there (at the original course) and must encourage the player to go and revel in all eighteen." Tour 18's attorneys take the opposite view, saying that "They will come away dissatisfied."[21]

One economic theory that has been advanced is that Tour 18 is receiving a premium per-round fee in comparison to other Houston area courses. The argument is that the plaintiffs ought to receive a percentage of that premium. Meanwhile, the owners of Tour 18 have opened another course near Dallas, and additional courses are scheduled in other parts of the country. The trial was held in November 1995 and a decision was expected in April 1996, but has yet to appear.

An examination of the degree of confusion as to source in the marketplace may be important to the court in determining whether "evil has been done," but it assists little in the estimation of monetary relief. We can imagine a situation in which a plaintiff may be able to show some degree of confusion among a relevant population, but may not be able to substantiate a quantum of financial damage (lost sales/profits). If, in this case, one

19. Michael J. Allen, "The Role of Actual Confusion Evidence in Trademark Infringement Litigation," *The Trademark Reporter*, Vol. 83 TMR, No. 3 (May–June 1993), p. 267.

20. *Pebble Beach Co., et al., v. Tour 18*.

21. "Bogus Bogeys?" *Corporate Legal Times*, Vol. 6, No. 51 (February 1996).

turned to an accounting of the infringer's profits as a surrogate, we are not sure how the confusion information helps with that methodology. It may be of some help, alternatively, in a quantification of remedial advertising or some other repair activity. This connection would be rather subjective, however. In our view, the analysis of monetary relief by a valuation expert should not include a consideration of confusion evidence. The quantification of confusion as to the origin of goods in the marketplace is a difficult task and may involve highly specialized survey evidence.

39.4 CASE ANALYSIS

We can observe how these concepts have surfaced in various cases of trademark infringement in the following discussion. Our primary purpose is to observe the diversity of approaches to the task of quantifying monetary relief.

(a) ***U-HAUL INTERNATIONAL, INC. v. JARTRAN, INC.***[22] The issue in this case was false comparative advertising. The U.S. District Court for the District of Arizona awarded plaintiff $40 million in damages plus a permanent injunction against future false advertising. On appeal to the U.S. Court of Appeals, Ninth Circuit, the decision was that the award, based on U-Haul's corrective advertising expenditures and revenue decline, was correct and that doubling these measures under the provisions of the Lanham Act was proper. This overrode the arguments by Jartran that the award was more than twice the amount of U-Haul's original advertising expenditures, and that Lanham Act provisions should not apply, since U-Haul's trademark was not registered with the patent and trademark office.

Jartran further argued that the District Court should not have included $6 million of its advertising campaign as profits, because it did not make a profit during the relevant period. The Appeals Court considered Jartran's profitability to be irrelevant and found that the district court's assumption that Jartran's financial benefit was at least equal to the advertising expenditures was not erroneous.

Measures of damages by the District Court:

- U-Haul revenue decline due to Jartran ads = $20 million (taxes were not deducted in this lost-profits calculation)
- Jartran's ad campaign = $6 million plus U-Haul counteractive advertising = $13.6 million, total approximately $20 million

Conclusion on monetary relief by the Ninth Circuit:

- $20 million advertising expenditures doubled = $40 million

(b) ***BIG O TIRE DEALERS, INC. v. GOODYEAR TIRE & RUBBER COMPANY.***[23] The issue in this case was false designation of origin and common law trademark infringement relative to the Bigfoot trademark for automobile tires. The jury's decision in the United States District Court for the District of Colorado awarded plaintiff general compensatory damages of $2.8 million and punitive damages of $16.8 million.[24] The case was

22. *U-Haul International, Inc. v. Jartran, Inc.*, 601 F Supp. 1140 (1984), *aff'd in part*, 793, F 2d 1034, 230 USPQ 343 (9th Cir. 1986).
23. *Big O Tire Dealers, Inc. v. Goodyear Tire & Rubber Co.*, 408 F Supp 1219, 1239, 189.
24. USPQ 17 (D Colo 1976), mod'f'd and aff'd 561 F2d 1365, 1373, 195 USPQ 417 (CA 10 1977), cert dismissed 434 US 1052 (1978).

appealed and the United States Court of Appeals, Tenth Circuit, reduced general compensatory damages to $678,302 and punitive damages to $4,069,812. There were no specific claims of damages by the plaintiff, other than the assertion that advertising was the appropriate way to repair the damage to goodwill. The decision made by the jury was based on standards contained in the court's instructions.

Measures of monetary relief by the District Court:

- The difference between the value of plaintiff's goodwill before and after the acts of the defendant
- That the damages could be based on the plaintiff's contention that it would have to mount an advertising campaign to restore the Bigfoot trademark to its condition before the defendant's actions

Conclusion on monetary relief by the District Court:

- Goodyear spent approximately $10 million on Bigfoot advertising.
- Big O dealers were in 14 of 50 states.
- 14/50 = 28% × $10 million = $2.8 million.
- Punitive damages = 6 times compensatory damages.
- $2.8 million × 6 = $16.8 million.

Conclusion on monetary relief by the Tenth Circuit Court:

- Goodyear actual advertising expenditures were $9,690,029.
- 14/50, or 28% × $9,690,029 = $2,713,208.
- $2,713,208 × the Federal Trade Commission "25% rule" for corrective advertising = $678,302.
- Punitive damages = 6 × $678,302 = $4,069,812.

(c) ***ZAZU DESIGNS v. L'ORÉAL S.A.***[25] This action, in the District Court for the Northern District of Illinois, was brought by plaintiff in six counts, one of which was trademark infringement under Illinois statutory and common law. This is an interesting case, in part because the court's annoyance with the actions of the defendant before and during the trial was clearly evident. The defendant claimed that it was the exclusive licensee (for use on hair cosmetics) of the Zazu trademark, which was federally registered as a mark for men's and boy's clothing. The plaintiff had minimal sales of the product prior to the infringing actions, as it was gearing up to introduce it to market.

Conclusion on monetary relief by the District Court:

- $100,000 as "a measure of plaintiff's lost profits and defendant's infringing sales."
- Defendant's advertising and promotional expense was estimated at $5 million. $5 million × 20% = $1 million.
- Punitive damages equal to 5% of defendant's "economic strength" of $20 million = $1 million.

These conclusions were reversed by the Seventh Circuit, which offered the following comment.[26]

25. *Zazu Designs v. L'Oréal S.A.*, 979 F2d 499, 505, 24 USPQ2d 1828, 1835 (CA 7 1992).
26. "Annual Review," *The Trademark Report*, Vol. 83, No. 6 (November–December 1993), p. 1116.

- "People who want damages have to prove them, using methodologies that need not be intellectually sophisticated but must not insult the intelligence. …"
- Compensatory damages must rest on a just and reasonable estimate of damage.
- To recover corrective advertising cost, one must show damage occasioned by the confusion and that the cost of repair is less than the value of the mark.
- An award based on a percentage of a party's net worth can be nothing but punitive.

(d) ***WEST DES MOINES STATE BANK v. HAWKEYE BANCORPORATION.***[27] Plaintiff brought this action for infringement of its West Bank service mark in the United States District Court for the Southern District of Iowa. It was appealed to the United States Court of Appeals, Eighth Circuit.

Conclusion on monetary relief by the District Court:

- Hawkeye advertising totaled $75,505.73.
- Using the FTC 25% rule, damages were calculated to be $18,876.43.
- No punitive damages.

Conclusion on monetary relief by the Eight Circuit Court:

- Of the $75,505.73 advertising expenditures of the defendant, $24,874.95 was spent for forms and supplies. Only the remainder, or $50,630.78, was expended on "products designed to reach out and affect the public mind. …"
- This smaller amount was the proper base for the "25 percent" calculation and the district court was ordered to recalculate the award (presumably $50,630.78 × 25% = $12,657.70).

(e) ***AETNA HEALTH CARE SYSTEMS, INC. v. HEALTH CARE CHOICE, INC.***[28] This was an action for trademark infringement in the District Court for the Northern District of Oklahoma related to the plaintiff's federally registered service mark, Choice, for its prepaid healthcare plan. Because of the nature of this mark, there is some interesting survey evidence relative to the likelihood of confusion. The damages issue is dealt with in a straightforward manner.

Conclusion on monetary relief:

- Defendants spent "over $50,000" in advertising.
- Plaintiff will have to use corrective advertising to remedy the incorrect associations created by the defendant's use of the mark.
- Damages are calculated at 25% of advertising expenditures, or $12,500, using the FTC rule of thumb.
- Because it cannot quantify the plaintiff's lost profits, the court uses a 3 × multiple to award total damages of $37,500.

(f) ***BANDAG, INC. v. AL BOLSER'S TIRE STORES, INC.***[29] Plaintiff's action alleged patent and trademark infringement and was brought in United States District Court for the Western District of Washington. Appeal was taken to the United States Court of Appeals, Federal Circuit. The district court's decision that the mark was infringed and

27. *West Des Moines State Bank v. Hawkeye Bancorporation,* 722 F.2d 411 (1983).
28. *Aetna Health Care Systems, Inc. v. Health Care Choice, Inc.,* 231 USPQ, 614.
29. *Bandag, Inc. v. Al Bolser's Tire Stores, Inc.*, 750 F2d 903, 917, 223 USPQ 982, 991, 92 (CAFC 1984).

the issuance of an injunction were affirmed by the CAFC. The damages issue went differently, and the court cautioned on the use of royalties as a measure of damages:

> Royalties normally received for the use of a mark may be a proper measure, if that measure comports with the equitable limitations of section 1117 and bears a rational relationship to the rights appropriated.

Conclusion of monetary relief by the District Court:

- Damages in the amount of $ 36,212.38 were determined based on an estimate of the royalties that the defendant would have paid had it been a defendant franchisee.
- No award for lost profits was made.

Conclusion of monetary relief by the CAFC:

- Damages were $ 0, because the defendant usurped only a very small portion of the rights that would have been enjoyed by a franchisee. Injunctive relief is sufficient.
- The decision to award nothing for lost profits was affirmed.

(g) ***SANDS, TAYLOR & WOOD v. THE QUAKER OATS CO.***[30] This was a very complex case that resists being reduced to an abstract. The reader is encouraged to refer to original sources to obtain the full flavor of the many issues raised and addressed. At issue was the use, by Quaker Oats, of "Thirst Aid" as part of an advertising slogan for its Gatorade isotonic beverage. Thirst-Aid is a registered trademark of Sands, Taylor & Wood. On December 18, 1990, the District Court of the Northern District of Illinois found infringement and concluded that an accounting of profits would be proper. The court rejected a monetary relief calculation based on actual damages, corrective advertising, and reasonable royalty. As to the latter, the court said:

> The parties in this case never considered a licensing agreement. Thus, any measure of damages based upon a royalty would force the court to engage in a hypothetical inquiry into what would have been a reasonable royalty for defendant to pay plaintiff had the parties contemplated a royalty arrangement. Damages predicated on a speculative royalty rate are clearly inappropriate.

Conclusion on monetary relief by the District Court:

- Defendant's advertising campaign using the Thirst Aid element was responsible for 10% of Gatorade success.
- Gatorade sales were $247.3 million.
- Award was $24,730,000.
- Judgment was for $42,629,399.09 including prejudgment interest and attorneys' fees.

On appeal, the Seventh Circuit could not reach unanimity about monetary relief and expressed a majority opinion (we quote Judge Ripple):

- Reversed the award of $24 million as "not equitable"
- Remanded the case for a redetermination of damages, suggesting that "A reasonable royalty … would more accurately reflect both the extent of Quaker's unjust enrichment and the interest of STW that has been infringed."
- Affirmed the payment of attorneys' fees, and vacated the award of prejudgment interest.

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30. *Sands, Taylor & Wood Co. v. Quaker Oats, Co.*, 978 F2d 947, 24 USPQ2d 1001, 1013 (CA 7 1992), affg 18 USPQ2d 1457 (ND III 1990), cert denied 113 S Ct 1879 (1993), after remand 34 F3d 1340, 32 USPQ2d 1065 (CA 7 1994), modfd 44 F3d 579, 33 USPQ2d 1543 (CA 7 1995).

On remand, the District Court found:

- A reasonable royalty was 1% during the first year and 0.5% thereafter, producing an amount of $10,328,411.
- As a deterrent, the court doubled this to $20,656,822 and added $5,431,413 prejudgment interest and $400,000 attorneys' fees and expenses, for a total of $26,088,235.

On appeal, the Seventh Circuit affirmed the $10 million reasonable royalty calculation, but remanded for more explanation as to why the damages should be enhanced. The response of the District Court was that its determination was supported by the record. The case was settled in August 1995, and the terms are confidential.

(h) *BOSTON PROFESSIONAL HOCKEY ASSOCIATION, INC. v. DALLAS CAP & EMBLEM MANUFACTURING, INC.*[31] This action was brought by the hockey league and member teams to prevent an unauthorized emblem manufacturer from making and selling products with the league and team trademarks and service marks. Case was heard in the United States District Court for the Northern District of Texas, appealed to the United States Court of Appeals, Fifth Circuit, remanded to District Court, and again appealed.

Conclusion of monetary relief by the District Court:

- Grant of injunctive relief
- *No award of damages*

Conclusion of monetary relief by the Fifth Circuit:

- Found actions constituted infringement under Lanham Act and remanded case to district court for determination of damages

Measures of monetary relief by the District Court:

- Defendant had offered plaintiff $25,000 for 3-year exclusive license to manufacture and distribute 3-inch emblems.
- Defendant had offered plaintiff $15,000 for a 3-year nonexclusive license.
- Defendant's profits attributed to the infringement were $5,200.

Conclusion of monetary relief by the District Court:

- Defendant infringed for 4 years; 4/3 times the license offer = 4/3 × $25,000 = $33,000.
- An additional $33,000 was added for damages due to the defendant's unauthorized manufacture of emblems larger than 3 inches.
- Total damages of $66,000 was doubled (because of the "bad faith" of the defendant) to $132,000.
- Defendant's profits of $5,200 were added.
- Damages totaled $137,200.

Conclusion of monetary relief by the Fifth Circuit:

- Plaintiff already had an exclusive licensee, so these rights were unavailable to defendant. Therefore damage calculation should have been 4/3 × $15,000 = $20,000.

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31. *Boston Professional Hockey Assn. Inc. v. Dallas Cap & Emblem Mfg., Inc.,* 597 F2d 71, 202 USPQ 536 (CA 5 1979).

- Doubling this amount to account for the larger emblems was proper, and so actual damages should be $40,000.
- Remanded again to District Court for reconsideration of the amount of additional damages to be awarded above the actual amount.

(i) *HOLIDAY INNS, INC. v. AIRPORT HOLIDAY CORPORATION.*[32] The motel corporation brought action against a former licensee who continued to use a trademark after the license was terminated. The United States District Court for the Northern District of Texas found for the plaintiff.

Measures of monetary relief:

- Transient business at the motel was 30% of the total, the remainder being weekly business attributed to management's efforts.
- Profits of the motel during the infringing period were $38,215.
- While the defendant was a licensee, the royalty fee was the larger of 15 cents per room night or 3% of room sales.
- Later, but during the period of infringement, the royalty fee was raised to 4% and an advertising fee of 1% was in effect.

Conclusion of monetary relief:

- Damages were calculated on the basis of the 4% royalty and the 1% advertising fee applied to the room sales during the infringing period. The amount was $54,320 + $15,015 = $69,335.
- Only 30% of this amount is appropriate as damages because only the transient business was attributable to the use of the infringing identity. Therefore actual damages were $69,335 × 30% = $20,800.50.
- Defendant's profits were calculated to be $38,215 × 30% = $11,464.50.
- Damages and profits were trebled due to "flagrant and willful conduct" to $96,795.

In this case there was an apportionment of the infringer's profits, which is not very common. See also *Sheldon v. Metro-Goldwyn Pictures Corp.*, 309 U.S. 390, 84 L Ed. 825, 60 S Ct. 681, 44 USPQ 607 (1940), in which a motion picture's profits were ascribed to the infringing use of the plaintiff's book.

(j) *W.E. BASSETT COMPANY v. REVLON, INC.*[33] W.E. Basset was a leading manufacturer of manicuring instruments under the Trim trademark. Revlon's infringing product was a cuticle trimmer trademarked Cuti-Trim. The Second Circuit court reversed the District Court's decision not to award a full accounting of Revlon's profits, suggesting that "most of" Revlon's operating expenses and overheads could be deducted in a profits calculation, as well as federal income taxes.

(k) *MALTINA CORPORATION v. CAWY BOTTLING CO., INC.*[34] In this infringement action, involving the Cristal beverage trademark, the United States District Court for the

32. *Holiday Inns, Inc. v. Airport Holiday Corporation,* 493 F. Suppr 1025 (1980).
33. *W.E. Bassett Co. v. Revlon, Inc.* 435 F2d 656, 662, 168 USPQ 1 (CA 2 1970), modfg 305 F Supp 581, 163 USPQ 466 (SDNY 1969).
34. *Maltina Corp. v. Cawy Bottling Co. Inc.*, 613 F2d 582, 205 USPQ 489 (CA 5 1980).

Southern District of Florida granted the plaintiff injunctive relief, awarded damages, and ordered defendant to account for gross profit earned on infringing sales. On appeal, the United States Court of Appeals, fifth Circuit ordered the defendant to account for its profits as a remedy for unjust enrichment, and reversed the decision to award actual damages.

Conclusion of monetary relief by the District Court:

- Actual damages were found to be $35,000.
- Gross profits of the defendant were calculated at $55,050. This represented total revenue less cost of goods sold. No deductions were made for overheads or other expenses (which would have resulted in a loss).

Conclusion of monetary relief by the Fifth Circuit:

- Actual damages found to be $0, due to lack of support for the $35,000 amount.
- Gross profits of the defendant in the amount of $55,050, were affirmed.

(l) *MONSANTO CHEMICAL CO. v. PERFECT FIT PRODUCTS MFG. CO. INC.*[35] Perfect Fit marketed mattress pads filled with Monsanto's Acrilan acrylic fiber together with inferior materials and identified them as Acrilan filled pads. The District Court refused to award profits, but the decision was reversed by the Second Circuit, saying that Perfect Fit was "deliberately engaging in commercial piracy" and that a deterrent was needed. The case was remanded for an accounting of Perfect Fit's profits.

(m) *SPRINGS MILLS, INC. v. ULTRACASHMERE HOUSE LTD.*[36] Ultracashmere House's Ultracashmere mark was judged to infringe Springs Mills' federally registered trademark Ultrasuede. The Second Circuit reversed the District Court decision to award profits and remanded the case for reconsideration.

(n) *CENTURY DISTILLING CO. v. CONTINENTAL DISTILLING CO.*[37] This 1953 case addresses a number of important issues related to infringing profits calculation. The primary issue was the use of the Dixie Belle trademark on gin. The case was before the U.S. District Court for the Eastern District of Pennsylvania.

Conclusion on monetary relief by the District Court:

- Judgment was entered in the amount of $129,296.20, calculated as 25% of Century's profits on the sale of infringing products.

On appeal, the Third Circuit was faced with many questions relating to the manner of calculating the infringer's profits. The master had used "the so-called differential cost or marginal profit theory" and had disallowed all nonvariable expenses such as taxes, depreciation, and insurance and allowed only those other expenses only to the extent that they were directly incurred in the production of the Dixie Dew infringing product. The Third Circuit affirmed the master's methodology and the 25% apportionment.

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35. *Monsanto Chemical Co. v. Perfect Fit Products Mfg. Co. Inc.*, 349 F2d 389, 146 USPQ 512 (CA 2 1965), revg 232 F Supp 493, 142 USPQ 259 SDNY 1964), cert denied 383 US 942, 148 USPQ 772 (1966).

36. *Springs Mills, Inc. v. Ultracashmere House, Ltd.*, 724 F2d 352, 221 USPQ 577 (CA2 1983), affg in part and revg and remdg in part 689 F2d 1127, 217 USPQ 298 (CA 2 1982).

37. *Century Distilling Co. v. Continental Distilling Co.*, 205 F2d 140, 95 USPQ 43 (CA3 1953), cert denied 346 US 900, 99 USPQ 490 (1953).

(o) ***POLO FASHIONS, INC. v. CRAFTEX, INC.***[38] This case involved counterfeit products bearing the Polo, Ralph Lauren, and Polo by Ralph Lauren marks, and the polo player logo.

Conclusion on monetary relief by the District Court:

- Profits on the counterfeit products were $14,837.72, including all costs.
- This amount was trebled to $44,513.16.

On appeal, the plaintiff argued that profits should have been calculated on a marginal cost basis.

The Fourth Circuit affirmed the calculation, commenting that a trebling of profits was enough, and also noted that the retail price of plaintiff's shirts was several times that of the defendant, so that it was unlikely that substantial sales were lost.

(p) ***WYNN OIL CO. v. AMERICAN WAY SERVICE CORP.***[39] The District Court did not award profits after finding that American Way's use of Wynn's X-Tend trademark was an infringement, based on its inability to ascertain profits on the infringing sales. The Sixth Circuit reversed that decision noting that the burden of apportioning profits is on the defendant.

(q) ***OTIS CLAPP & SON, INC. v. FILMORE VITAMIN CO.***[40] Otis and Filmore were competitors in the nonprescription pharmaceutical market. The suit claimed false advertising and infringement. The Seventh Circuit affirmed the District Court's award of profits.

Conclusion of monetary relief by the District Court:

- Even though the defendant lost money, the award was calculated on the basis of 15% of infringing Femaids sales during the years in question, or $13,250.
- Defendant received reimbursement of advertising expense.

On appeal, the Seventh Circuit rejected the plaintiff's argument that damages were $2.8 million due to not meeting growth rate of the past during the infringement period. The damage award was affirmed.

(r) ***ROULO v. RUSS BERRIE & CO. INC.***[41] After the expiration of a greeting card design license with Roulo, Russ Berrie brought out its own line of cards, which was found to infringe. Profits in the amount of $4.3 million were awarded in the original trial before the U.S. District Court of the Northern District of Illinois.

The Seventh Circuit affirmed the award:

- Plaintiff calculated profits from the sale of infringing greeting cards on an incremental basis in the amount of approximately $5 million.
- Defendant calculated incremental profits at $2.9 million and profits after deduction for appropriate costs were $38,601.

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38. *Polo Fashions, Inc. v. Craftex, Inc.*, 816 F2d 145, 2 USPQ2d 1444 (CA 4 1987).
39. *Wynn Oil Co. v. American Way Service Corp.*, 943 F2d 595, 19 USPQ2d 1815 (CA 6 1991) affg and revg and remdg 15 USPQ2d 1728 ED Mich 1990).
40. *Otis Clapp & Son, Inc. v. Filmore Vitamin Co.*, 754 F2d 738, 225 USPQ 387 (CA 7 1985).
41. *Ruolo v. Russ Berrie & Co. Inc.*, 886 F2d 931, 12 USPQ2d 1423 (CA 7 1989), cert denied 110 S Ct 1124 (1990).

- Issues were apportionment of sales to the infringing elements and the deductions for expenses.
- The jury found monetary relief in the amount of $4.3 million.

(s) ***DEERING, MILLIKEN & CO. INC. v. GILBERT.***[42] Heard in the U.S. District Court for the Southern District of New York, this case involved a trademark for hang tags for garment linings of Milium, a patented material. The defendant appealed the damages issue.

- Monetary relief was calculated based on the number of hang tags apparently used (32,300) times the yards of Milium per tag (2½)times the $.75 royalty per yard received by the plaintiff for the patent. This yielded $6,056.25.
- No apportionment was made between the patent and the trademark because they were judged to be "inseparable."
- Monetary relief was in the amount of $23,419.86 after a trebling and, apparently, the addition of interest.

(t) ***TRUCK EQUIPMENT SERVICE CO. v. FRUEHAUF CORP.***[43] Fruehauf was found by the District Court to have infringed Tesco's trade dress relating to the exterior design of a hopper truck trailer. The award of profits was 20% of the amount earned by Fruehauf in the states in which Tesco had rights, on the basis that this was the amount attributable to the trailer's appearance. The Eighth Circuit judged that Tesco should receive all of Fruehauf's profits in the defining states.

(u) ***SOURCE PERRIER, S.A. ET AL. v. WATERS OF SARATOGA SPRINGS, INC.***[44] In the U.S. District Court of the Southern District of New York, the issue concerned the infringement of the "Indian Club Bottle" of Perrier.

Conclusion of monetary relief by the District Court:

- Defendant sold 720,000 bottles of mineral water in the infringing bottle.
- If plaintiff had sold this amount of water, it would have received $200,000 gross profit before advertising expenses.
- After advertising expenses, plaintiff's profit would have been $100,000.
- Testimony was heard that Perrier would have received a royalty of 50% of gross revenues if it had licensed its bottle to another company.
- Monetary relief was calculated as $100,000 × 50% = $50,000.

39.5 CONCLUSION

Quantifying monetary relief in trademark infringement cases is a challenging task that probably cannot and should not be reduced to some mechanical exercise. The facts of each case are unique and the measurement of relief or damages should be likewise.

We can imagine one of these knotty infringement situations in the following form:

Plaintiff: Crunchy Co.

Product: Crunchy-Wunchy breakfast food
"Your Best Choice for Breakfast"

42. 269 F2d 191, 193, 122 USPQ 355 (CA 2 1959).
43. 536 F2d 1210, 191 USPQ 79 (CA 8 1976), cert denied 429 US 861, 191 USPQ 588 (1976).
44. *Source Perrier, S.A. et al. v. Waters of Saratoga Springs, Inc.,* 217 USPQ 617 (S.D.N.Y. 1982).

Defendant: Luncho Co.

Product: Luncho-Loaf lunch meat
"Your Family's Choice for Lunch"

Crunchy Co. is a long-established, large, multiproduct organization with a reputation for quality. Luncho Co. has also been in business for many years with a variety of food products. Luncho-Loaf is, however, its first foray into the prepared meat business and, after 2 years, the product is just now nearing profitability. Packaging of the two products is quite different and they are found in different sections of most food markets. Luncho Co. has been spending about $20 million annually on advertising for its new product.

Crunchy Co. has just become aware of Luncho's use of the phrase "Your Family's Choice for Lunch" and is of the opinion that it is confusingly similar to its longstanding slogan "Your Best Choice for Breakfast." Sales of Crunchy-Wunchy breakfast food have increased during the past 2 years, in line with previous growth patterns. Crunchy has commissioned a research expert to make a study of confusion existing in the marketplace. A small number of people surveyed indicated they thought that Luncho-Loaf was probably made by Crunchy Co.

What does the expert addressing the subject of monetary relief do in a case such as this? Several "knee-jerk" responses are possible:

- Estimate monetary relief to the plaintiff in the amount of 25% of the defendant's advertising budget ($5 million) for corrective advertising.
- Estimate monetary relief to the plaintiff equal to Luncho Co.'s gross profit of $5 million (even though it had no net income).
- Estimate monetary relief to the plaintiff equal to a 5% royalty on $50 million of sales ($2.5 million).

Under this scenario, the court has its choice among estimates of $2.5 million to $25 million. That range, in itself, suggests that the quantification process is questionable. Second, are *any* of these estimates fair?

- Is Crunchy Co. going to do any corrective advertising? It might well be that corrective advertising on its part will exacerbate whatever confusion exists.
- Payment of damages in the amount of $25 million of gross profits might well kill the whole product line for Luncho Co. Further, this measure of damages presumes that all of Luncho's sales resulted from getting a free ride on Crunchy's secondary trademark. Is that logical, or even believable?
- A 5% royalty from the marketplace is probably indicative of transactions for whole, product-identifying trademarks, not for a slogan of secondary importance. Is it really comparable, for the purposes of this situation?

Our point is to question whether an expert should present the court with a "menu" of monetary relief calculations based on various damage theories, or whether that presentation should represent an opinion about the methodology that best fits the facts and circumstances of the case.

Finally, and most important, should the monetary relief judgment be made before that concerning whether there has been any measurable harm to the trademark owner? An expert retained to quantify damages must assume some level of harm. An expert for the plaintiff could be expected to be directed to assume harm in the extreme (perhaps based on some analysis of confusion that he or she is not qualified to evaluate), and the answer could be monetary relief at the extreme. The defendant's expert would be instructed to

assume no harm—in which case the answer could be zero. Of what use is this testimony to the court?

All of this is a vote on our part to bifurcate such proceedings. First, someone must express an opinion about the amount and character of the harm that has befallen the plaintiff. We do not ask for a precise quantification, but we need an indication of the direction and magnitude of the harm (like those arrows used by meteorologists to show the direction and force of the wind). If no direct harm has come to the plaintiff, then attention can be directed to monetary relief as measured by defendant profits. Perhaps the process could be facilitated by attempting to answer questions such as whether:

- The plaintiff has suffered a drop in sales that may be due to the infringement
- The defendant would not have achieved its level of sales (or achieved it as fast) had it not been for the influence of its misuse of the trademark
- There is (substantial, significant, some, a small amount of) confusion among consumers, or the plaintiff has received communications from customers (distributors, retailers) about confusion in the marketplace
- The defendant has usurped the essence of the plaintiff's market identification, as opposed to some secondary identification
- The plaintiff has had to increase its advertising budget in order to counteract an unexplained decline in sales during the infringement period
- The plaintiff has had to cut prices during the infringement period in order to maintain sales (or sales growth)
- The plaintiff has lost some distributor or retailer relationships as a result of the infringement

The answers would provide some facts to go on, there would be a much narrower range of monetary relief estimates, and the court or jury would not have such a vast menu from which to choose.

CHAPTER 40

ESTIMATING DAMAGES FOR INFRINGEMENT OF AGRICULTURAL BIOTECHNOLOGY-DERIVED PRODUCTS

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40.1 INTRODUCTION

The application of biotechnology techniques that allow scientists to modify deoxyribonucleic acid (DNA), the genetic material of living things, to agriculture has resulted in new plant varieties and products that enhance the productivity of meat and dairy animals, and the quality of their output. Biotechnology promises future developments that have the potential to dramatically expand global agricultural production, increase income for farmers by introducing value-added traits, and reduce the application of traditional chemical agricultural crop protection products. Maintaining the incentive to pursue research and commercialize these new technologies requires protection from infringement for related intellectual property and the assurance that inventors and innovators can receive fair compensation when infringement occurs. Consequently, when competing claims on technology and products arise, an accurate identification and quantification of damages resulting from infringement is essential. The estimation of damages resulting from patent infringement for biotechnology-derived products requires a clear identification of the benefits these products provide to all parties involved in the production, distribution, and use of the technology and resulting products.

40.2 WHAT IS AGRICULTURAL BIOTECHNOLOGY?

Agricultural biotechnology is the collection of scientific techniques that are employed to create, improve, or modify plants, animals, and microorganisms. Biotechnology encompasses the techniques of genetic engineering, which is typically defined as altering or moving the genetic material of living cells.[1] Compared with traditional plant selection and breeding methods, genetic engineering reduces the time to identify desirable traits and allows a more precise alteration of a plant's traits. Seed developers are able to target a single plant trait without incorporating unintended characteristics, which may occur with traditional breeding methods. There are two broad applications

1. Jorge Fernandez-Cornejo and William D. McBride, *Genetically Engineered Crops for Pest Management in U.S. Agriculture: Farm-Level Effects* (Washington, DC: Resource Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 786, April 2000), p. 2.

of agricultural biotechnology, defined by their outcomes:

- **Input-oriented biotechnology** is directed at genetically modifying plants, animals, or microorganisms so that they are resistant to specific insects or other pests, or tolerant to specific herbicides. Examples include:
  - ***Bt* crops**, which are genetically engineered to carry the gene from the soil bacterium *Bacillus thuringiensis*. This bacteria produces a protein that is toxic when ingested by certain *Lepidopteran* insects. Examples include *Bt* cotton in which the *Bt* gene controls several economically important insects, including tobacco budworms and bollworms, and *Bt* corn, which is engineered to provide protection from the European corn borer. The introduction of the *Bt* gene enables the plant to produce a toxin that protects itself against the target insect pest. This technology permits farmers to avoid the risk of not detecting insect infestations and enables them to reduce or eliminate the purchase and application of conventional chemical insecticides, while enjoying the same or higher yield.
  - **Herbicide-tolerant crops** are engineered to resist herbicides that, without such tolerance, would destroy the crop along with the targeted weeds. Examples of herbicide-tolerant crops include ROUNDUP READY® (RR) corn, soybeans, cotton, and canola, which are resistant to the broadleaf herbicide glyphosate; LIBERTY LINK® corn, resistant to glufosinate-ammonium; and BXN cotton, resistant to bromoxynil. Farmers who plant herbicide-tolerant crops can use postemergent herbicides that are both very effective and safer than other herbicide products. Farmers using herbicide-tolerant crops may continue to use chemical herbicides; however, these herbicides may be applied at lower rates, may require fewer applications, and may be more environmentally benign than herbicides required for effective weed control on crops without the herbicide-tolerant genes.
- **Output-oriented biotechnology** strives to impart to plants or animals traits that enhance the quality of their products or provide other value-added qualities. Specific examples of output-oriented biotechnologies include tomatoes genetically engineered to slow the ripening process, corn engineered to produce higher amounts of oil, soybeans designed to enhance specific amino acids required by poultry and meat animals for efficient feed conversion, and plants that are drought resistant or can mature in a shorter period of time.

  Calgene, Inc. introduced the delayed ripening tomato as the FLAVRSAVR™ tomato in 1994 upon approval by the U.S. Food and Drug Administration (FDA). Following careful scientific review, the FDA determined that the biotechnology-derived tomato was as safe as its traditional counterparts developed by conventional plant breeding techniques, and there followed approval in 1990 of the first biotechnology food ingredient processing aid, chymosin, an agent that helps milk clot when making cheese.[2] The output trait for the tomato was achieved by introducing into the tomato DNA an antisense (or reverse copy) gene that produces the polygalacturonase (PG) enzyme. The PG enzyme is naturally found in tomato cell walls and breaks down pectin, which causes ripe tomatoes to soften. Introduction of the PG antisense gene suppresses the PG enzyme, thereby enabling engineered tomatoes to remain on the vine longer before they are picked because they soften more slowly.

2. "Biotechnology of Food," FDA Backgrounder BG94-4 (Washington, DC: U.S. Food and Drug Administration, May 1994).

In order for any new technology or product to be successful in the marketplace, the technology developer and provider must have a reasonable assurance of recouping development costs, and the product has to offer a benefit to the prospective consumer. Biotechnology-derived products are no exception. In the case of an input-oriented technology such as a *Bt* or herbicide tolerant crop, the consumer typically is the farmer who buys the new seed. In order to persuade a farmer to abandon traditional practice and adopt a new technology, he must be convinced that the biotechnology-derived product will save him money by reducing production costs, provide yields at least as high as conventional techniques, and result in a safe product the ultimate customer—the food consumer—will want to buy. This is important because agricultural biotechnology comes with a cost. Genetically engineered seed costs more than traditional seed, and farmers are usually charged an additional technology fee to cover the development of the technology. Consequently, farmers carefully assess potential insect, weed, and other pest infestations and resulting losses and compare costs of treatment alternatives before deciding whether to use the new technology.

In most cases, the ultimate customer for an output-oriented biotechnology product is the food consumer. This consumer must be persuaded that the food product resulting from the technology offers a clear benefit over conventional products (e.g., better tasting, longer shelf-life, leaner cut of meat, improved nutritional characteristics) and, first and foremost, is safe. In the case of the FLAVRSAVR™ tomato, consumers were unconvinced that the "new" tomato was as tasty as conventional fruit. Consequently consumers refused to pay a premium for the product, and it failed in the marketplace.

Farmers have been relatively quick to adopt input-oriented agricultural biotechnologies because of the combination of cost savings and yield protection they provide. According to the U.S. Department of Agriculture, farmers planted genetically modified (GM) seed on more than 40% of the acres planted with three major crops—corn, soybeans, and cotton—in the spring of 2000. As shown in Exhibit 40.1, GM seeds were planted on over 60 percent of all cotton acres, 54 percent of soybean acres, and 25% of corn acres.

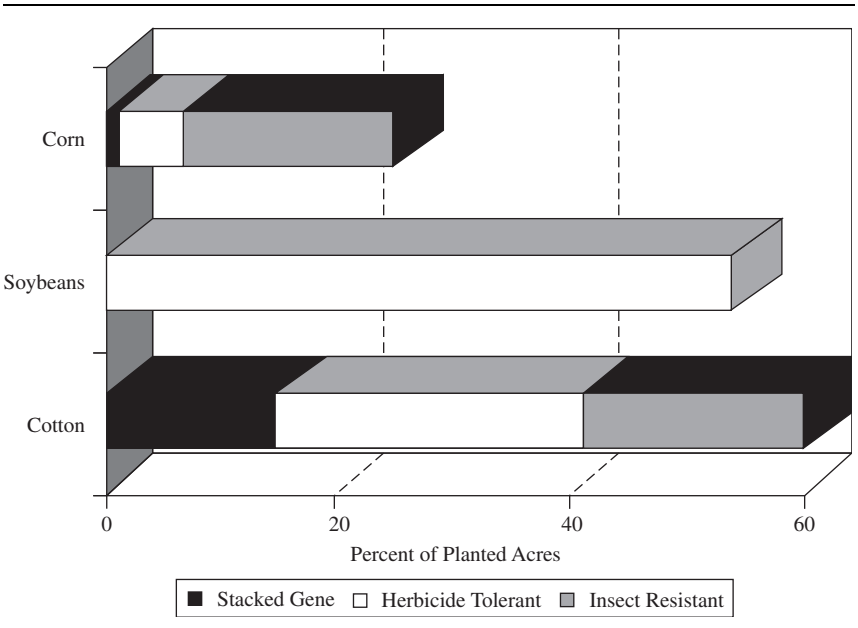

EXHIBIT 40.1 USE OF GENETICALLY MODIFIED SEED: 2000 CROP SEASON

40.3 DETERMINING BENEFITS: THE CASE OF *Bt* CORN

The development of *Bt* corn involves inserting a gene into the corn seed that enables the corn to express insecticidal toxins normally produced in the bacterium *Bacillus thuringiensis* (*Bt*). The presence of this gene and ability to produce the *Bt* toxin enables the plant to protect itself against the European corn borer (ECB) and to varying degrees other insects of economic importance to corn. The technology enables the farmer to avoid the risk of not detecting infestations of these insects and the necessity of purchasing and applying insecticides, while allowing the farmer to enjoy the same or higher yield.

Corn is the most important farm crop grown in the United States. In the spring of 2000, American farmers planted corn on 79.6 million acres and harvested 10.1 billion bushels of corn for grain in the fall of 2000, with an estimated farm-gate value of $18.6 billion.[3] Approximately 40 insect pests (excluding those infesting corn in storage) have been recognized for control recommendations by state cooperative extension services. Of these, eight—including the ECB—are considered major pests with indicated economic thresholds.[4] Losses from ECB damage and control costs for corn are estimated at $1 to $2 billion annually.

The ECB (*Ostrinia nubilalis*) is one of the most destructive corn pests in the United States. Corn borer larvae tunnel inside the corn plants and disrupt the flow of water and nutrients to the developing ear. Extensive tunneling may cause stalks to break or lodge, and tunneling in the ear shank may result in ear drop. Corn borer feeding also provides an avenue into the plant for infection by stalk rot organisms.[5] Two to three generations of ECBs occur every year, depending on location and weather. The ECB is found in virtually every major corn-producing state in the United States. According to the Illinois Cooperative Extension Service, injury to corn by first-generation ECB larvae is primarily physiological, with yield loss due to interference with the transport of water and nutrients in the stalk and leaves. Damage caused by second-generation corn borer is both physiological and physical, with the greatest yield loss caused by borers feeding in stalks from pollination until the ears are filled. Stalk breakage, ear feeding, and ear drop contribute to yield reduction. Physical damage is amplified when stalk rot weakens the plant and is aggravated by high winds or other adverse environmental conditions.

The yield loss for corn from ECB differs, depending on the plant growth stage at the time the damage occurs, water stress on the plant, and the hybrid planted. Extension entomologists at several universities have estimated yield losses from ECB to be in the range of 2 to 10% per borer per plant.[6] Iowa State University's Department of Entomology suggests ECB larvae that begin feeding earlier in a plant's development have a greater potential to cause yield reduction than those that begin feeding closer to physiological maturity. Iowa State researchers caution that if corn plants experience prolonged moisture stress after significant ECB tunneling, the loss per larva per plant can be as high as 12%.[7]

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3. *World Agricultural Supply and Demand Estimates* (Washington, DC: World Agricultural Outlook Board, U.S. Department of Agriculture, WASDE-369, December 12, 2000).

4. These include the western corn rootworm, northern corn rootworm, European corn borer, corn earworm, fall armyworm, black cutworm, southwestern corn borer, and the corn lead aphid. Robert L. Metcalf and Robert A. Metcalf, *Destructive and Useful Insects: Their Habits and Control*, Fifth Edition. (New York: McGraw Hill 1993).

5. *Illinois Agronomy Handbook, 1995–1996.* (Urbana, IL: Cooperative Extension Service, University of Illinois at Urbana-Champaign, Circular 1333, December 1994).

6. John Witkowski and Robert Wright, *The European Corn Borer: Biology & Management* (University of Nebraska, Lincoln, July 11, 1997). Available online: http://ianrwww.unl.edu/ianr/entomol/ecb/ecb1.htm

7. The European Corn Borer Home Page (Iowa State University Department of Entomology). Available online: http://www.ent.iastate.edu/pest/cornborer/

Event	Brand Name	Developer
176	Knock Out®	Novartis
176	YieldGard®	Mycogen
*Bt*11	YieldGard®	Novartis/Northrup King
MON810	YieldGard®	Monsanto
DBT418	DEKALBt®	Dekalb Seeds (Monsanto)
CBH-351	StarLink®	Aventis Crop Science

Source: Jeffrey Hyde et al., "The Economics of *Bt* Corn: Valuing Protection from the European Corn Borer." *Review of Agricultural Economics*, Vol. 21 no. 2 (Fall/Winter 1999), pp. 442–454.

EXHIBIT 40.2 TYPES OF *BT* CORN

Five *Bt* corn types have been granted registrations for nonhuman food uses by the U.S. Environmental Protection Agency. Each type of corn seed is identified by an "event," which is the insertion of the *Bt* gene into the corn DNA. These corn types are summarized in Exhibit 40.2.

Aventis Crop Science voluntarily withdrew STARLINK *Bt* corn in 2000 after STARLINK corn was detected in taco shells and other food items in the United States. The Environmental Protection Agency (EPA) requires GM corn to be handled separately from conventional corn in order to prevent its direct use in food products until food use registrations are requested by developers and granted by the EPA.

40.4 CONVENTIONAL METHODS OF ECB CONTROL

Corn farmers typically employ Integrated Pest Management (IPM) programs to address pest problems, including those from insects such as the ECB. Integrated Pest Management is described as "the best combination of cultural, biological, and chemical measures that provides the most cost effective, environmentally sound and socially acceptable method of managing diseases, insects, weeds and other pests under the circumstances in which they occur."[8] One of the most familiar features of field-crop (corn) IPM programs is scouting fields for insect pests and basing treatment decisions on economic thresholds. The economic threshold is that point where the costs associated with application or treatment equals the estimated value of the yield loss if control measures were not made. Virtually all agricultural extension service entomologists recommend that corn farmers scout fields for a 2- to 4-week period following peak moth flight as determined by blacklight or pheromone trap collections for both first- and second-generation ECB. Other IPM programs include the use of pest-resistant varieties, crop rotation, tillage, variation in planting and harvest times, biological and natural control, and application of insecticides.

8. *Integrated Pest Management.* Brochure published by the American Crop Protection Association.

40.5 THE ECONOMICS OF ECB CONTROL

Entomologists have developed management worksheets for both first- and second-generation ECB to assist farmers in calculating the economic threshold used in making decisions about insect control. The worksheet takes into account the level of infestation obtained from scouting, the expected corn yield, the anticipated value of the grain crop, and the cost of control. The cost of scouting for insects is estimated at about $3 per acre. Spraying insecticides can cost between $5 and $20 per acre for the farmer that treats against the corn borer, depending on the insecticide product used. This includes both the cost of insecticides and the cost of applying the insecticides. These data are then used to calculate the gain or loss a farmer may experience if an insecticide is applied for ECB control.

The essential three steps involved in completing an insect management worksheet include the following:

1. Calculate the preventable yield loss (bushels per acre). (Preventable yield loss = Anticipated yield × Yield loss estimate × Level of infestation × Anticipated level of control)
2. Calculate preventable dollar loss ($ per acre). (Preventable dollar loss = Preventable yield loss × Market value)
3. Compare the preventable dollar loss to the cost of insecticide treatment.

For example, assuming an expected yield of 140 bushels per acre, a potential yield loss from ECB of 8% expected level of control of 75%, 80% infestation, corn price of $2.50 per bushel, and treatment cost of $15.00 per acre, a corn farmer would realize a net savings of $1.80 per acre by treating for first-generation ECB ($16.80/acre preventable loss minus $15/acre cost of treatment).[9] A similar calculation using a smaller yield loss would be made to decide whether to treat for second-generation ECB.

A more specific example of the economic value of *Bt* corn in Minnesota was provided by Ostlie, Hutchinson, and Hellmich.[10] The authors calculate the expected benefits for corn growers from the use of *Bt* corn, assuming the product provides 96% average control of ECB larvae and that physiological losses average 5.5 and 2.8% for first and second generations, respectively (8.3% overall). Their analysis suggests that "benign neglect" of European corn borer costs U.S. growers about $6.57 and $12.90 per acre for first- and second-generation borers, respectively. The authors indicate that an IPM approach (basing insecticide use on scouting and economic thresholds as discussed earlier) was profitable against both first- and second-generation borers. *Bt* corn, however, offered a much better economic advantage. An analysis of historical ECB damage in Minnesota from 1988 to 1995 indicated returns of $5.61 per acre against first-generation borers and returns of $11.63 per acre against second-generation borers, for a total return of $17.24 per acre.

A recent analysis of *Bt* corn follows essentially the same technique but evaluated the value of *Bt* corn for Indianan farmers under varying degrees of risk aversion. The authors examined *Bt* corn under yield and ECB infestation conditions prevalent in Indiana and estimated that when the probability of infestation increases from 25 (the statewide average) to 40% (a likely maximum), the added value of *Bt* seed increases 69%, or from

9. The preventable loss is calculated as follows: 140 bushels/acre yield × 8% yield loss × 80% infestation × 75% control × $2.50 corn price = $16.80 per acre.

10. K.R. Ostlie, W.D. Hutchinson, and R.L. Hellmich, "*Bt* Corn & European Corn Borer: Long-Term Success Through Resistance Management," BU-7055-GO. (University of Minnesota Extension Service, 1997).

$4.44 per acre to $7.50 per acre for the YieldGard® variety.[11] They also concluded that the value of *Bt* corn seed is more than 14% greater for a highly risk averse producer compared to a risk neutral producer.

Under infestation conditions, the use of *Bt* corn hybrids compares favorably with chemical insecticides for control of ECB and offers four key advantages:

1. Corn farmers who plants a *Bt* hybrid does not have to scout their fields, thereby saving time and reducing the risk of misdiagnosing potential infestation problems.
2. Since the control of ECB is "built into" the seed, protection against all generations of ECB is provided, thereby reducing the risk of additional yield loss.
3. *Bt* corn hybrids typically provide the same level of yield as conventional hybrids in the absence of ECB infestation.
4. Use of *Bt* hybrid seeds reduces the pounds applied of chemical insecticides thereby reducing the pesticide load on the soil and environment and eliminating the need for farmers to make additional equipment passes over their fields. Not only does this save the farmers money, but it also reduces soil compaction.

To estimate the potential benefit that corn farmers could realize from the use of *Bt* corn hybrids, a model was developed that calculates the value of *Bt* to corn farmers based on assumptions for the percentage of corn acres infested with ECB, *Bt* adoption, and yield loss due to ECB (see Exhibit 40.3).

The baseline used for comparative purposes is the actual number of acres planted and harvested, average yield, season average farm price, and farm-gate value of production for the 2000 U.S. corn crop. Farmers planted 79.6 million acres of corn and harvested nearly 10.1 billion bushels with an average yield of 137.7 bushels per acre. The season average price received by farmers for the marketing year currently is an estimated $2.05 per bushel. This provides a crop valued at $20.6 billion. The key assumptions used in our analysis and results include:

- Twenty percent of corn acres are infested with ECB at above economic threshold levels, and *Bt* corn hybrids are used on 90% of ECB infested acres, resulting in 14.3 million acres on which *Bt* corn is planted.
- European corn borer infestation causes a 10% loss in average corn yields. Yield loss estimates in the literature suggest a range of 7 to 12% loss per larva per plant for first- and second-generation ECB. This assumption is applied as follows: The baseline, or actual, average yield of 137.7 bushels per acre includes both chemical insecticide treatments and ECB losses. The use of *Bt* hybrids would provide an average yield of 151.5 bushels per acre. The combination of production on infested and treated acres and uninfested acres results in a total corn crop of about 10.2 billion bushels.
- Price flexibility estimates for corn were applied to the increase in corn production resulting from the use of *Bt* hybrids to adjust for the inverse relationship between quantity produced and price. This suggests that corn prices would be 0.6% below baseline levels if *Bt* corn hybrids were used.

11. Jeffrey Hyde, Marshall A. Martin, Paul V. Preckel, and C. Richard Edwards, "The Economics of *Bt* Corn: Valuing Protection from the European Corn Borer," *Review of Agricultural Economics*, 21, no. 2 (Fall/Winter 1999): 422–454.

Planted Acres (Mil)	79.6
Harvested Acres (Mil)	73.0
% Harvested	91.7%
Base Yield (bu/acre)	137.7
Base Production (Mil bu)	10,052
Base Farm Price ($/bu)	$2.05
Base Grower Value (Mil $)	$20,607
Assumptions	
Pct of Acres Infested with ECB	20.0%
Acres Infested (Mil)	15.920
Bt Share of Treated Acres	90.0%
Bt Acres (Mil)	14.3
Acres/bag	3.23
Bt Seed Bags (Mil)	4.44
Loss Due to Untreated ECB	
Yield Loss from ECB (%)	10.0%
bu/acre	–13.8
Yield on *Bt* Acres (bu/ac)	151.5
Untreated Production (Mil bu)	8,079
Treated Production (Thou bu)	2,170
Total Production (Thou bu)	10,249
% Change	2.0%
New Farm Price ($/bu)	$2.04
% Change	–0.6%
Value of *Bt* (Mil $)	
Untreated Revenue (Mil $)	$4,021
Treated Revenue (Mil $)	$4,423
Value of *Bt* (Mil $)	$402
$/Treated Acre	$28.07

EXHIBIT 40.3 ECONOMIC VALUE OF *BT* CORN HYBRIDS

40.6 VALUE OF *Bt*

The use of *Bt* hybrids can put money in the pockets of corn farmers. By applying the "new" corn price to the production on the acres planted with *Bt* hybrids and comparing the resulting value with that of non-*Bt* production, farmers who plant *Bt* hybrids would realize additional revenues of $402 million if ECB exacts a 10% yield loss. When expressed in terms of the number of acres planted with *Bt* hybrids, this amounts to $28.07 per acre. This is an estimate of the total value added by the *Bt* technology.

The next major issue is who gets to keep this added value and how it should be collected. The value of seed technology typically is embedded in the price of the seed either as a price premium over conventional hybrids or as an added technology fee.

Monsanto introduced the concept of a technology fee in the early 1990s and implemented the arrangement for their YIELDGARD™ Insect Protected Corn. Monsanto's technology fee to the grower was established at a fixed charge per bag of seed. A licensee, typically the seed company providing the technology-enhanced seed, collected this fee on behalf of Monsanto. The licensee also was required to pay Monsanto a small up-front fee for each technology embodied in the seed. The seed company could retain a service fee equal to about 10% of the technology fee and could qualify for

additional incentives. Industry estimates suggest that under this arrangement, Monsanto received between 80 and 90% of the total technology fee for YIELDGARD™ Insect Protected Corn.

The seed producer and distributor typically collects the technology fee. This presents complications for a technology developer who is not vertically integrated into seed production and distribution. An integrated firm is in a position to keep all or a significant portion of any technology premium, or can make a conscious decision to discount this premium or fee as an element of an overall pricing strategy. A technology provider who is not directly in the seed business cannot take advantage of this opportunity. The only effective way a nonintegrated technology provider can share in the revenue generated by sale of the technology-enhanced seed is through a royalty on sale of the seed. Consequently, the technology fee can be viewed in much the same way as a royalty rate.

The value of the *Bt* technology must be shared three ways. The majority of the benefit should be returned to the farmer as the incentive to use the technology. The remaining share is available to be shared between the seed supplier and technology provider. Estimating the appropriate shares each party should receive is a key issue facing the analyst attempting to estimate the value of an agricultural biotechnology. The application of this concept is new enough that industry norms have not yet been firmly established.

A technology fee can be estimated from the *Bt* value example described above. Assuming a 10% yield loss from untreated ECB infestations, the use of *Bt* seed would avert a loss of $402 million for corn growers. If the corn grower retains 70% of the benefit or $281.5 million, this leaves $120.6 million for the technology provider and seed supplier. The industry standard bag of seed contains enough seed to plant 3.2 acres of corn. In our example, this means that 4.4 million bags of seed would be required to plant 14.3 million acres. This equates to a royalty in the form of a technology fee of $27.20 per bag of *Bt* hybrid seed for the technology provider.

CHAPTER 41

A REVIEW OF COURT-AWARDED ROYALTY RATES IN PATENT INFRINGEMENT CASES (1990–2001)

Michele M. Riley, CPA[1]

41.1 INTRODUCTION

Chief Judge Howard T. Markey of the Federal Circuit referred to the determination of royalties adequate to compensate for infringement of a patent as "a difficult judicial chore, seeming often to involve more the talents of a conjurer than those of a judge" (*Howard A. Fromson v. Western Litho Plate and Supply Co. et al.*, 853 F.2d 1568, 1574 (Fed. Cir. 1988)). This chapter develops an understanding of the reasonable royalty rates awarded by the courts and the methodologies used to determine these rates by examining case law established during the past 12 years. Our review considers many different aspects of reasonable royalty awards, including trends in rates awarded by the trial courts across industries, how these royalty rates fare on appeal, the Georgia-Pacific factors most often cited by the courts, and other topics of interest.

41.2 ROYALTIES AS A MEASURE OF DAMAGES

The United States Code establishes a reasonable royalty as the floor for damages in a patent infringement suit (35 U.S.C. 284). As Exhibit 41.1 shows, reasonable royalties comprise either all or part of the damages awarded in more than 70% of trial court decisions.[2] This exhibit clearly establishes the importance of properly calculating reasonable royalties in litigation, because royalties are often the measure of damages decided by the courts to be most appropriate.

Exhibit 41.2 shows the top 10 royalty awards during the 1990–2001 period, with *Alpex Computer Corporation v. Nintendo Company Ltd. et al.* at the top of the list with over $208 million in royalty damages awarded (34 U.S.P.Q.2D (BNA) 1167 (S.D.N.Y. 1994)). This royalty award is almost six times greater than the next largest award of almost $36 million made to Hughes Aircraft Company after a lengthy court battle with the United States government (*Hughes Aircraft Company v. United States*, 46 U.S.P.Q.2D (BNA)

1. © 2002 PENTA Advisory services, a unit of Navigant Consulting, Inc. Ms. Riley is a manager in PENTA's Washington, DC, office. This study is based on information contained in a proprietary patent infringement damages database developed and maintained by PENTA Advisory Services.
2. Multiple decisions relating to the same case were removed to prevent double counting.

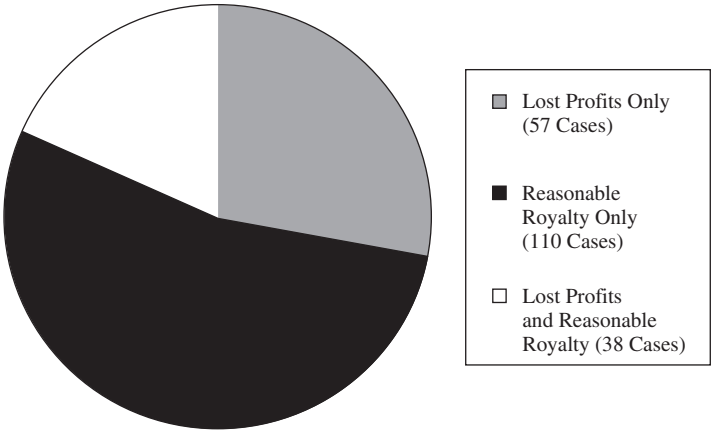

EXHIBIT 41.1 DISTRICT COURT CASES WITH LOST PROFITS AND/OR REASONABLE ROYALTY AWARDS (1990–2001)

1285 (Fed. Cir. 1998)). On appeal, the Federal Circuit reversed the finding of infringement in *Alpex*, leaving Hughes as the largest standing damage award in our survey. In the 10th spot is a $13 million award made to an individual inventor of a patent covering data relay systems (*Frank and Kathleen Calabrese v. Square D Company*, 2000 U.S. Dist. LEXIS 4307 (N.D. Ill. 2000)). The top 10 awards are evenly split between jury and bench decisions, but because of the very large award in *Alpex*, the jury awards exceed $295 million in royalties while the bench decisions equal roughly $116 million.

A review of the reasonable royalty rates awarded by the district courts during the period 1990–2001 shows some variation in the size of rates awarded, see Exhibit 41.3.[3] The rates awarded most frequently are in the 6 to 10% range, with 38 awards made during the period covered by our survey. The most common rate awarded is 10%, which was awarded 18 times during the relevant time period. As for the rest of the distribution, there are 21 awards of 5% or less, 11 awards of rates between 16 and 20%, and only 4 awards with rates higher than 25%.

The highest rate awarded during the period was 35% of gross sales in *Lonnie Williams v. Skid Recycling, Inc. et al.* (1994 U.S. Dist. LEXIS 5219, 5221 (N.D. Ill. 1994)), which involved technology relating to a machine for disassembling wooden pallets. The jury in this case decided on a 35% royalty after the parties were unable to agree on a royalty of $2,000 for each machine, which would have implied a 25% royalty. The plaintiff's expert also opined that an appropriate rate would be 25%, while the defendant did not introduce any evidence relating to damages. The court noted that the jury's awarded rate was higher than any rates set forth during the trial, but there was no evidence in the record that would have required a nullification of the jury's verdict.

Even though the rate in *Lonnie Williams* is the highest in our survey, the reasonable royalty damages awarded were just over $400,000, which demonstrates the importance of the royalty base in a patent infringement suit. With a large sales base, a lower royalty rate can still yield millions in damages. For example, in *Hughes* the royalty rate awarded by the court was only 1% but the royalty damages were in excess of $35 million because the patent covered an apparatus for controlling the attitude of a spin-stabilized spacecraft. In this case, Hughes accused 109 spacecraft of infringing its patent. The court found that 81

3. There are 93 cases for which PENTA was able to determine a rate based on the public information available for the case. Multiple decisions relating to the same case were removed in order to prevent double counting.

Year	Plaintiff	Defendant	Jury/Bench	Royalty Award	On Appeal
1994	Alpex Computer Corporation	Nintendo Company Ltd. et al.	Jury	$208,268,418	Reversed
1999	Hughes Aircraft Company	United States	Bench	$ 35,775,000	N/A
1995	Fonar Corporation and Dr. Raymond V. Damadian	General Electric Company and Drucker & Genuth, MDs, P.C.	Jury	$ 34,125,000	Modified
1995	Mobil Oil Corporation	Amoco Chemicals Corporation	Bench	$ 31,736,366	N/A
1998	Tec Air, Inc.	Denso Manufacturing Michigan, Inc. and Denso Corporation	Jury	$ 25,200,000	Affirmed
1996	Dow Chemical Company	United States	Bench	$ 17,325,000	Reversed
1999	Standard Manufacturing Company, Inc. and DBP, Ltd.	United States	Bench	$ 15,819,594	N/A
1996	Joy Technologies, Inc., A/S Niro Atomizer	Flakt, Inc.	Bench	$ 15,440,000	N/A
1997	Applied Medical Resources Corporation	United States Surgical Corporation	Jury	$ 14,768,564	Affirmed
2000	Frank and Kathleen Calabrese	Square D Company	Jury	$ 13,300,000	N/A

EXHIBIT 41.2 TOP 10 REASONABLE ROYALTY AWARDS IN DISTRICT COURTS (1990–2001)

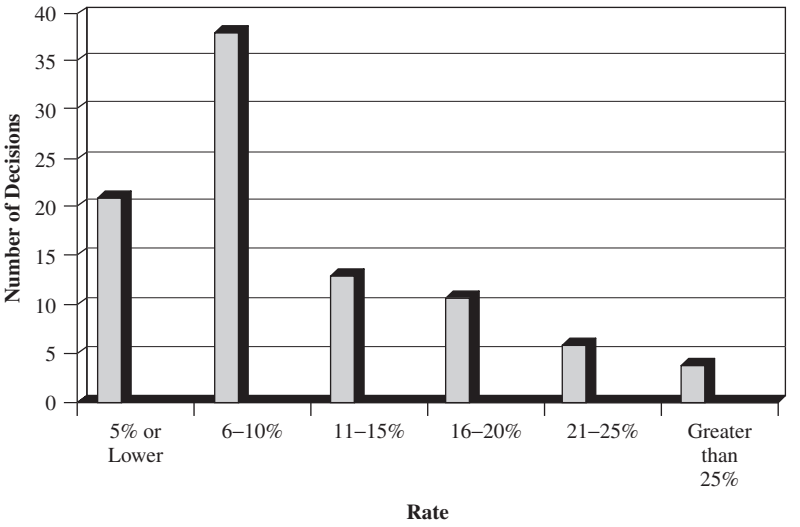

EXHIBIT 41.3 ROYALTY RATES AWARDED BY DISTRICT COURTS (1990–2001)

of these spacecraft did infringe, which resulted in a total sales base of $3.5 billion (31 Fed. Cl. 481, 488–492 (Fed. Cl. 1994)).

The lowest rate in our survey is 0.75% and was awarded in *Slimfold Manufacturing Company v. Kinkead Industries, Inc.* (932 F.2d 1453, 1456 (N.D. Ga. 1990)).

41.3 ROYALTY RATE AWARDS CATEGORIZED BY INDUSTRY

Many of the royalty rates can be categorized into one of two industries defined by the North American Industry Classification System (NAICS) (Exhibit 41.4). The industry with the most rates awarded is computer and electronic product manufacturing, which had 21 rates awarded during the relevant period, ranging from a low of 0.75% to a high of 25%. Close behind in number of awards is medical equipment and supplies manufacturing with 20 rates awarded, ranging from a high of 34.88% to a low of 1%. For both industries, the mean rate and median rate are similar, which implies the absence of a significant number of overly large or small awards. The industry with the highest average award is fabricated metal product manufacturing, with a mean award of 13.92% for the six cases included in that category. The industry with the lowest average award is food manufacturing, which has an average rate of 3%. This average, however, is based on only one case, *Grain Processing Corporation v. American Maize-Products Company* (51 U.S.P.Q.2D (BNA) 1556 (Fed. Cir. 1999)), which is a significant case because of its precedence in the area of noninfringing substitutes.

41.4 BASIS FOR ROYALTY RATES

For the cases in which the basis for a rate award is given, the method used to determine a rate more than half the time is the hypothetical negotiation (Exhibit 41.5).[4] Our survey also

4. Of the 93 cases for which a rate could be determined, 36 cases did not contain enough information to determine the basis for the rate award. Generally, these cases stated only that a royalty award was made and did not detail the court's consideration of the evidence.

NAICS Description	Number of Awards	Mean	Median	Maximum
Computer and Electronic Product Manufacturing	21	9.74	10.00	25.00
Medical Equipment and Supplies Manufacturing	20	13.78	10.00	34.88
Machinery Manufacturing	10	12.07	9.00	35.00
Miscellaneous Manufacturing	10	8.46	7.75	17.00
Transportation Equipment Manufacturing	8	10.60	10.00	16.31
Fabricated Metal Product Manufacturing	6	13.92	13.75	21.00
Chemical Manufacturing	5	12.33	10.00	24.00
Electrical Equipment, Appliance and Component Manufacturing	4	12.88	12.00	25.00
Furniture and Related Product Manufacturing	3	9.79	8.62	20.00
Plastic and Rubber Product Manufacturing	3	11.67	10.00	15.00
Paper Manufacturing	2	4.00	4.00	6.00
Food Manufacturing	1	3.00	3.00	3.00

EXHIBIT 41.4 ROYALTY RATE AWARDS BY INDUSTRY IN DISTRICT COURTS (1990–2001)

has eight cases that utilize an existing license rate as the royalty rate. The Federal Circuit has stated that the most logical measure of a hypothetical reasonable royalty is evidence of an actual, established royalty for the patent in question or for related patents or products (*Sakharam D. Mahurkar v. C. R. Bard, Inc. et al.*, 79 F.3d 1572, 1579 (Fed. Cir. 1996)). Often a court will have evidence of the plaintiff's licensing policies and royalties received from licensing out the patent(s) in suit. In *Electronics for Imaging, Inc. v. Photoscript Group Ltd.* the court found that the plaintiff's past licensing practice and policies with respect to the patent in suit were consistent with the court's royalty award of 10% (1999 U.S. Dist. LEXIS 7395, 7405 (N.D. Ca. 1999)).

Existing licenses can also be more credible than trial testimony relating to what could have been the result of a hypothetical negotiation, as shown in *Unique Coupons v. Menasha Corporation et al.* In this case, the owner of Unique Coupons had licensed one of its patents covering a coupon inserting machine to the plaintiff for an annual fee of $27,000 per year plus a running royalty ranging from 8 to 15% of net sales. During the trial, however, the owner of Unique testified that if she had licensed the patents to the defendants during the period of infringement, she would have charged $30,000 per machine, or 100% of the price of a coupon inserter. The court instead found that the structure of the existing license between the owner and Unique Coupons was adequate to compensate for infringement (1999 U.S. Dist. LEXIS 21744, 21787-21788 (N.D. Ill. 1999)).

Exhibit 41.5 shows there was one instance of the court awarding the infringer's entire profit margin as a royalty rate. In *Minnesota Mining and Manufacturing Company v. Johnson & Johnson Orthopaedics, Inc.*, the special master determined that Johnson & Johnson earned a profit margin of approximately 6% on the infringing units not included in 3M's lost profits claims. Because the evidence in the case showed that Johnson & Johnson had consistently been willing to sacrifice profit to maintain its market share, the master found that the defendant would have been willing to pay a reasonable royalty equal to its entire profit margin. The master also concluded there was no evidence that suggested Johnson & Johnson would pay a royalty that would cause it to lose money in the course of its business (1991 U.S. Dist. LEXIS 11451, 11603 (D. Minn. 1991)). The decision was affirmed on appeal.

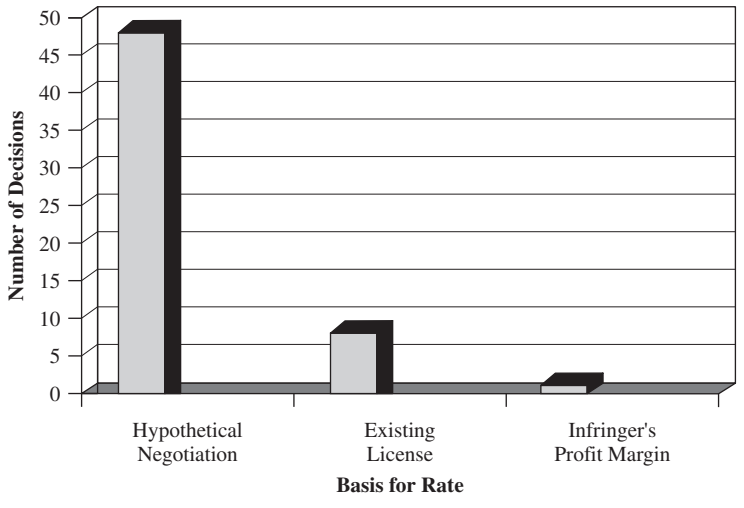

EXHIBIT 41.5 BASIS FOR ROYALTY RATES AWARDED BY DISTRICT COURTS

41.5 THE HYPOTHETICAL NEGOTIATION

Patent law does not mandate how the royalty should be determined, only that the royalty must compensate for the infringement. As Judge Markey wrote in *Fromson*: "The methodology encompasses fantasy and flexibility; fantasy because it requires a court to imagine what warring parties would have agreed to as willing negotiators; flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators." (*Fromson v. Western Litho Plate*, 853 F.2d 1568, 1575 (Fed. Cir. 1988)). The hypothetical negotiation is the most common method cited by the courts as the basis for determining a royalty rate.

In *Georgia-Pacific v. U.S. Plywood-Champion Papers, Inc.* (318 F. Supp. 1116 (S.D.N.Y. 1970)), the court promulgated a set of 15 frequently cited factors to aid in evaluating some of the relevant quantitative and qualitative factors present in patent license negotiations. These factors provide a convenient compilation of criteria that a licensor and licensee would be likely to consider in negotiating a royalty. Many courts, including the Federal Circuit, have acknowledged the Georgia-Pacific factors in setting a hypothetical reasonable royalty rate.

Exhibit 41.6 shows the number of times each factor was given consideration by the courts hearing the cases in our survey. The factor most frequently mentioned is factor 14, which relates to the opinion testimony of qualified experts. The next most considered factor is factor 8, which requires the court to consider the established profitability of the product made under the patent and the product's commercial success. Factors 1 and 15 were each considered an equal number of times by the trial courts. We have already discussed factor 1 in the context of the number of times courts have awarded a rate from an existing license for the patent in suit as the royalty rate. Factor 15 is often used by the court to weigh all the Georgia-Pacific factors and any additional elements in the negotiations between the parties, such as whether noninfringing substitutes were available or whether extenuating circumstances exist in the litigation that would require adjustments to a negotiated rate.

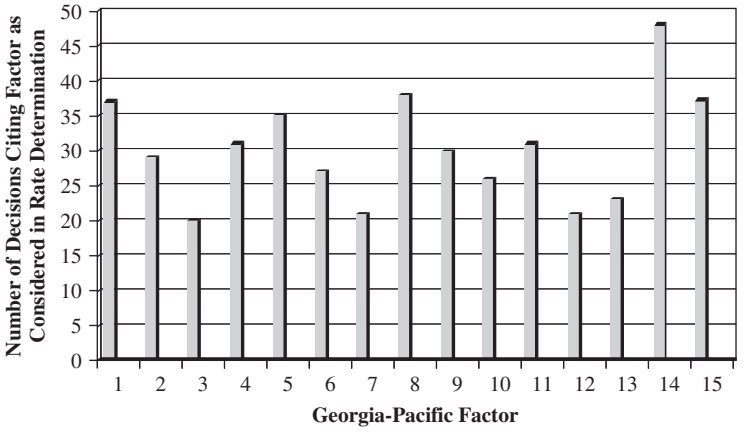

EXHIBIT 41.6 GEORGIA-PACIFIC FACTORS CONSIDERED IN DISTRICT COURT DECISIONS (1990–2001)

41.6 CONSIDERATION OF THE GEORGIA-PACIFIC FACTORS

The trial courts' discussion of and reliance on the Georgia-Pacific factors vary from case to case. This section reviews the most enlightening discussions of the factors as set forth by the courts in a variety of cases.

Factors 1 and 2 focus on licenses for the patents at issue and licenses completed in the industry for comparable patents. The courts have often found rates on existing licenses for the patent in suit to be particularly relevant in determining a reasonable royalty. However, in conducting a hypothetical negotiation, there may be factors that exist that must be considered in addition to any existing licenses. For this reason, the first Georgia-Pacific factor requires consideration of the royalties received by the patent holder for licensing of the patent in suit. For example, in *T. J. Smith & Nephew Ltd. v. Parke, Davis & Company et al.*, the Federal Circuit affirmed the District Court's finding that the "market circumstances" of the case dictated that a license to make and sell Smith & Nephew's patented product was worth less to the defendants than it would be to other licensees. Therefore, the royalty awarded should be less than the rate paid by Smith & Nephew's other licensees (1993 U.S. App. LEXIS 25039, 25044 (Fed. Cir. 1993)). Sometimes the court will conduct an entire hypothetical negotiation and then conclude the rate on an existing license for the patent in suit would be sufficient to compensate for infringement. This was the case in *Procter & Gamble v. Paragon Trade Brands*, where the court found the hypothetical license rate to equal the rate on a license Procter & Gamble granted to a competitor six years after the hypothetical negotiation. The court noted, "[T]he analysis … would be the same for [both licenses]. In particular, the competitive relationship between the parties, the absence of prior comparable licenses in the industry, and the commercial success and significance of the innovations at issue have not changed since [the hypothetical negotiation]" (989 F. Supp. 547, 614 (D. Del. 1997)).

The type of license being negotiated has an impact on the royalty rate as well. Factor 3 requires the negotiators to determine whether the license would be exclusive or nonexclusive and also determine if the sales territory would be restricted. In *Ziggity Systems, Inc. v. Val Watering Systems et al.*, the court noted that Ziggity would remain a competitor after licensing the patent in suit and therefore the hypothetical license would be nonexclusive, which would normally require a lower rate. In this particular case, however, because the patent holder would be the only other manufacturer and seller of the patented device, the court concluded a nonexclusive license would still have "considerable value" in allowing the defendants to retain their market shares (769 F. Supp. 752, 826 (E.D. Pa. 1990)).

Factor 4 analyzes the patent holder's established licensing policy and marketing program. If a patent holder intends to not license the patent in suit, that would tend to increase the hypothetical royalty, and conversely, a patent holder's desire to license would tend to decrease the royalty. The willingness of the patent holder to license, however, must be proven to the court through a documented licensing program that has produced licenses negotiated with unrelated parties in arm's-length transactions. In *Procter & Gamble v. Paragon Trade Brands*, the plaintiff presented sufficient evidence to prove that it had an established policy of not licensing out its patents covering major innovations in diaper technology and also presented sufficient evidence to prove that the patent in suit was indeed such an innovation (989 F. Supp. 547, 610 (D. Del. 1997)). For companies or patent holders with less rigorous recordkeeping and documentation procedures, the matter of proving whether or not a licensing policy existed can be more difficult. For example, in *Penda v. United States*, the plaintiff had entered into an agreement with one of its customers whereby it would receive a license from the customer on other technology in exchange

for licensing out the patent in suit. This was an informal arrangement, and the two companies had a friendly and ongoing business relationship. Although the court did not find that this license proved Penda had an established licensing program, it noted that the cross-license arrangement was one of the most probative items adduced by either party as to a reasonable royalty (29 Fed. Cl. 533, 578 (Fed. Cl. 1993)).

An important consideration to the negotiators is the commercial relationship between the licensor and licensee, which is considered in factor 5. If the parties are direct competitors in the same line of business and selling similar products in the same sales territories, the licensor would naturally attempt to negotiate a higher rate in order to ensure it would be compensated for any potential loss of its own sales or customers to the licensee. As the District Court stated in *Telemac v. US/Intellicom* (USI), "It is particularly relevant to the Georgia-Pacific analysis that Telemac would not have willingly licensed a direct competitor such as USI and, if forced to do so, would only have licensed USI at the highest possible royalty rate it could obtain" (185 F. Supp.2d 1084, 1101–1102 (N.D. Ca. 2001)).

Factor 6 considers whether and to what extent the patented item promotes the sales of unpatented products of the licensor and licensee. Sales of such unpatented items would tend to increase the royalty rate in a hypothetical negotiation. Courts often acknowledge such convoyed sales either by expanding the royalty base to account for both the patented and unpatented items or by multiplying a sales base consisting of only patented items against an increased royalty rate. The link connecting the sales of the patented and unpatented items must be clearly delineated so the court will be able to see that sales of the patented item drive sales of other items. The plaintiff's expert in *Bose Corporation v. JBL, Inc. et al.* testified that purchasers of the speaker system containing the patented feature would also be inclined to purchase amplifiers or receivers as well as add-on systems or systems for additional rooms. The defendant argued that Bose could not document such convoyed sales. The court found the plaintiff's expert to be "a bit too enthusiastic" on this issue and stated the factor had a neutral impact on the royalty rate (112 F. Supp.2d 138, 165–166 (D. Mass. 2000)).

Factor 8 relates to the profitability of the product made under the patent and the commercial success and popularity of that product. This factor is almost always discussed during a hypothetical negotiation. In consideration of this factor, courts have accepted both estimates of profit prepared around the time of the hypothetical negotiation and actual profits as detailed by sales records relating to infringing products. In *Interactive Pictures Corporation v. Infinite Pictures, Inc. et al.*, the Federal Circuit affirmed the District Court's use of projected sales from the plaintiff's business plan as the royalty base. The Federal Circuit wrote, "[T]hose projections would have been available to Infinite at the time of the hypothetical negotiation. The fact that Infinite did not subsequently meet those projections is irrelevant to Infinite's state of mind at the time of the hypothetical negotiation" (274 F.3d 1371, 1385 (Fed. Cir. 2001)). Similarly, in *Micro Motion, Inc. v. Exac, Inc.*, the court assumed a hypothetical negotiation would have taken place in December 1983 but used financial projections dated eight months later because the projections would offer some insight into Exac's expectations even though they were prepared subsequent to the negotiation (761 F. Supp. 1420, 1435 (N.D. Ca. 1991)).

Evidence of actual sales and profits is also considered important by the courts, but the profits must relate to a relevant business unit that has responsibility for the technology at issue. One jury was instructed that it could consider evidence of the defendant's actual profits as part of its hypothetical negotiation, but only to the extent that such evidence was probative of the expectations for the future that the negotiators would have had as of the time of the negotiation (*Alpex v. Nintendo*, 1994 U.S. Dist. LEXIS 17515, 17648 (S.D.N.Y. 1994)). Further, in *Brunswick Corporation et al. v. United States*, the court

stated that in order to determine commercial success of a product, the court considers "actual profitability of the exact technological area rather than speculative or expected profitability of a business generally" (36 Fed. Cl. 204, 215 (Fed. Cl. 1996)).

Factor 11 considers the extent to which the infringer has made use of the invention and any evidence showing such use. If the infringer has not sold high numbers of the infringing products or such products are not part of the infringer's main business lines, the hypothetical royalty rate is likely to be lower. The court determined that one of the defendants in *Promega Corporation v. Lifecodes Corporation et al.* was willing to pay a higher royalty rate because it was firmly committed to manufacturing and selling the infringing products at the time of the hypothetical negotiation. The defendant had already incorporated the product into its internal databases as well, further proving the extent of its use of the patent (1999 U.S. Dist. LEXIS 21094, 21135–21136 (D. Utah 1999)).

It is often difficult to apportion profitability between the patented and nonpatented elements of a product, because typically only the price for the entire product is recorded when a product is sold. Factor 13 allows for apportionment of profit in the hypothetical negotiation. Because companies do not often keep their financial records in a manner that allows this breakdown of profit to be performed, it is unusual for courts to give this factor much weight in opinions relating to damages. In *Pentech International, Inc. v. Leon Hayduchok, et al.* (931 F. Supp. 1167, 1176 (S.D.N.Y. 1996)), the infringing product was an erasable marker kit. The court determined that the patent in suit covered the entire product. Therefore, all of the profit was attributable to the patented feature and no apportionment was required.

Factor 14, the opinion testimony of qualified experts, is often considered by the courts and, depending on the substance of the testimony, can either be given great weight in the hypothetical negotiation or be dismissed entirely. Such testimony will not be accepted by the court if it is not supported by the evidence in the case.

Finally, factor 15 allows the court to determine the amount "a willing licensor and licensee would agree upon at the time of infringement." At this stage in the hypothetical negotiation, the court looks at all the factors and other considerations affecting the calculation of a royalty rate. We will discuss some of these other considerations at the end of the chapter.

41.7 FEDERAL CIRCUIT DECISIONS ON ROYALTY AWARDS

Exhibit 41.7 shows the outcomes of cases in our survey that were appealed to the Federal Circuit. The largest number of appeals decisions (20) are in cases with royalty rates in the 6 to 10% range. Of these decisions, 35% affirmed the District Court's decision, 20% reversed or remanded the case on damages, and 45% reversed or remanded the case on other grounds (i.e., infringement, claim construction).

Exhibit 41.8 shows the cases from our survey that were remanded by the Federal Circuit specifically because of the trial court's determination of royalty damages. Three of the cases were remanded because the calculation of the royalty rate was found to be erroneous or unsupported by the evidence in the case. In *Total Containment, Inc. v. Environ Products, Inc. and Michael C. Webb*, the District Court began its hypothetical negotiation with a rate of 8.75%, which was equal to one-quarter of Total Containment's profit. The court then added 2% to compensate the plaintiff for its lost profits on sales of accessory products frequently sold with the patented product. Finally, to account for Total Containment's policy of not licensing its patents and the fact that the parties were direct competitors, the court added an additional 10% to the royalty rate, making it a royalty of more than 20%. The Federal Circuit found that the addition of 10% to the royalty calculation lacked evidentiary support, specifically because there may have been noninfringing alternatives that Environ

Royalty Rate Awarded (District Court)	Cases Affirmed	Cases Reversed/ Remanded on Damages	Cases Reversed/ Remanded on Other Grounds
5% or lower	77%	23%	0%
6%–10%	35%	20%	45%
11%–15%	43%	29%	29%
16%–20%	80%	0%	20%
21%–25%	33%	67%	0%
Greater than 25%	50%	50%	0%

Due to rounding, the data shown for royalty rates in the 11–15% range add to greater than 100%.

EXHIBIT 41.7 FEDERAL CIRCUIT DECISIONS BY SIZE OF DISTRICT COURT RATE AWARD

Products would have chosen to manufacture rather than pay Total Containment such a high royalty (1997 U.S. App. LEXIS 793, 811–812 (Fed. Cir. 1997)).

The District Court awarded a 14% royalty in *Unisplay, S.A. v. American Electronic Sign Co., Inc. and Luke G. Williams*, but the Federal Circuit ordered a new trial on damages because the case evidence did not support a royalty rate of more than 10%. Unisplay's damages expert discussed a rate as high as 12%, but the Federal Circuit determined his testimony was directed at the rate the parties would arrive at during the trial rather than at the time infringement began. In addition, the expert's testimony was based on a "poison the market" theory, whereby the plaintiff argued that its sales of the product at issue did not reach original expectations because the defendants manufactured infringing products that were of inferior quality and turned the market against the patented product altogether. The Federal Circuit found the 14% royalty was based on this theory and therefore could not stand because the theory had been disqualified by the District Court (69 F.3d 512, 515–519 (Fed. Cir. 1995)).

The most often cited of the three cases remanded for redetermination of the royalty rate is *Sakharam D. Mahurkar v. C. R. Bard, Inc. et al.* After conducting a hypothetical negotiation, the District Court awarded a 34.88% royalty on infringing sales of double-lumen catheters, which remove and restore fluids to the body during a transfusion. The District Court determined Dr. Mahurkar was entitled to a 25.88% royalty on Bard's sales of the infringing product. This royalty was calculated by adding Bard's savings in research and development costs to Bard's profit margin on the infringing products (less the 10% margin the court determined Bard was entitled to keep). The judge then added an additional 9% to this reasonable royalty, which it labeled a "Panduit kicker." The Federal Circuit found the award of the Panduit kicker to be an abuse of discretion and remanded the case for recalculation of the reasonable royalty (79 F.3d 1572, 1580–1581 (Fed. Cir. 1996)). We will discuss the use and acceptance of such "kickers" later in the chapter.

The three remaining cases shown in Exhibit 41.8 were remanded for reasons other than redetermination of royalty rates. In *Wang Laboratories, Inc. v. Toshiba Corporation et al.*, the District Court awarded a 2.75% royalty to the plaintiff after conducting a hypothetical negotiation as of the time the defendant was told it was infringing the plaintiff's patent. The Federal Circuit stated this was not the appropriate date to conduct the hypothetical negotiation because *Fromson* dictates the negotiations should be considered to have occurred on the patent issuance date (993 F.2d 858, 869–870 (Fed. Cir. 1993)). Fortunately for the

Appeal Decision Date	Plaintiff	Defendant	Rate Awarded by District Court	Appeals Court Decision	Comment
March 29, 1996	Sakharam D. Mahurkar	C. R. Bard, Inc., Davol Inc., and Bard Access Systems, Inc.	34.88%	Remand for recalculation of reasonable royalty	District Court erred in awarding 9% "Panduit kicker" in addition to 25.88% royalty
March 26, 1996	Zygo Corporation	Wyko Corporation	25.00%	Remand for reconsideration of royalty rate and redetermination of royalty base	One of Wyko's products found to not infringe; must be taken out of royalty base
January 17, 1997	Total Containment, Inc.	Environ Products, Inc. and Michael C. Webb	21.00%	Remand for redetermination of a reasonable royalty	District Court's decision to add additional 10% to royalty calculation lacks evidentiary support
September 6, 2000	Dow Chemical	United States	15.00%*	Remand for recalculation of royalty damages	Claims Court chose incorrect royalty base for royalty damage calculations

EXHIBIT 41.8 DETAIL ON REASONABLE ROYALTY RATE AWARDS REMANDED BY FEDERAL CIRCUIT

Appeal Decision Date	Plaintiff	Defendant	Rate Awarded by District Court	Appeals Court Decision	Comment
October 25, 1995	Unisplay, S.A.	American Electronic Sign Co., Inc. and Luke G. Williams	14.00%	Vacate damages and order District Court to hold new trial on damages unless plaintiff remits excess portion of award	Evidence in record does not support jury's award of 14%
May 10, 1993	Wang Laboratories, Inc.	Toshiba Corporation et al.	2.75%	Remand for recalculation of reasonable royalty damages	District Court committed legal error in choosing date infringement began as date of hypothetical negotiation

EXHIBIT 41.8 DETAIL ON REASONABLE ROYALTY RATE AWARDS REMANDED BY FEDERAL CIRCUIT *(CONTINUED)*

plaintiff, the District Court had determined that the negotiations as of the date the patent was issued would result in a 4% royalty as opposed to a 2.75% royalty.

Both *Dow Chemical v. United States* and *Zygo Corporation v. Wyko Corporation* were remanded for a redetermination of the royalty base. In *Dow*, the patent in suit covered a pressurized slurry pump injection system developed to fill abandoned coal mines with a material that would prevent the mines' collapse. The Court of Federal Claims determined the plaintiff was entitled to 15% of the "estimated decline of private property values that might occur if the abandoned coal mines were not filled, and then collapsed." The Federal Circuit found these hypothetical losses of property values bore little relationship to what a willing buyer and a willing seller would use in the real world to negotiate a royalty rate. The evidence in the record relating to negotiations between the parties for use of the patent in suit indicated that total project costs or quantities of materials should be the base for calculation of royalties (226 F.3d 1334, 1348 (Fed. Cir. 2000)). In *Zygo*, one of the accused products was found on appeal to not infringe and therefore constituted an available noninfringing substitute for the infringing product. The Federal Circuit remanded the case to the District Court with instructions to reconsider the 25% royalty award in light of the defendant's ability to market the noninfringing product in place of the infringing product (79 F.3d 1563, 1571 (Fed. Cir. 1996)).

41.8 OTHER CONSIDERATIONS IN THE DETERMINATION OF A REASONABLE ROYALTY

(a) ENTIRE MARKET VALUE RULE. The entire market value rule allows for the recovery of damages based on the value of an entire apparatus containing several features, when the patented feature constitutes the basis for customer demand (*TWM Manufacturing Co., Inc. v. Dura Corp. and Kidde, Inc.*, 789 F.2d 895, 901 (Fed. Cir. 1986)). This rule often requires the inclusion of nonpatented items in the royalty base. Courts have also acknowledged the importance of patented features in driving sales of entire products by increasing the royalty rate in a hypothetical negotiation. If the evidence is sufficient to indicate the patented feature creates demand for an entire product made up mostly of unpatented features, the royalty base can be increased significantly under the entire market value rule. In *Bose Corporation v. JBL, Inc. et al.*, the District Court found that the patented feature, which was a port inside a loudspeaker enclosure used to radiate acoustic energy from the speaker to the listener, "shared a substantial nexus with the demand for the products incorporating it." The Court also found that the defendants, with the exception of one product, sold all of their infringing products as part of complete speaker systems. Therefore, the court determined the royalty base would equal the sales of the speaker systems sold by the defendants as opposed to the sales of only the infringing products (112 F. Supp.2d 138, 164 (D. Mass. 2000)).

In another application of the entire market value rule, the District Court concluded a patented paper towel dispenser drove the demand for the paper towels it dispensed. The court established the sales of paper towels for that particular dispenser as the relevant royalty base. The defendant had argued that the appropriate royalty base would be 5% of the difference in price between the infringing dispenser and defendant's prior noninfringing dispenser. The Court, however, noted that the dispensers were often placed in customers' facilities for "little or no charge in an attempt to sell paper which, after all, is the heart of the business" (*Mosinee Paper Corporation v. James River Corporation of America*, 1992 U.S. Dist. LEXIS 2425, 2442–2443 (E.D. Wis.1992)).

It is often difficult to identify a single factor or element driving demand for an entire product that incorporates a patented feature. In *Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc. and Rockwell Graphics Systems, Inc.*, the District Court found that a patented folding device in a web-fed rotary printing press did not appear to be the most important consideration in the purchase of a printing press. The court noted that while the speed of the press (which it acknowledged was positively impacted by the patented folder) was important, there were other considerations completely unrelated to the folder that customers must consider, including "print quality, ease of use, service support, brand reputation, even the urge to 'Buy American,'" and therefore declined to set the sales of the printing press as the royalty base (1995 U.S. Dist. LEXIS 17493, 17497–17499 (S.D.N.Y. 1995)).

(b) ESTABLISHED ROYALTY RATE IN PARTICULAR INDUSTRIES OR FOR CERTAIN PATENTS. The question of whether or not an established royalty rate exists is difficult to answer for certain industries that may not have much licensing activity. Evidence relating to industry royalty rates is often introduced through the use of expert testimony. In *Code-Alarm, Inc. v. Electromotive Technologies Corporation, and Directed Electronics*, the Federal Circuit affirmed the District Court's acceptance of royalty rates "commonly exhibited" in the automotive industry and the trial court's use of that common range in testing the reasonableness of its royalty rate determination (1997 U.S. App. LEXIS 13031, 13038 (Fed. Cir. 1997)). Similarly, in *Bose v. JBL*, the District Court tested its award of a 7% royalty by considering the plaintiff's expert testimony relating to typical royalty ranges in the consumer electronics industry (112 F. Supp.2d 138, 167–168 (D. Mass. 2000)). Because these industry royalty ranges are usually based on licenses negotiated outside of litigation, the courts generally consider factors relevant to each particular case in addition to the industry rates.

Another method of determining whether an established rate exists is to review the licenses granted under a patent in suit. In *Sun Studs v. ATA Equipment Leasing*, the Federal Circuit defined an established royalty as follows: (1) the royalty was agreed to prior to the infringement, (2) it was paid by such a number of persons or by an exclusive licensee who had such a significant amount of sales volume as to indicate a general acquiescence in its reasonableness by those who use the invention, (3) it was not negotiated under threat of a lawsuit or in settlement of a lawsuit, and (4) it paid for comparable rights of activity under the patent (873 F.2d 978, 993 (Fed. Cir. 1989)).

If the licensor has an established licensing program, the existing licenses cannot be ignored when determining reasonable royalty damages. In *William G. Riles v. Shell Exploration and Production Company*, the jury found Shell to have willfully infringed a patent relating to the construction and installation of fixed offshore platforms for oil drilling. The jury awarded the plaintiff $8.7 million in royalty damages. On appeal, the Federal Circuit reviewed each of the three models constructed by the plaintiff's expert in order to determine whether the damage award made by the jury was reasonable. The first model calculated a royalty based on a percentage of the cost of the Shell platform, while the second model took a percentage of the gross revenue received from the first year of production on the Shell platform. The third model simply added the results from the first and second models together. The Federal Circuit remanded the case to the District Court for redetermination of the award, finding that all three of the models ignored the plaintiff's established licensing practice, which based the royalty rate on either a percentage of the savings the licensee would realize from use of the patent or a fee based on the depth of the installed platform (298 F.3d 1302, 1311–1313 (Fed. Cir. 2002)).

(c) EFFECT OF AVAILABLE NONINFRINGING SUBSTITUTES ON THE HYPOTHETICAL NEGOTIATION. There appears to be a general consensus among the courts regarding the impact of noninfringing substitutes on the hypothetical negotiation. In general, if it is proven that a noninfringing substitute existed at the time the parties were engaging in the negotiation, that substitute would serve to lower the royalty rate. The Court of Federal Claims in *Brunswick Corp. et al. v. United States* considered the viable, noninfringing alternatives that existed as functioning "against an elevated royalty rate." The court included its consideration of these noninfringing alternatives after weighing all the Georgia-Pacific factors as well (36 Fed. Cl. 204, 217 (Fed. Cl. 1996)).

Likewise, in *State Industries, Inc. v. Mor-Flo Industries, Inc. et al.* the Eastern District of Tennessee noted that a noninfringing substitute available in the industry could have been manufactured and sold by the defendants, albeit at a lesser profit. The court recognized that "in a competitive industry with traditionally small profit percentages, a manufacturer such as [either defendant] would choose to market a less desirable product and still make a reasonable profit, rather than market a more desirable product and make less than a reasonable profit" (8 U.S.P.Q.2D (BNA) 1971 (E.D. Tenn. 1988)). Therefore, even though the noninfringing product was not a true substitute for the infringing product, the court found the existence of such a product would serve to reduce the reasonable royalty.

(d) AMOUNT OF PROFIT LEFT FOR INFRINGER AFTER ROYALTY PAYMENT. Courts differ somewhat on whether the hypothetical negotiation must arrive at a royalty payment that will leave the infringer some profit. It is generally acknowledged that a licensee in an actual negotiation would likely walk away from any license requiring it to pay all its profit to the licensor. However, the courts have awarded royalties that leave the defendant no profit, emphasizing instead the role of the patented product in helping the defendant maintain its share of a particular market. For example, in *Andrew Corporation v. Gabriel Electronics, Inc.*, the District Court awarded a 10% royalty, which took into account the fact that the plaintiff would have had very little incentive to license its product. The court acknowledged that a 10% royalty would leave the defendant little or no profit, but explained the defendant would be willing to forsake a large profit in order to remain a viable competitor in the market. Gabriel Electronics argued that the royalty awarded by the court must leave the defendant with some profit, but the court stated that was "plainly not the law" (785 F. Supp. 1041, 1053 (D. Maine 1992)). Another instance of a defendant sacrificing profit in order to maintain market share was demonstrated in *3M v. Johnson & Johnson*. The evidence in the record indicated Johnson & Johnson would do anything to maintain market share, including paying all its profit on the patented item to 3M as a license fee (1991 U.S. Dist. LEXIS 11451, 11603 (D. Minn. 1991)). This case was affirmed by the Federal Circuit.

(e) PANDUIT OR INFRINGEMENT KICKER. The concept of the Panduit kicker, or infringement kicker, originated with *Panduit Corporation v. Stahlin Bros. Fibre Works, Inc.* In this case, the court discussed the high litigation costs incurred by the plaintiff because of its pursuit of the defendant for 13 years. The court stated, "The setting of reasonable royalty after infringement cannot be treated, as it was here, as the equivalent of ordinary royalty negotiations among truly 'willing' patent owners and licensees. That view would constitute a pretense that the infringement never happened. It would also make an election to infringe a handy means for competitors to impose a 'compulsory license' policy upon every patent owner" (575 F.2d 1152, 1158 (Sixth Cir. 1978)). This

discussion subsequently led some courts to compensate plaintiffs for litigation expenses through an enhancement of the reasonable royalty award that has come to be known as the Panduit kicker. The Federal Circuit reversed the kicker portion of the royalty rate award in *Mahurkar v. Bard*, noting that this type of award does not meet the statutory standards for enhancement and fees (79 F.3d 1572, 1581 (Fed. Cir. 1996)). Apparently, the Federal Circuit's decision in *Mahurkar* has essentially stopped the trial courts from awarding these kickers in subsequent cases. In 2001, the District Court in *Micro Chemical, Inc. v. Lextron, Inc.* declined to award the Panduit kicker requested by the plaintiff, noting such an award had been "specifically discredited" by the Federal Circuit (161 F. Supp.2d 1187, 1209 (Colorado 2001)). In *Code-Alarm, Inc. v. Electromotive Technologies Corporation and Directed Electronics*, the counterdefendant argued that the District Court committed legal error by including an infringement kicker in the 2.5% royalty rate and then applying this rate to infringing and noninfringing components. The Federal Circuit declined to reverse that portion of the award, noting that an award in excess of a reasonable royalty does not automatically "translate into a presumption that the district court improperly applied an 'infringement kicker' or 'additional damages'" (1997 U.S. App. LEXIS 13031, 13038 (Fed. Cir. 1997)).

41.9 CONCLUSION

The analyses presented in this chapter demonstrate the many factors courts must consider when determining reasonable royalty damages adequate to compensate for infringement. Although these considerations are numerous, the courts' determinations repeatedly demonstrate that a reasonable royalty award will be defensible if it is thoroughly reasoned and supported by ample evidence in the case record.

CHAPTER 42

TRADEMARK DAMAGE TRENDS IN THE FEDERAL CIRCUIT (1982–2001)

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42.1 INTRODUCTION

In the 1990s, intellectual assets, including intellectual property, gained recognition as not just a necessary legal asset, but also a valuable business asset to organizations. In particular, companies now understand even more how their brands, trademarks, service marks, and the like support and enhance their strategic business objectives. Organizations have increasingly begun to develop a strategic framework to manage these valuable assets, and in many cases these frameworks have resulted in an increasing number of disputes initiated to protect the assets and further the companies' strategies.

Overall, the filing of protected property rights cases—those involving patents, trademarks, and copyrights—are on the rise and represent about 3% of the Federal Circuit Court (the court) docket. From 1997 to 2000, the number of trademark infringement cases commenced in the Federal Circuit rose from 3,189 to 4,204, an increase of over 30%. Since 1993, the number of cases commenced increased 74%. For the first time in many years, the number of new trademark cases commenced declined to 3,348 in 2001.[2]

An injunction remains the most desired and primary remedy that most, if not all, trademark owners request—the defendant must cease and desist its improper use of the mark in the marketplace. Where monetary damage has also occurred, the court has awarded various remedies on a finding of trademark infringement. These remedies are based on the Trademark Act of 1946 (the Lanham Act), common and statutory law, and court precedents. Based on a review of the various trademark damage cases, certain trends emerge.

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2. www.uscourts.gov

Ernst & Young LLP (E&Y) compiles and maintains a proprietary database of damage awards that include published cases:[3]

- Involving a federally registered trademark infringement action
- Decided since 1982
- In either the *United States Patent Quarterly (USPO)* or LexisNexis through December 31, 2001
- That have stood on appeal, or remain to be heard

Although there are many reported trademark damage cases tried in the Federal Circuit prior to 1982, this year coincides with the adoption of the Court of Appeals of the Federal Circuit to hear all patent infringement appeals. For the purposes of this analysis, 1982 was selected for consistency with E&Y's proprietary database of patent infringement damage decisions. While numerous cases were filed in the state courts under common law, those cases are not included in this analysis.

While we have captured all cases that involve a federally registered trademark infringement damages decision, those that were remanded, reversed, or vacated on appeal for issues related or unrelated to damages are excluded from our analysis.

42.2 OVERVIEW OF TRADEMARKS

The Trademark Act of 1946 provides for registration of trademarks, service marks, collective trademarks and service marks, collective membership marks, and certification marks. The United States Patent and Trademark Office (USPTO) defines a trademark and service mark as follows:

- A **trademark** is a word, phrase, symbol, or design, or a combination of words, phrases, symbols, or designs, that identifies and distinguishes the source of the goods of one party from those of others.
- A **service mark** is the same as a trademark, except that it identifies and distinguishes the source of a service rather than a product.[4]

Federal registration is not required to establish rights in a trademark. Rights can be established and claimed by a legitimate use of the mark. Federal registration does provide certain benefits to the owner, most notably the ability to bring an action concerning the mark in the Federal Court as well as the right to use the symbol ® denoting a federally registered mark. If the trademark owner uses the mark as noted in its registration and files all necessary paperwork required by the USPTO, a federally registered trademark can last indefinitely. Marks are deemed abandoned if they have not been commercially used for 3 years. Furthermore, if not actively policed, marks can become genericized and no longer maintain their strength.

Through commercial use, trademarks can also be protected under state common law including unfair competition laws, the Model Trademark Bill, and the Uniform Deceptive

3. Various partners and employees of Arthur Andersen LLP previously published some of the information contained in the E&Y database. Most recently, the information through 2000 was published in the American Bar Association's *Section of Intellectual Property Law*, Volume 20, Number 3, Spring 2002. The authors were Kathleen M. Kedrowski and Jennifer L. Knabb, formerly of Andersen.

4. www.uspto.gov

Practices Act. The Trademark Act of 1946 governs the federal law in defining the available remedies in trademark infringement cases as discussed below.

42.3 INJUNCTIVE AND MONETARY RELIEF GUIDANCE

The Trademark Act of 1946, commonly known as the Lanham Act, has federal jurisdiction over the various monetary remedies for trademark infringement. Case precedents provide guidance as to the accepted monetary relief, usually with varying interpretations by the district courts.

Even though a finding of infringement may result and an injunction be entered, monetary relief does not necessarily follow. There is a distinction in the court as to the burden of proof necessary to obtain injunctive relief as opposed to monetary relief. It is common for trademark infringement matters to result in an injunction with no monetary damages awarded.

Title 15 of the United States Code Section 1117 guides monetary damages. Its guidance states that "[w]hen a violation of any right of the registrant of a mark registered in the Patent and Trademark Office shall have been established in any civil action arising under this chapter, the plaintiff shall be entitled to recover (1) defendant's profits, (2) any damages sustained by the plaintiff, and (3) the cost of the action."[5] In practice, damage recoveries have included unjust enrichment, plaintiff's lost profits (and associated diminution in value, loss of goodwill, increased costs, etc.), price erosion, reasonable royalties, corrective advertising costs, as well as punitive damages, attorney fees, and other costs of the action. Under the Lanham Act, up to treble damages are available if the Court deems them appropriate. Under 15 U.S.C. 1117, "if the Court shall find that the amount of the recovery based upon profits is either inadequate or excessive, the Court may in its discretion enter judgment for such sum as the Court shall find to be just, according to the circumstances of the case ... the court in exceptional cases may award reasonable attorney fees to the prevailing party."[6] This includes statutory damages of $1 million per mark when the infringement is willful and up to $100,000 per mark if there is no willful infringement.

The plaintiff's burden of proof to receive monetary damages is primarily based on the degree of confusion caused by the alleged trademark infringement. Likelihood of confusion is a measure by which courts usually find for injunctive relief in trademark infringement cases. For a finding of monetary damages, the confusion requirement extends to proof of actual confusion (not just likelihood of confusion), as well as establishing bad faith. Experts are commonly retained to measure the likelihood of and/or actual confusion resulting from the defendant's infringing actions. The confusion is typically measured through various confusion surveys or studies as well as direct communication with those who may have been confused.[7]

In those trademark cases where the court found for the plaintiff on infringement, there are many circumstances where monetary damages were not awarded due to the plaintiff's failure to prove actual confusion. In cases where the burden of actual confusion is met and monetary relief is awarded, there has been a recent trend toward awards of statutory damages in lieu of actual damages or defendant's profits. The statutory awards

5. 15 U.S.C. 1117.
6. Ibid.
7. *Sands, Taylor & Wood Co. v. The Quaker Oats Co.*, 978 F.2d 947; 1992 U.S. App. LEXIS 20674; 24 U.S.P.Q.2D (BNA) 1001.

were primarily the result of domain name and other Internet infringement actions under the Anticybersquatting Protection Act (15 U.S.C. 1125d) that carries an award of no less than $1,000 up to a maximum $1 million per domain name in lieu of actual damages or profits. In other cases, monetary awards were granted for the various types of relief described later.

42.4 TRENDS IN TRADEMARK DAMAGES AWARDS

Since 1982, there have been approximately 200 trademark infringement cases with monetary damages that were tried in the federal courts. Of these cases, only 121 either stood on appeal or contain adequate information regarding the amount of damages awarded.

Total trademark infringement damages awarded during the period 1982 to 2001 amounted to just over $105 million. Not surprisingly, only 21 cases involved total damages greater than or equal to $1 million, with the largest award approximating $27 million. While about 70% of the cases were tried since 1990, the majority of the damages, 86%, were awarded since 1990. The average trademark damages award was slightly more than $800,000. Excluding the two largest awards results in an average of approximately $485,000.

(a) YEARLY TRENDS. As noted in Exhibit 42.1 there is no discerning trend in the award of trademark damages by year. The two spikes in the yearly data are the result of the two largest damages cases, *Sands, Taylor & Wood Co. v. The Quaker Oats Co.* and *Playboy Enterprises, Inc. v. Hsin L. Chen*. These two cases alone compose nearly 50% of the total trademark infringement damages awarded in the past 20 years.

(b) COMPONENTS OF AWARDS. For a successful trademark owner, various monetary damage theories are available under the law. Historically, the court awards have been predominantly in the following areas (see Exhibit 42.2).

(i) Defendant's Profits. An award of defendant's profits, commonly known as "unjust enrichment," results in disgorging all the defendant's profits made from the infringement. Under this damage theory, a disgorgement of profits is awarded when (1) the defendant has profited from its illegal actions, (2) the plaintiff has suffered damages, and (3) the defendant must be deterred from further infringement.[8]

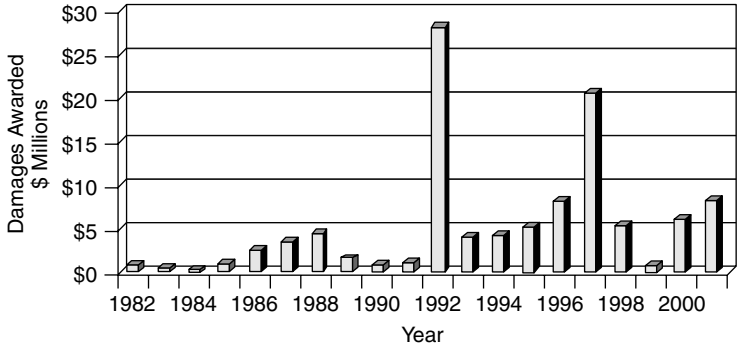

EXHIBIT 42.1 TOTAL TRADEMARK DAMAGES AWARDED (1982–2001)

8. *George Basch v. Blue Coral*, 968 F.2d 1532.

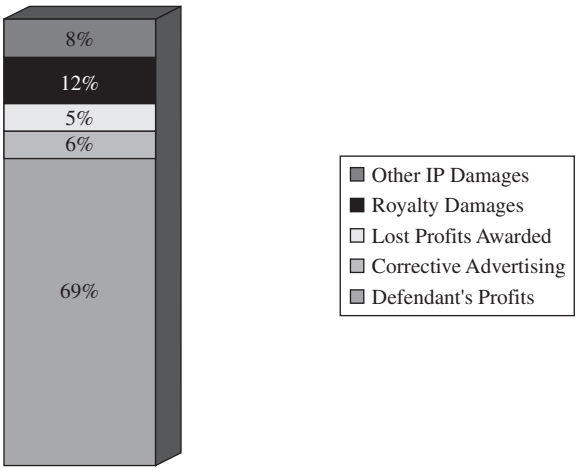

EXHIBIT 42.2 BREAKDOWN OF TRADEMARK DAMAGES, ALL CASES INCLUDED (1982–2001)

According to the Lanham Act, "in assessing profits, the plaintiff shall be required to prove defendant's sales only; defendant must prove all elements of cost or deduction claimed."[9] In some district courts, the plaintiff must only show that an infringing sale was made and then identify the total sales of the defendant. The defendant has the burden of apportioning the sales related only to the infringing actions, market and other issues, and deductions for costs. A study of the damages cases shows varying approaches to apportioning sales as well as deducting costs—incremental, direct, operating, net, or a hybrid method in between. The case precedent provides guidance on these issues. In calculating defendant's profits, it is common to reduce the damages by the amount, if any, of claimed lost profits to avoid double recovery.

As shown in Exhibit 42.2, defendant's profits accounted for nearly 70% of all trademark damages awarded since 1982.

(ii) Plaintiff's Lost Profits and Price Erosion. A successful plaintiff can also be awarded its lost profits. The lost profits can take the form of lost profits on sales lost to the defendant, price erosion, loss of goodwill, diminution in the value of the mark, and other losses. Due to the higher level of proof necessary for a lost profits claim, causation as well as confusion, it is increasingly difficult to identify these lost profits in the market, especially where there are multiple factors affecting sales, such as other competitors in the marketplace.

In intellectual property cases, most commonly patent infringement matters, price erosion has been awarded as an additional measure of lost profits. The negative effect and related losses, if any, on the market price of goods due to the infringing actions are referred to as price erosion. Price erosion is commonly measured by the loss in the price of plaintiff goods in the market due to the presence of the defendant's infringing mark in the market. Historically price erosion damages have been an uncommon award due to the various market factors influencing prices. Based on our findings presented in our database, no trademark cases have awarded price erosion damages.

9. 15 U.S.C. 1117.

As shown in Exhibit 42.2, plaintiff's lost profits accounted for 5% of all trademark damages awarded since 1982.

(iii) Corrective Advertising. Corrective advertising is a measure of the advertising and marketing expenditures either incurred or to be incurred to correct the confusion in the marketplace caused by the infringing actions. This can relate as well to false advertising claims made by the plaintiff. The Court has awarded corrective advertising damages based on a variety of measures, including actual defendant expenditures, actual plaintiff corrective expenditures, and planned plaintiff corrective expenditures, as well as application of the Federal Trade Commission (FTC) rule. The FTC rule calls for an award of no less than 25% of the defendant's actual advertising expenditures. Historically, five trademark infringement cases included in our study awarded corrective advertising damages.

As shown in Exhibit 42.2, corrective advertising accounted for approximately 6% of all trademark damages awarded since 1982.

(iv) Reasonable Royalty. A reasonable royalty for the use of the trademark has been found an appropriate measure of damages. In certain circumstances where the plaintiff cannot prove lost profits and an award of defendant's profits would have been considered excessive, the courts awarded a reasonable royalty in lieu of defendant's profits. Such was the case in *Sands, Taylor & Wood Co. v. The Quaker Oats Co.*, where a reasonable royalty was awarded to compensate the plaintiff since an award of defendant's profits would have resulted in a plaintiff's windfall. Historically, a reasonable royalty award has not been a common measure, occurring in less than 10 cases in our study.

As shown in Exhibit 42.2, reasonable royalties accounted for approximately 12% of all trademark damages awarded since 1982. Clearly the *Sands, Taylor* case referred to able accounts for the majority of the reasonable royalty damages awarded to date.

(v) Other IP Damages. Many of the trademark infringement cases that awarded damages included amounts related to other claims and allegations. These include statutory damages under the Anticybersquatting Protection Act, unfair competition, related copyright actions, and other breach or contract claims. In many cases, the amounts cannot be separated from the trademark damages awarded.

As shown in Exhibit 42.2, other IP damages accounted for approximately 8% of all trademark damages awarded since 1982.

(c) TOP 10 DAMAGES AWARDS. Exhibit 42.3 details the top 10 trademark damages awards since 1982. Only one case was added to the list in 2001, *Bear U.S.A. v. Jooan, Co. Ltd.* Not surprisingly, 9 of the top 10 were awarded since 1990. The top 10 cases represent just over 70% of total monetary damages awarded since 1982.

A sample of the various top cases provides some perspective on the nature of the individual awards. *Sands, Taylor & Wood Co. v. The Quaker Oats Co.* represents the largest federally registered trademark damages award to date. The trademark of THIRST-AID was found to have been infringed by GATORADE (The Quaker Oats Co.). This case originally awarded the plaintiff over $40 million in GATORADE profits as compensation for the infringement. Upon appeal, the award was found to be excessive and was reduced to a reasonable royalty. In *Playboy Enterprises, Inc. v. Hsin L. Chen*, the plaintiff was awarded defendant's profits as well as trebled damages by establishing that the defendant knowingly infringed the "Rabbit Ear" logo registered by Playboy Enterprises, Inc. *A & M Records Inc. etc. v. Abdallah* involved 26 plaintiff companies that claimed

Case	Decision Year	Damages Award
Sands, Taylor & Wood Co. v. The Quaker Oats Co.	1992	$26,517,408
*Edmark Industries SDN. BHD v. South Asia Intl. et al.**	1998	$22,118,872
Playboy Enterprises, Inc. v. Hsin I. Chen	1997	$18,537,766
A&M Records Inc. etc. v. Abdallah	1996	$7,000,000
Christopher Rdell Weaver v. Burger King Corp.	1998	$3,059,681
Nintendo of America Inc. v. Ketchum	1993	$2,994,000
Ford Motor Co. v. Kuan Tong Industrial Co.	1987	$2,965,458
United Phosphorus, Ltd. v. Midland Fumigant/ United Phosphorus, Ltd. and *Inventa Corp. v. Midland Fumigant, etc.*	2000	$2,729,146
McCoy v. Mitsubushi Cutlery, Inc.	1995	$2,600,000
Bear U.S.A. v. Jooan, Co. Ltd.	2001	$2,191,698

*The *Edmark Industries SDN.BHD v. South Asia Intl. et al.* case is a non-*USPQ* source that is shown in the top 10 damages awards exhibit only.

EXHIBIT 42.3 TOP 10 TRADEMARK DECISIONS (1982–2001)

customers of General Audio (Abdallah) were providing time-loaded audiotapes to individuals who used these tapes to counterfeit the plaintiffs' recordings. The plaintiffs were awarded defendant's profits in this case. *Ford Motor Co. v. Kuan Tong Industrial Co.* involved Ford's claim that the defendant sales were achieved solely through the use of counterfeit logos on all of the produced automotive accessories. The court awarded lost profits as well as trebled damages. In the recent *Bear U.S.A. v. Jooan, Co. Ltd.* case, the plaintiff was awarded defendant's profits, trebled damages and liquidated damages, based on the defendant's infringement of the registered BEAR marks for jackets produced. Jooan, Co. Ltd. was found to have breached a contractual agreement with Bear U.S.A. and infringed its registered trademark.

(d) ENHANCED DAMAGES. A surprising 50% of all trademark damages included an award of enhanced damages. As shown in Exhibit 42.4, of the total trademark damages

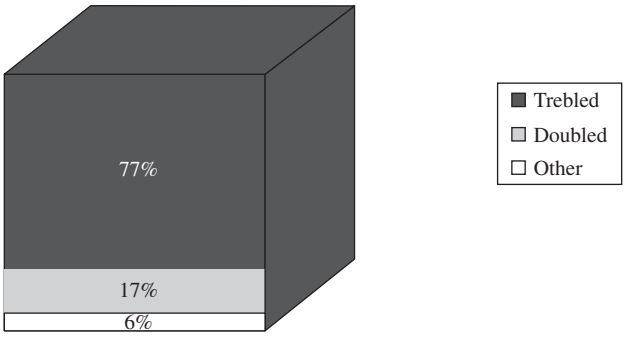

EXHIBIT 42.4 CASES OF INCREASED DAMAGES PER TYPE OF INCREASE (1982–2001)

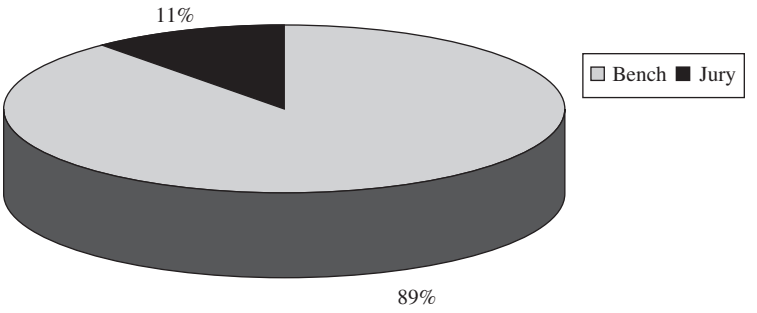

EXHIBIT 42.5 BREAKDOWN OF CASES: BENCH VERSUS JURY DECISIONS (1982–2001)

awards involving enhanced damages, 77% resulted in trebled damages, 17% in doubled damages, and the remaining 6% on some other measure of enhancement based on the circumstances of the case.

(e) BENCH VERSUS JURY. Since 1982 juries have decided 11% of the cases involving monetary damages awarded for trademark infringement, while the bench has decided 89%. (See Exhibit 42.5.) Of all the damages awarded, 30% of the damages were awarded in jury trials and 70% in bench trials. (See Exhibit 42.6.)

(f) DAMAGES BY CIRCUIT. As shown in Exhibit 42.7, when reviewed by Circuit Court, the impact of the two largest trademark awards in the Ninth and Seventh Circuits is evident. Removing those two cases from the data shows the Ninth Circuit (Alaska, Arizona, California, Idaho, Montana, Nevada, Oregon, Hawaii, and Washington) awarded the most trademark damages, over $19 million on 21 cases. No other circuit awarded more than $8 million in damages. The Second Circuit (Connecticut, New York, and Vermont) has tried the most trademark damages cases, with 31, yet awarded just slightly more than $7 million in total damages.

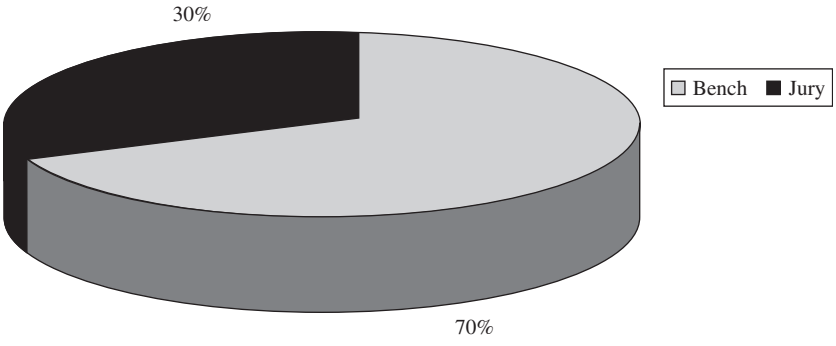

EXHIBIT 42.6 BREAKDOWN OF DAMAGES: BENCH VERSUS JURY DECISIONS (1982–2001)

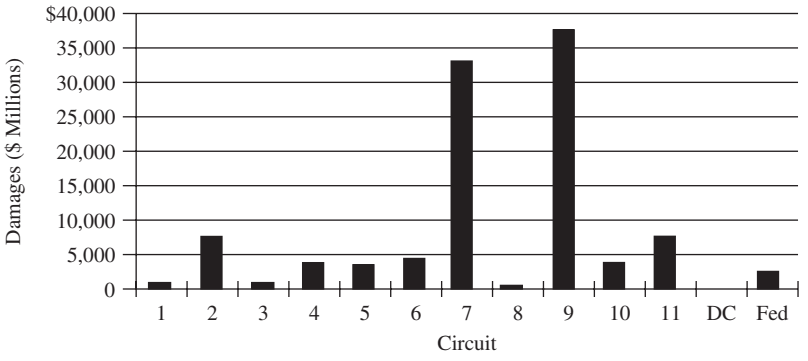

EXHIBIT 42.7 CIRCUIT COURT DECISIONS: DAMAGES BY CIRCUIT (1982–2001)

42.5 CONCLUSION

In summary, both the frequency of and amounts awarded in trademark damages cases have increased in recent years. Due to differences in the facts and circumstances of each case, however, there are no predominating trends in the awards from year to year. Defendants' profits remain the most commonly awarded measure of damages in trademark infringement cases. Trebled damages have been the most commonly awarded measure in cases that allowed enhanced damages. Not surprisingly, most cases continue to be tried by the bench rather than juries.

CHAPTER 43

RECENT DECISION: COPYRIGHT INFRINGEMENT DAMAGES CAN BE BASED ON VALUE OF LICENSES

43.1 INTRODUCTION

This chapter is derived from the opinion of the U.S. Court of Appeals for the Second Circuit, August Term, 1999, Docket No. 99–9081 regarding *On Davis (Plaintiff-Appellant) v. The Gap, Inc. (Defendant-Appellee)*. Before: Leval, Parker, and Katzmann, Circuit Judges.

43.2 *ON DAVIS v. THE GAP, INC.*

The U.S. Court of Appeals for the Second Circuit has ruled in *On Davis v. The Gap, Inc.* that the owner of a copyrighted product design can sue an advertiser for infringement when the advertiser displays the product in its ads without a license. In this case Gap included a jewelry prop in an advertisement without a license to use the prop. The decision reversed a lower court summary judgment ruling. The lower court had ruled that no such suit could be brought unless the copyright holder could prove actual damages. The Second Circuit concluded that copyright law allows damages to be awarded based on a provable analysis of the fair market value of a prop license.

(a) BACKGROUND. Davis is the creator and designer of nonfunctional jewelry worn over the eyes. The Gap, Inc. is an international retailer of clothing and accessories marketed largely to a young customer base. It operates several chains of retail stores, largely under the names of GAP and OLD NAVY. Gap, without Davis's permission, used a photograph of an individual wearing Davis's copyrighted eyewear in an advertisement for the GAP trademarked stores. The photograph was widely displayed throughout the United States. Davis filed a copyright infringement lawsuit seeking a declaratory judgment of infringement and damages, including $2.5 million in unpaid licensing fees, a percentage of the Gap's profits, punitive damages of $10 million, and attorney's fees. The district court granted summary judgment for the Gap on the grounds that:

- Davis's claims for actual damages and profits under 17 U.S.C. § 504(b) (1994) were too speculative to support recovery, or were otherwise barred by a prior ruling of this court.
- Davis was not eligible for statutory damages or attorney's fees because he had not registered his copyright on a timely basis.
- The Copyright Act does not permit recovery of punitive damages.

Davis has created many different designs of eye jewelry, which he markets under the name ONOCULII DESIGNS. Davis describes Onoculii eyewear as "sculptured metallic ornamental wearable art." Each piece is made of gold, silver, or brass. The eyewear is constructed in a manner similar to eyeglasses (a frame hinged to templates that hook over the ears), but with a very different effect. The frames support decorative, perforated, metallic discs in the place that would be occupied by the lenses. The discs effectively conceal the wearer's eyes, although the perforations permit the wearer to see through them. Some of Davis's designs are of flowery or abstract shapes, and some are crescents with protruding spokes or wings. The specific piece that was the subject of the infringement lawsuit consists of a horizontal bar at the level of the eyebrows from which are suspended a pair of slightly convex, circular discs of polished metal covering the eyes, perforated with dozens of tiny holes. Davis registered his copyright for the design at issue, effective May 16, 1997.

Davis sought to gain recognition for his Onoculii line by promoting and marketing his designs "in carefully chosen media settings." As part of his marketing plan, Davis encouraged "known stylish and popular entertainers" to wear his creations in public. Entertainers who have worn Onoculii designs while appearing on stage, on MTV, in magazine photographs, or in other media include Vernon Reid, Thomas Mapfumo, Don Cherry, Sun Ra, Ryo Kawasaki, Cat Coore, Mr. Pepper Seed, Chuck Johnson, and Jack and Jill. Various fashion designers have also featured Davis's eyewear as accessories in runway shows or photographs. His work has been noted in such publications as *Vogue, Women's Wear Daily, Fashion Market, In Fashion*, the *New York Times*, the *New York Post*, and the *Village Voice*.

Since 1995 Davis has marketed his merchandise through boutiques and optical stores. The eyewear sold at wholesale prices of approximately $30 to $45 a pair and retailed for between $65 and $100 in 1995. Davis asserts he has earned approximately $10,000 from sales. He testified that on one occasion he received a $50 license fee from *Vibe* magazine for the use of a photograph depicting the musician Sun Ra wearing an Onoculii piece.

In May 1996, prior to Davis's 1997 registration of his copyright, the defendant created a series of advertisements showing photographs of people of various lifestyles wearing Gap clothing. The campaign was designed to promote the concept that all kinds of people wear Gap merchandise. The ad, which bears the caption "fast" emblazoned in red (the "fast" ad), depicts a group of seven young people of Asian appearance, standing in a loose V formation staring at the camera. They are dressed primarily in black, exhibiting bare arms and partly bare chests, several with goatees (accompanied in one case by bleached, streaked hair), large-brimmed, Western-style hats, and distinctive eye shades, worn either over their eyes, on their hats, or cocked over the top of their heads. The central figure, at the top of the V formation, is wearing Davis's highly distinctive eyewear and peers over the metal disks into the camera lens.

The "fast" photograph was taken by the Gap in May 1996 during a photo shoot in Manhattan. The defendant provided the subjects with Gap apparel to wear for the shoot and a trailer in which to change. The Gap claims that it did not furnish eyewear to any of the subjects, and that the subjects were told to wear their own eyewear, wristwatches, earrings, nose rings, or other incidental items. The Gap claims that it wanted the subject models to "permit each person to project accurately his or her own personal image and appearance."

The Gap's "fast" advertisement was published in a variety of magazines, including *W, Vanity Fair, Spin, Details*, and *Entertainment Weekly.* Davis claims that the total circulation of these magazines was over 2.5 million. For five weeks during August and September

1996, the advertisement was displayed on the sides of buses in New York, Boston, Chicago, San Francisco, Atlanta, Washington, DC, and Seattle.

Davis submitted evidence showing that during the fourth quarter of 1996, the period that Davis asserts is relevant to the "fast" advertisement, the net annual sales of the parent company, Gap, Inc., increased by about 10%, compared to the fourth quarter of 1995, to $1.668 billion. There was no evidence of what portion of the parent company's revenues were attributable to the stores operated under the Gap label, much less what portion was related to the ad in question.

Shortly after seeing the "fast" advertisement in October and November 1996, Davis contacted the Gap by telephone and in writing. The Gap's advertising campaign, which apparently ran during August and September 1996, had been completed by the time Davis wrote. Davis stated that he had not authorized the use of his design and inquired whether the Gap might be interested in selling a line of his eyewear. Davis filed this action on November 19, 1997. The Gap then filed a motion for summary judgment, arguing that Davis had no entitlement to damages and that his claims were barred by the *de minimis* and fair use doctrines.

(b) SUMMARY JUDGMENT GRANTED: 17 U.S.C. § 504. On April 9, 1999, the district court granted summary judgment to the Gap. The district court first noted that Davis was not eligible for "statutory damages" under 17 U.S.C. § 504(c) due to the fact that he had not registered his copyright within 3 months of his first "publication" of his work or prior to the allegedly infringing use by the Gap. As regards damages under 17 U.S.C. § 504(b), the court rejected Davis's claim as unduly speculative and, insofar as it sought damages for Davis's failure to receive a license fee from the Gap, precluded by a prior decision of the court. Since the court also found Davis ineligible for punitive damages, it concluded that he was not entitled to any form of damages, and thus dismissed his claims. On appeal, Davis argued that (1) the district court erred by granting summary judgment without ruling on the merits of his claim for declaratory relief, and (2) he was entitled to both compensatory and punitive damages.

The statute 17 U.S.C. § 504 imposes two categories of compensatory damages. Taking care to specify that double recovery is not permitted where the two categories overlap, the statute provides for the recovery of both the infringer's profits and the copyright owner's "actual damages." It is important that these two categories of compensation have different justifications and are based on different financial data. The award of the infringer's profits examines the facts only from the infringer's point of view. If the infringer has earned a profit, this award makes it disgorge the profit to ensure that it not benefit from its wrongdoing. The award of the owner's actual damages looks at the facts from the point of view of the copyright owner; it undertakes to compensate the owner for any harm suffered by reason of the infringer's illegal act. See generally *Fitzgerald Publ'g Co. v. Baylor Publ'g Co.,* 807 F.2d 1110, 1118 (2d Cir. 1986); *Walker v. Forbes, Inc.,* 28 F.3d 409, 412 (4th Cir. 1994).

The district court granted summary judgment dismissing Davis's claims for damages. As for Davis's claim of entitlement to a part of the "infringer's profits," the district court believed Davis failed to show any causal connection between the infringement and the defendant's profits. With respect to Davis's claim of entitlement to "actual damages" based on the license fee he should have been paid for the Gap's unauthorized use of his copyrighted material, the district court believed that his evidence was too speculative and that the Court of Appeal's decision in *Business Trends Analysts, Inc. v. Freedonia Group, Inc.,* 887 F.2d 399 (2d Cir. 1989), precluded any such award.

Davis submitted evidence that, during and shortly after the Gap's advertising campaign featuring the "fast" ad, the corporate parent of the Gap stores realized net sales of $1.668 billion, an increase of $146 million over the revenues earned in the same period of the preceding year. The district court considered this evidence inadequate to sustain a judgment in the plaintiff's favor because the overall revenues of the Gap, Inc. had no reasonable relationship to the act of alleged infringement. Because the ad infringed only with respect to Gap label stores and eyewear, the Appeals Court agreed with the district court that it was incumbent on Davis to submit evidence at least limited to the gross revenues of the Gap label stores, and perhaps also limited to eye-wear or accessories. Had Davis done so, the burden would then have shifted to the defendant under the terms of § 504(b) to prove its deductible expenses and elements of profits from those revenues attributable to factors other than the copyrighted work.

It is true that a highly literal interpretation of the statute would favor Davis. It says that "the copyright owner is required to present proof only of the infringer's gross revenue," 17 U.S.C. § 504(b), leaving it to the infringer to prove what portions of its revenue are not attributable to the infringement. Nonetheless, the court found that the term "gross revenue" under the statute means gross revenue reasonably related to the infringement, not unrelated revenues.

The court presented a publishing example. If a publisher published an anthology of poetry that contained a poem covered by the plaintiff's copyright, the court did not believe the plaintiff's statutory burden would be discharged by submitting the publisher's gross revenue resulting from its publication of hundreds of titles, including trade books, textbooks, cookbooks, and so on. In the court's view, the owner's burden would require evidence of the revenues realized from the sale of the anthology containing the infringing poem. The publisher would then bear the burden of proving its costs attributable to the anthology and the extent to which its profits from the sale of the anthology were attributable to factors other than the infringing poem, including particularly the other poems contained in the volume.

The point would be clearer still if the defendant publisher were part of a conglomerate corporation that also received income from agriculture, canning, shipping, and real estate development. While the burden-shifting statute undoubtedly intended to ease the plaintiff's burden in proving the defendant's profits, the court did not believe it would shift the burden so far as to permit a plaintiff in such a case to satisfy his or her burden by showing gross revenues from agriculture, canning, shipping, and real estate where the infringement consisted of the unauthorized publication of a poem. The facts of this case are less extreme; nonetheless, the point remains the same: The statutory term "infringer's gross revenue" should not be construed so broadly as to include revenue from lines of business that were unrelated to the act of infringement.

(c) RELATED CASE: *TAYLOR v. MEIRICK.* The district court relied on the Seventh Circuit's ruling in *Taylor v. Meirick*, 712 F.2d 1112 (7th Cir. 1983). In that case the defendant was a mapmaker who copied and sold three of the plaintiff's copyrighted maps. During the relevant time period, the defendant sold 150 maps, as well as other merchandise. The plaintiff submitted evidence of gross revenues and profits deriving from the defendant's overall sales. The court rejected the plaintiff's claim, reasoning: "all [the burden-shifting language of § 504(b)] means is that [the plaintiff] could have made out a prima facie case for an award of infringer's profits by showing [the defendant's] gross revenues from the sale of the infringing maps. It was not enough to show [the defendant's] gross revenues from the sale of everything he sold. …"

Applying this reasoning to the *Davis* case, the Appeals Court found that the district court was correct in ruling that Davis failed to discharge his burden by submitting the Gap, Inc.'s gross revenue of $1.668 billion—revenue derived in part from sales under other labels within the Gap, Inc.'s corporate family that were in no way promoted by the advertisement, not to mention sales under the "Gap" label of jeans, khakis, shirts, underwear, cosmetics, children's clothing, and infant wear.

Among the elements Davis sought to prove as damages was the failure to receive a reasonable license fee from the Gap for its use of his copyrighted eyewear. The complaint asserted an entitlement to a $2.5 million licensing fee. The district court rejected the claim on two grounds. First, the court found that Davis's claim was too speculative—that is, insufficiently supported by evidence. Second, the court believed that the Appeals Court decision in *Business Trends*, 887 F.2d 399, bars a copyright owner's claim for actual damages consisting of the infringer's failure to pay the fair market value of a license fee for the use the infringer made.

(d) FAIR MARKET VALUE. While there was no evidence to support Davis's wildly inflated claim of entitlement to $2.5 million, the court decided that his evidence did support a much more modest claim of a fair market value for a license to use his design in the ad. In addition to his evidence of numerous instances in which rock music stars wore Onoculii eyewear in photographs exhibited in music publications, Davis testified that on one occasion he was paid a royalty of $50 for the publication by *Vibe* magazine of a photo of the deceased rock star Sun Ra wearing Davis's eyewear.

On the basis of this evidence, the court found that a jury could reasonably find that Davis established a fair market value of at least $50 as a fee for the use of an image of his copyrighted design. This evidence was sufficiently concrete to support a finding of fair market value of $50 for the type of use made by *Vibe*. And if Davis could show at trial that the Gap used the image in a wider circulation than *Vibe*, that might justify a finding that the market value for the Gap's use of the eyewear was higher than $50. Therefore, to the extent the district court dismissed the case because Davis's evidence of the market value of a license fee was too speculative, the Appeals Court believed that the district court was in error.

(e) *BUSINESS TRENDS* DECISION. The district court believed that the Appeals Court decision in *Business Trends* interprets § 504(b) to foreclose "actual damages" to compensate a plaintiff for the defendant's failure to pay for the reasonable value of what the defendant took. The court believes this was a misreading of the holding in *Business Trends*. The district court decision under review in that case had not made an award of "actual damages" under this theory. The award that the court reviewed and rejected in that case was fashioned under the other prong of § 504(b)—the infringer's profits. (See *Business Trends*, 887 F.2d at 402.) While there is indeed some language in the *Business Trends* decision expressing disfavor for Davis's theory of actual damages, it was not at issue in that case. Furthermore, the court's decision did not purport to lay down an absolute rule; the decision made clear that the ruling depended on the particular factual circumstances—circumstances that are not present in the Davis case. Finally, the Appeals Court has either awarded such damages or implied that they were appropriate. See *Rogers v. Koons*, 960 F.2d 301, 310-13 (2d Cir. 1992); *Abeshouse v. Ultragraphics, Inc.*, 754 F.2d 467, 470-72 (2d Cir. 1985); *Szekely v. Eagle Lion Films, Inc.*, 242 F.2d 266, 268-69 (2d Cir. 1957). Moreover, other courts have adopted the same analysis, and the Supreme Court has suggested, albeit obliquely, that such a measure of damages is appropriate. See *Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 562 (1985).

In *Business Trends*, the plaintiff and the defendant were competitors in the publication of economic analyses and forecasts—not a relationship where the defendant was a potential licensee of the plaintiff. Each produced a study of the robotics industry. The plaintiff, Business Trends Analysts, Inc. (BTA), marketed copies of its study for $1,500. The defendant produced a similar study, which it initially offered at the same price as BTA's study. In response to slow sales, the defendant cut its price by 90% to $150 during a 3-month special-offer period. It sold 37 copies at the reduced price. Plaintiff BTA registered its study with the U.S. Copyright Office, but only after the defendant had begun selling its version. See *Business Trends*, 887 F.2d at 401.

BTA sued the defendant, alleging that the defendant's report included portions that were copied from BTA's. The district court found copying and substantial similarity, and awarded damages of $54,028.35. The damages were found solely for the infringer's profits under the second prong of § 504(b). No damages were awarded under the first prong for the "actual damages" suffered by the owner. In fact, the district court expressly found that the plaintiff "failed to establish actual damages as a consequence of defendant's infringement of BTA's robotics study." See *Business Trends Analysts, Inc. v. Freedonia Group, Inc.*, 700 F. Supp. 1213, 1233 (S.D.N.Y. 1988).

The infringer's profits awarded were derived from two components: a smaller component consisting of the defendant's cash profit (revenues minus expenses) on its sale of the robotics study, and a larger amount consisting of noncash profit attributed in part to the value of acquired goodwill (a "value of use") deriving in part from the defendant's giving the report to customers at a 90% markdown. See *Business Trends*, 700 F. Supp. at 1237-41. In justifying the proposition that the profits of the infringement could properly include noncash benefits to the infringer resulting from the infringement, the district court referred to the Seventh Circuit's conclusion in *Deltak, Inc. v. Advanced Sys., Inc.*, 767 F.2d 357 (7th Cir. 1985), that "'saved acquisition cost is a measure of damages or profit' when calculating value of use under the statute, where cash was not generated." See *Business Trends*, 700 F. Supp. at 1238 (quoting *Deltak*, 767 F.2d at 362 n. 3).

The Appeals Court affirmed the award insofar as it was based on the defendant's cash profit from the sale of the infringing report. However, insofar as the district court had attributed profits to the defendant based on noncash elements consisting of either goodwill achieved by giving the infringing study to customers at a heavily discounted price or the "value of use" the defendant achieved by acquiring for free material for which it might otherwise have paid the plaintiff, the court found such attribution of profit to the defendant inappropriate. See *Business Trends*, 887 F.2d at 404–407.

The Appeals Court noted that the District Court had based its analysis of the noncash elements of the defendant's profits in part on *Deltak's* reasoning. See *Business Trends*, 887 F.2d at 404–405. The court declined to adopt *Deltak's* approach, relying primarily on two reasons. First, the court believed the instructions of § 504(b) relating to the proof of the "infringer's profits" indicated "that Congress means 'profits' in the lay sense of gross revenue less out-of-pocket costs, not the fictive purchase price that the defendant hypothetically chose not to pay to BTA." Second, given the defendant's larcenous intent and the competitive relationship between the plaintiff and the defendant, the court believed it was unreasonable to find that the defendant profited within the meaning of the statute by copying for free rather than paying the price it might have negotiated with the plaintiff.

The sole issue before the court was whether either the expenses saved by the infringer resulting from its decision to infringe rather than purchase or the goodwill the defendant generated by offering the infringing material to its customers at a greatly reduced price can be considered "infringer's profits" recoverable under § 504(b). The decision did not

involve the question under consideration in the *Davis* case—whether the amount the owner failed to collect as a reasonable royalty or license fee could be considered as constituting the owner's actual damages under § 504(a) and (b).

It is true that the *Business Trends* decision, in a digression, observed "that [actual damages] is hardly a reasonable description of the entirely hypothetical sales to the defendant lost by BTA."

For two reasons, the court believes *Business Trends* does not foreclose the use of the owner's loss of a reasonable royalty as its "actual damages" under § 504(a) and (b). First, as noted, that issue was not before the court. Second, the court went to pains in *Business Trends* to make clear that it was *not* laying down an absolute rule, but rather making a ruling that was heavily influenced by the particular facts of that case. The court rejected the defendant's argument that a "value of use" standard is always impermissible, saying "we see no legal barrier to such an award under Section 504(b) so long as the amount of the award is based on a factual basis rather than 'undue speculation.'" Again at the conclusion of the opinion the court "emphasize[d] that we are not rejecting as a matter of law" a recognition of the "value of use" theory. The court held "only that the proof in the instant case is inadequate to support such an award."

To the extent that the *Business Trends* decision was based on its observation that the defendant before it was no more inclined to negotiate a purchase price than a "purse snatcher," the facts of the Davis case are significantly different. The Gap was not seeking, like the *Business Trends* defendant, to surreptitiously steal material owned by a competitor. There is no reason to suppose that the Gap's use of Davis's copyrighted eyewear without first receiving his permission was attributable to anything other than oversight or mistake. To the contrary, the facts of this case support the view that the Gap and Davis could have happily discussed the payment of a fee, and that Davis's consent, if sought, could have been obtained for very little money, since significant advantages might flow to him from having his eyewear displayed in the Gap's ad. Alternatively, if Davis's demands had been excessive, the Gap would in all likelihood have simply eliminated Davis's eyewear from the photograph. Where the *Business Trends* decision was motivated by its perception of the unrealistic nature of a suggestion that the infringer might have bargained with the owner (see 887 F.2d at 405), such a scenario was in no way unlikely in the present case.

(f) REASONABLE LICENSE FEE. Because *Business Trends* did not rule on, much less foreclose, the use of a reasonable license fee theory as the measure of damages suffered by Davis when the Gap used his material without payment, we proceed to consider whether that measure of damages is permissible under the § 504(a) and (b) statute.

The question is as follows: Assume that the copyright owner proves that the defendant has infringed his work. He proves also that a license to make such use of the work has a fair market value, but does not show that the infringement caused him lost sales, lost opportunities to license, or diminution in the value of the copyright. The only proven loss lies in the owner's failure to receive payment by the infringer of the fair market value of the use illegally appropriated. Should the owner's claim for "actual damages" under § 504(b) be dismissed? Or should the court award damages corresponding to the fair market value of the use appropriated by the infringer?

Neither answer is entirely satisfactory. If the court dismisses the claim by reason of the owner's failure to prove that the act of infringement caused economic harm, the infringer will get its illegal taking for free, and the owner will be left uncompensated for the illegal taking of something of value. However, an award of damages might be seen as

a windfall for an owner who received no less than he would have if the infringer had refrained from the illegal taking. The more reasonable approach seems to be to allow such an award in appropriate circumstances.

(g) ACTUAL DAMAGES. Section 504(a) and (b) employ the broad term "actual damages." Courts and commentators agree it should be broadly construed to favor victims of infringement. See William F. Patry, *Copyright Law and Practice* 1167 (1994) ("Within reason, any ambiguities should be resolved in favor of the copyright owner."); 4 *Nimmer* § 14.02[A], at 14-12 ("[U]ncertainty will not preclude a recovery of actual damages if the uncertainty is as to amount, but not as to the fact that actual damages are attributable to the infringement."); *Fitzgerald Publ'g Co.*, 807 F.2d at 1118 ("[A]ctual damages are not … narrowly focused."); *Sygma Photo News, Inc. v. High Society Magazine*, 778 F.2d 89, 95 (2d Cir. 1985) (stating that when courts are confronted with imprecision in calculating damages, they "should err on the side of guaranteeing the plaintiff a full recovery"). Cf. *In Design v. K-Mart Apparel Corp.*, 13 F.3d 559, 564 (2d Cir. 1994) (noting that any doubts in calculating profits that result from the infringer's failure to present adequate proof of its costs are to be resolved in favor of the copyright holder), *abrogated on other grounds by Fogerty v. Fantasy, Inc.*, 510 U.S. 517 (1994).

A principal objective of the copyright law is to enable creators to earn a living either by selling or by licensing others to sell copies of the copyrighted work. See U.S. Const. Art. I, § 8, cl. 8 ("Congress shall have the power … [t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."); Statute of Anne, 1709, 8 Anne, ch. 19 (Eng.), *reprinted in* III Patry, *supra*, at 1461 (first establishing copyright protection for authors because "Printers, Booksellers, and other Persons, have of late frequently taken the liberty of printing, reprinting, and publishing … books, and other writings, without the consent of the authors or proprietors of such books and writings, to their very great detriment, and too often to the ruin of them and their families").

If a copier of protected work, instead of obtaining permission and paying the fee, proceeds without permission and without compensating the owner, it seems entirely reasonable to conclude that the owner has suffered damages to the extent of the infringer's taking without paying what the owner was legally entitled to exact a fee for. There seems to be no reason why, as an abstract matter, the statutory term "actual damages" should not cover the owner's failure to obtain the market value of the fee the owner was entitled to charge for such use.

The problem is roughly analogous to illegal takings or uses in other contexts outside the realm of copyright. For example: D, who lives on property adjacent to P, without authorization regularly swims and canoes in P's lake and uses a road crossing P's land because it provides more direct access to town. The right to use P's property for such purposes has a fair market value. P proves neither harm to his property nor loss of opportunity to license others to use the property for such recreation. Nonetheless, P has lost the revenue he would have recovered if D had paid the fair market value of what he took.

In this case, the defendant has surreptitiously taken a valuable right, for which the plaintiff could have charged a reasonable fee. The plaintiff's revenue is thus smaller than it would have been if the defendant had paid for what he took. However, the plaintiff's revenue is no less than it would have been if the defendant had refrained from the taking. Between leaving the victim of the illegal taking with nothing and charging the illegal taker with the reasonable cost of what he took, the latter, at least in some circumstances, seems to be the preferable solution.

It is important to note that under the terms of § 504(b), unless such a forgone payment can be considered "actual damages," in some circumstances victims of infringement will go uncompensated. If the infringer's venture turned out to be unprofitable, the owner can receive no recovery based on the statutory award of the "infringer's profits." And in some instances, there will be no harm to the market value of the copyrighted work. The owner may be incapable of showing a loss of either sales or licenses to third parties. To rule that the owner's loss of the fair market value of the license fees that might have been exacted of the defendant does not constitute "actual damages" would mean that in such circumstances an infringer may steal with impunity. In the *Davis* case, the Appeals Court could not see reason why this should be so. Of course, if the terms of the statute compelled that result, the court's perception of inequity would make no difference; the statute would control. But in the court's view, the statutory term "actual damages" is broad enough to cover this form of deprivation suffered by infringed owners.

(h) DETERMINING FAIR MARKET VALUE. The Appeals Court recognized in the *Davis* case that awarding the copyright owner the lost license fee can risk abuse. Once the defendant has infringed, the owner may claim unreasonable amounts as the license fee—to wit, Davis's demand for an award of $2.5 million. The law therefore exacts that the amount of damages may not be based on "undue speculation." (See *Abeshouse*, 754 F.2d at 470.) The question is not what the owner would have charged, but rather what is the fair market value. In order to make out a claim that one has suffered actual damage because of the infringer's failure to pay the fee, the owner must show that the thing taken had a fair market value. But if the plaintiff owner has done so, and the defendant is thus protected against an unrealistically exaggerated claim, the court could see little reason not to consider the market value of the uncollected license fee as an element of "actual damages" under § 504(b).

The court recognized also that finding the fair market value of a reasonable license fee may involve some uncertainty. But that is not sufficient reason to refuse to consider this as an eligible measure of actual damages. Many of the accepted methods of calculating copyright damages require the court to make uncertain estimates in the realm of contrary to fact. See 4 *Nimmer* § 14.02[A], at 14-9. A classic element of the plaintiff's copyright damages is the profits the plaintiff would have earned from third parties were it not for the infringement. See 4 *Nimmer* § 14.02[A], at 14-9 to 10. This measure requires the court to explore the counterfactual hypothesis of the contracts and licenses the plaintiff would have made absent the infringement and the costs associated with them. See *Fitzgerald Publ'g*, 807 F.2d at 1118 (actual damages measured by "the profits which the plaintiff might have earned were it not for the infringement"); *Stevens Linen Assocs. v. Mastercraft Corp.*, 656 F.2d 11, 15 (2d Cir. 1981) (same).

A second accepted method, focusing on the "infringer's profits," similarly requires the court to explore circumstances that are counterfactual. The owner's entitlement to the infringer's profits is limited to the profits "attributable to the infringement"—17 U.S.C. § 504(b). The court, therefore, must compare the defendant's actual profits to what they would have been without the infringement, and award the plaintiff the difference. Neither of these approaches is necessarily any less speculative than the approach that requires the court to find the market value of the license fee for what the infringer took. Indeed, it may be far less so. Many copyright owners are represented by agents who have established rates that are regularly paid by licensees. In such cases, establishing the fair market value of the license fee of which the owner was deprived is no more speculative than determining the damages in the case of a stolen cargo of lumber or potatoes. Given

the court's long-held view that in assessing copyright damages "courts must necessarily engage in some degree of speculation," some difficulty in quantifying the damages attributable to infringement should not bar recovery. See 4 *Nimmer* § 14.02[A], at 14-12 ("[U]ncertainty will not preclude a recovery of actual damages if the uncertainty is as to amount, but not as to the fact that actual damages are attributable to the infringement."); II Paul Goldstein, *Copyright* § 12.1.1, at 12:6 (second edition 2000) ("Once the copyright owner shows a connection between infringement and damage, uncertainty about the amount of damages will not bar an award."); *Szekely*, 242 F.2d at 269 (where "legal injury is certain … [w]e should not allow difficulty in ascertaining precisely the value of the right destroyed, which difficulty arises largely from the destruction, to enable the infringer to escape without compensating the owner of the right").

(i) COPYRIGHT INFRINGEMENT. Davis contended that it was improper for the district court to grant summary judgment on his copyright claims without first determining whether the defendant infringed his copyright. The complaint expressly sought "a declaratory judgment in favor of Mr. Davis against Gap, declaring" that the Gap had infringed Davis's copyright by its reproduction of his eyewear in its advertisement. The district court granted the defendant's motion for summary judgment on the basis of a variety of theories that had no bearing on the demand for declaratory relief. No doubt because of the confusing and prolix nature of the complaint, this aspect of the relief sought was overlooked. The existence of damages suffered is not an essential element of a claim for copyright infringement. See *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 361 (1991) (to establish a prima facie case of copyright infringement, "two elements must be proven: (1) ownership of a valid copyright, and (2) copying of constituent elements of the work that are original"); Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 13.01, at 13-6 (1999) ("Notably absent from this formulation of the *prima facie* case is damage or any harm to [the] plaintiff resulting from the infringement."). The owner of a copyright is thus entitled to prevail in a claim for declaratory judgment of infringement without showing entitlement to monetary relief. Insofar as the judgment dismissed the claim for declaratory relief without discussion, the Appeals Court was obliged to vacate the judgment and remand for consideration of that claim.

The decisions of this and other courts support the view that the owner's actual damages may include in appropriate cases the reasonable license fee on which a willing buyer and a willing seller would have agreed for the use taken by the infringer.

Although the Supreme Court has never directly addressed this question, it has suggested in the somewhat different context of a fair use analysis that a critical question is "whether the user stands to profit from exploitation of the copyrighted material without paying the customary price." *Nation Enters.*, 471 U.S. at 562.

In *Szekely*, a 1909 Act case, the court awarded such damages. A screenwriter sued a film distributor for damages based on its distribution of a film employing the plaintiff's screenplay. The plaintiff had contracted with a movie producer to sell the screenplay for $35,000. However, the producer encountered financial difficulties and failed to complete the purchase, leaving the ownership of the screenplay with the plaintiff. The production company nonetheless made the film using the plaintiff's screenplay. The screenwriter sued the distributor for infringement, and the distributor was held liable. The plaintiff's award of damages was based on the amount of the license fee the plaintiff would have been entitled to charge, calculated by reference to the contract the plaintiff had made with the production company. See *Szekely*, 242 F.2d at 268-69.

In *Abeshouse*, under the current act, the court again awarded such damages. The plaintiff had licensed the defendant to be the plaintiff's exclusive distributor for a poster design showing a Rubik's Cube solution. The defendant secretly caused infringing posters to be printed by an independent source and sold them. The court upheld an award of damages under § 504(b) in two parts: one part consisting of the infringer's profits from its sale of the infringing posters, and the second part representing the payments the plaintiff would have received if the defendant had obtained the infringing posters from the plaintiff. See *Abeshouse*, 754 F.2d at 470-71.

In *Koons*, the defendant, a famous pop art sculptor, appropriated the plaintiff's copyrighted photograph of a couple with a litter of puppies, and caused his workshop to fabricate a work of sculpture copying the plaintiff's image. In rejecting the defendant's claim of fair use, the court observed that while a finding of infringement would not necessarily prevent the defendant from publishing his expression, "it does recognize that any such exploitation must at least entail 'paying the customary price"'—*Koons*, 960 F.2d at 310 (quoting *Nation Enters.*, 471 U.S. at 562). In remanding to the district court to assess the plaintiff's actual damages, the court observed that "a reasonable license fee for the use of [the plaintiff's work] best approximates the market injury sustained by [the plaintiff] as a result of [the defendant's] misappropriation." See also *Ringgold v. Black Entertainment Television*, 126 F.3d 70, 81 (2d Cir. 1997) (The fact that infringement had little likelihood of adversely affecting sales of a licensed poster of copyrighted artwork "deserves little weight [in fair use analysis] against a plaintiff alleging appropriation without payment of a customary licensing fee").

Szekely, Abeshouse, and *Koons* are supported by the decisions of other circuit courts, as well as district courts. In *Nucor Corp. v. Tennessee Forging Steel Serv., Inc.*, 513 F.2d 151, 152 (8th Cir. 1975), a 1909 Act case, the defendant infringed on the plaintiff's architectural plans. After a trial on damages, the jury returned with a verdict of no damages. On appeal, the Eighth Circuit held that the district court had erred by failing to instruct the jury that the defendants were liable for the "fair value," or market value, of the infringed plans.

In *Sid & Marty Krofft Television Prods. Inc. v. McDonald's Corp*, 562 F.2d 1157, 1174 (9th Cir. 1977), where the defendant had produced commercials infringing on the plaintiff's television show, the Ninth Circuit approved a jury instruction that allowed the jury to award an amount approximating "what a willing buyer would have been reasonably required to pay to a willing seller for plaintiff's work."

In *Kleier Adver., Inc. v. Premier Pontiac, Inc*, 921 F.2d 1036, 1039 (10th Cir. 1990), the defendant automobile dealership infringed for 22 months on an advertising agency's syndicated advertising program. The Tenth Circuit upheld the jury's award of damages, concluding that the jury had intended an award of actual damages that represented the plaintiff's lost license fees over the 22-month period.

In *Encyclopedia Brown*, a cable television company and various cable operators infringed on the plaintiff's television program. The district court rejected the defendants' argument that the plaintiff's claim for a reasonable license fee was not cognizable as a matter of law. The court reasoned that if the lost sale of a product to a third-party customer constitutes "actual damages," then the lost sale of a license to a defendant who, absent the infringement, would have paid for a license may constitute "actual damages" as well. See *Encyclopedia Brown*, 25 F. Supp. 2d at 399–402. The court found authorization for such an award in *Koons*. See *Encyclopedia Brown*, 25 F. Supp. 2d at 401 (quoting *Koons*, 960 F.2d at 313).

In *Aitken, Hazen, Hoffman, Miller, P.C. v. Empire Constr. Co*, 542 F. Supp. 252 (D. Neb. 1982) the defendant construction company, after first engaging the plaintiff architectural firm to design an apartment complex, subsequently copied and used the plaintiff's plans in construction of an apartment complex on a neighboring parcel of land. The court determined that the fair market value of the modified architectural plans was the relevant measure for actual damages, and calculated that amount by determining "the amount [defendant] would reasonably have paid to the plaintiff and the plaintiff would reasonably have expected to receive for the revision and use of the [first set of] plans." Id. at 263. In *Kleier Adver. Co. v. James Miller Chevrolet, Inc*, 722 F. Supp. 1544, 1546 (N.D. Ill. 1989), where the facts were similar to the Tenth Circuit's *Kleier* case just cited, the court awarded lost license fees, which it characterized as "actual damages," as well as the infringer's profits. See also *Curtis v. General Dynamics Corp.*, No. C89-566S, 1990 WL 302725, at *11 (W.D. Wash. Sept. 26, 1990) (awarding plaintiff photographer the fee he would have been paid had defendant hired him instead of infringing his copyright); *Bishop v. Wick*, No. 88 C 6369, 1988 WL 166652, at *5 (N.D. Ill. Dec. 29, 1988) ("Plaintiffs shall recover the fair market value of the [infringed computer program] in an amount equal to the ordinary licensing fees charged to licensees of plaintiffs, multiplied by each time that defendants illegally copied or utilized the [program]." (emphasis omitted)); *Sherry Mfg. Co. v. Towel King*, 220 U.S.P.Q. 855, 859 (S.D. Fla. 1983) (awarding actual damages based on reasonable royalty that should have been paid for license to use infringed design), *rev'd on other grounds*, 753 F.2d 1565 (11th Cir. 1985).

43.3 CONCLUSION

The Appeals Court in the *Davis* case conclude that Section 504(b) permits a copyright owner to recover actual damages, in appropriate circumstances, for the fair market value of a license covering the defendant's infringing use. Davis adduced sufficiently concrete evidence of a modest fair market value of the use made by the Gap. The Gap's use of the infringed matter was substantial. If Davis were not compensated for the market value of the use taken, he would receive no compensation whatsoever. On remand, the district court should consider such factors as whether the infringement was innocent and whether for any reason it would be inequitable to impose an award.

The district court had correctly held that Davis was not entitled to punitive damages under the U.S. Copyright Act. As a general rule, punitive damages are not awarded in a statutory copyright infringement action. The purpose of punitive damages—to punish and thereby prevent malicious conduct—is generally achieved under the Copyright Act through the provisions of 17 U.S.C. § 504(c)(2), which allow increases to an award of statutory damages in cases of willful infringement. In any event, the question did not detain the Appeals Court for long because Davis had failed to show willfulness on the Gap's part.

The Gap contended that even if the Appeals Court found fault with the district court's reasons, its dismissal should be affirmed under the doctrine *de minimis non curat lex* because any copying of protected matter was trivial. The *de minimis* doctrine essentially provides that where unauthorized copying is sufficiently trivial, "the law will not impose legal consequences." *Ringgold*, 126 F.3d at 74. See also *Knickerbocker Toy Co. v. Azrak-Hamway Int'l, Inc.*, 668 F.2d 699, 703 (2d Cir. 1982) (denying relief under *de minimis* doctrine where defendant had made a copy of plaintiff's work but copy was never used); *American Geophysical Union v. Texaco, Inc.*, 60 F.3d 913, 916 (2d Cir. 1994) (suggesting that if photocopying for individual use in research is *de minimis*, it would not constitute an

infringement); Pierre N. Leval, *Nimmer Lecture: Fair Use Rescued*, 44 U.C.L.A. L. Rev. 1449, 1457–58 (1997).

The *de minimis* doctrine is rarely discussed in copyright opinions because suits are rarely brought over trivial instances of copying. Nonetheless, it is an important aspect of the law of copyright. Trivial copying is a significant part of modern life. Most honest citizens in the modern world frequently engage, without hesitation, in trivial copying that, but for the *de minimis* doctrine, would technically constitute a violation of law. We do not hesitate to make a photocopy of a letter from a friend to show to another friend, or of a favorite cartoon to post on the refrigerator. Parents in Central Park photograph their children perched on José de Creeft's Alice in Wonderland sculpture. We record television programs aired while we are out so as to watch them at a more convenient hour. Waiters at a restaurant sing "Happy Birthday" at a patron's table. When we do such things, it is not that we are breaking the law but are unlikely to be sued given the high cost of litigation; because of the *de minimis* doctrine, in trivial instances of copying we are in fact *not* breaking the law. If a copyright owner were to sue the makers of trivial copies, judgment would be for the defendants. The case would be dismissed because trivial copying is not an infringement.

The Gap sought to avail itself of the *de minimis* rule. It argued that even in advertising it is a trivial matter for persons to be shown wearing their eyeglasses or wristwatches. Although the Gap's argument might well be valid in other circumstances, the court found it did not fit the facts of the case.

Here, the combination of circumstances convinced the Appeals Court that the *de minimis* doctrine was not applicable. In the "fast" advertisement, the infringing item is highly noticeable. This is in part because Davis's design and concept are strikingly bizarre; it is startling to see the wearer peering at us over his Onoculii. Because eyes are naturally a focal point of attention, and because the wearer is at the center of the group—the apex of the V formation—the viewer's gaze is powerfully drawn to Davis's creation. The impression created, furthermore, is that the models posing in the ad have been outfitted from top to bottom, including eyewear, with Gap merchandise. All this leads us to conclude that the Gap's use of Davis's jewelry cannot be considered a *de minimis* act of copying to which the law attaches no consequence.

Finally, the Gap contended its advertisement was protected by the fair use doctrine, and that the dismissal could be affirmed on that basis. Fair use is a judicially created doctrine dating back nearly to the birth of copyright in the eighteenth century—see *Burnett v. Chatwood*, 2 Mer. 441, 35 Eng. Rep. 100809 (Ch. 1720); *Gyles v. Wilcox*, 26 Eng. Rep. 489 (Ch. 1740)—but first explicitly recognized in statute in the Copyright Act of 1976. See 17 U.S.C. § 107 (1994).

The Appeals Court reviewed the Gap's claim of fair use in light of the Supreme Court's clarification in *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569 (1994), of the relationship among the four factors specified in the statute as appropriate for consideration.

The heart of the fair use inquiry is into the first specified statutory factor identified as "the purpose and character of the use"—17 U.S.C. § 107(1). This formulation, as the Supreme Court observed in *Campbell*, 510 U.S. at 578, draws on Justice Story's famous reference in *Folsom v. Marsh*, 9 F. Cas. 342, 348 (C.C.D. Mass. 1841) (No. 4901), to "the nature and objects of the selections made." As the *Campbell* court explained,

> The central purpose of this investigation is to see, in Justice Story's words, whether the new work merely "supersede[s] the objects" of the original creation, or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message …, in other words, whether and to what extent the new work is "transformative." Although

> such transformative use is not absolutely necessary for a finding of fair use, the goal of copyright, to promote science and the arts, is generally furthered by the creation of transformative works. *Such [transformative] works thus lie at the heart of the fair use doctrine's guarantee of breathing space.* … *Campbell*, 510 U.S. at 579 (emphasis added) (alteration in original) (citations omitted).

Pausing for the moment at that inquiry, the Appeals Court found nothing transformative about the Gap's presentation of Davis's copyrighted work. The ad shows Davis's Onoculii being worn as eye jewelry in the manner it was made to be worn—looking much like an ad Davis himself might have sponsored for his copyrighted design.

The first factor, as spelled out in the statute, goes on to mention "whether such use is of a commercial nature or is for nonprofit educational purposes"—17 U.S.C. § 107(1). By reason of dicta in the Supreme Court's opinion in *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417, 451 (1984), to the effect that commercial uses of a copyrighted work are "presumptively … unfair," courts have sometimes given "dispositive weight" to whether the secondary use was commercial—*Campbell*, 570 U.S. at 584 (criticizing *Acuff-Rose Music, Inc. v. Campbell*, 972 F.2d 1429 (6th Cir. 1992)). The Supreme Court in *Campbell* rejected the notion that the commercial nature of the use could by itself be a dispositive consideration. The *Campbell* opinion observes that "nearly all of the illustrative uses listed in the preamble paragraph of § 107, including news reporting, comment, criticism, teaching, scholarship, and research … are generally conducted for profit," and that Congress "could not have intended" a rule that commercial uses are presumptively excluded. The commercial objective of the secondary work is merely a factor. "[T]he more transformative the new work, the less will be the significance of other factors, like commercialism, that may weigh against a finding of fair use."

In the *Davis* case, as in *Sony*, the secondary use was not transformative. The question of whether the new use is commercial thus acquired an importance it does not have when the new work is transformative. In *Sony*, however, the copied work was saved by its private, noncommercial character. See *Sony*, 464 U.S. at 449. Here the work, being an advertisement, is at the outer limit of commercialism. See *Campbell*, 510 U.S. at 585 ("The use, for example, of a copyrighted work to advertise a product … will be entitled to less indulgence under the first factor … than the sale of [the new work] for its own sake.").

The second statutory factor, the nature of the copyrighted work, see 17 U.S.C. § 107(2), is rarely found to be determinative. *Campbell* explained that "[t]his factor calls for recognition that some works are closer to the core of intended copyright protection than others, with the consequence that [with the former] fair use is more difficult to establish" (Campbell, 510 U.S. at 586). In this case, as in *Campbell*, the plaintiff's copyrighted work is in the nature of an artistic creation that falls close to "the core of the copyright's protective purposes."

The third factor, which looks at the "amount and substantiality of the portion used in relation to the copyrighted work as a whole," 17 U.S.C. § 107(3), recognizes that fragmentary copying is more likely to have a transformative purpose than wholesale copying. In this case, the Gap's ad presents a head-on full view of Davis's piece, centered and prominently featured. The Gap cannot benefit from the third factor.

The fourth factor looks at "the effect of the use upon the potential market for or value of the copyrighted work." Although the Supreme Court had observed in dictum in *Nation Enters.*, 471 U.S. at 566, that this is perhaps the "most important" of the factors, *Campbell* made clear that this dictum, if misunderstood, was capable of causing confusion. As the *Campbell* opinion explained, if the secondary work harms the market for the original through criticism or parody, rather than by offering a market substitute for the original that supersedes it, "it does not produce a harm cognizable under the Copyright Act"

(*Campbell*, 510 U.S. at 592). "[T]he role of the courts is to distinguish between biting criticism that merely suppresses demand and copyright infringement, which usurps [the market for the original]."

Thus, when secondary uses harms the market for, or value of, the original, courts must examine the source of the harm. If the harm resulted from a transformative secondary use that lowered the public's estimation of the original (such as a devastating review of a book that quotes liberally from the original to show how silly and poorly written it is), this transformative use will be found to be a fair use, notwithstanding the harm. If, on the other hand, the secondary use, by copying the first, offers itself as a market substitute and in that fashion harms the market value of the original, this factor argues strongly against a finding of fair use. *Campbell* explains that the market effect must be evaluated in light of whether the secondary use is transformative.

> [W]hen a commercial use amounts to mere duplication of the entirety of an original, it clearly "supersede[s] the objects," *Folsom v. Marsh* [9 F. Cas. at 348], of the original and serves as a market replacement for it, making it likely that cognizable [actionable] market harm to the original will occur. But when, on the contrary, the second use is transformative, market substitution is at least less certain, and market harm may not be so readily inferred. Notwithstanding harmful effect, the use may be a fair use.

In the *Davis* case the Appeals Court noted that the Gap's use was not transformative. By taking for free Davis's design for its ad, the Gap avoided paying "the customary price" Davis was entitled to charge for the use of his design. See *Nation Enters.*, 471 U.S. at 562. Davis suffered market harm through his loss of the royalty revenue to which he was reasonably entitled in the circumstances, as well as through the diminution of his opportunity to license to others who might regard Davis's design as preempted by the Gap's ad.

In the Appeals Court's view, all the fair use factors favored Davis. The court said that they could not accept the Gap's claim that its use of Davis's design was protected by the fair use doctrine.

Finding no merit to the parties' other contentions, the court affirmed the grant of summary judgment in favor of the defendant denying Davis's claims for infringer's profits under 17 U.S.C. § 504(b), and for punitive damages. With regard to Davis's claim for declaratory relief and "actual damages" under § 504(b), the judgment of the district court was vacated and the case remanded for further proceedings.

The case has now been remanded to the trial court for further proceedings. Trial Court Judge Robert W. Sweet of the U.S. District Court for the Southern District of New York must consider whether Davis is entitled to damages flowing from his loss of a licensing fee and whether any factors would mitigate the imposition of such damages.

CHAPTER 44

TRADE SECRET DAMAGES

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Unfortunately, there is no consensus among the various state courts regarding the appropriate way to measure damages for trade secret misappropriation cases. As a result, there are numerous conflicting state court opinions on various issues related to the calculation of damages for trade secret misappropriation.

44.1 SUMMARY OF TRADE SECRET DAMAGES

Damages for trade secret misappropriation may be based on three different theories: tort, contract implied in law or implied in fact, and contract law. Each theory measures the damages award differently.

In the contract cause of action, the misappropriator is theoretically liable to the trade secret owner for the loss of value of the trade secret as a result of the breach, as well as any special or consequential damages, offset by any benefit the trade secret owner receives from the breach. Under a contract implied-in-law or implied-in-fact cause of action, the trade secret owner can recover by way of restitution the value of the benefits received by the misappropriator.

In addition to contractual theories, most jurisdictions recognize misappropriation as a tort. Misappropriation requires proof that:

- A trade secret existed
- The trade secret was acquired through a confidential relationship
- The defendant used the trade secret without authorization from the plaintiff

The tort is the breach of the confidential relationship. Therefore, this theory looks at the injury to the relationship rather than the loss of information to establish liability. An important point regarding the tort theory is that a court can use it to award punitive damages. However, it requires a showing that the misappropriator knew of the confidential relationship. In addition, the statute of limitations in most jurisdictions is shorter for torts than contracts, and may therefore limit use of this approach. Using a tort theory, a trade secret owner may recover "damages for past harm, or . . . an accounting of the wrongdoer's profits."

Section 59.1-338(A) of the Virginia Uniform Trade Secrets Act states:

> Except where the user of a misappropriated trade secret has made a material and prejudicial change in his position prior to having either knowledge or reason to know of the misappropriation and the court determines that a monetary recovery would be inequitable, a complainant is entitled to recover damages for misappropriation. Damages can include both the actual loss caused by misappropriation and the unjust enrichment caused by misappropriation that is not taken into

> account in computing actual loss. If a complainant is unable to prove a greater amount of damages by other methods of measurement, the damages caused by misappropriation can be measured exclusively by imposition of liability for a reasonable royalty for a misappropriator's unauthorized disclosure or use of a trade secret.

In determining the proper measure of damages for misappropriation of a trade secret, the first inquiry of the courts generally has been whether there is any factual basis, such as a royalty agreement or an offer and a counteroffer in anticipation thereof, from which one might legitimately determine the value, which the parties themselves actually assigned to the misappropriated information. Where such circumstances exist, the courts usually have drawn upon them in order to measure the plaintiff's damages, calling the award a "reasonable royalty," an "established royalty," a "negotiated royalty," or, simply, a "royalty."

In the absence of circumstances indicating what the parties thought the plaintiff's trade secret was worth, the courts, in measuring damages for a misappropriation, seem to have been guided substantially by what the plaintiff has proved. Thus, they have awarded the plaintiff its lost profits, or an accounting for the defendant's profits, upon proper and sufficient evidence as to the amount thereof, both measures being deemed acceptable in general by most courts. It sometimes has been held explicitly that the plaintiff may recover either its own lost profits or the defendant's profits, whichever affords the greater recovery.

44.2 ROYALTY METHOD OF CALCULATING DAMAGES FOR MISAPPROPRIATION OF TRADE SECRET

As noted, the first inquiry of the courts generally has been whether there is any factual basis, such as a royalty agreement or an offer and a counteroffer in anticipation thereof, from which one might legitimately determine the value that the parties themselves actually assigned to the misappropriated information.

For example, the minimum periodic lump-sum payments, established in a nonbinding "agreement in principle," which was discussed in the course of negotiation of a license agreement, were held to be an "established royalty," and, therefore, the proper measure of damages in *Vitro Corp. of America v. Hall Chemical Co.*, 292 F.2d 678 (6th Cir. 1961), a trade secret misappropriation case. The plaintiff had developed a process, which was potentially valuable to the defendant in its business of recovering metal salts, and the parties entered into negotiations to license the defendant to use the plaintiff's process. Although no agreement was consummated, the parties did discuss the terms upon which the plaintiff was to be compensated if an agreement were to be reached, providing for a down payment by the defendant and minimum annual payments up to a stated maximum. However, the defendant terminated the negotiations and then commenced using the plaintiff's process. The court reasoned that the actual value of what has been appropriated is always the ultimate in appraisement. Pointing out that the master made findings of the absence of proof of loss profits, because there were no profits, and that the master also found that there was no proof of lost sales, and that there were no standards of comparison, the court explained that the proofs adequately supported, as an equitable measure of damages, established royalties, properly set as the payments agreed upon in the "agreement in principle." It held that the primary inquiry was what the parties would have agreed upon if both were trying reasonably to reach an agreement. Thus, the "agreement in principle" provided the best evidence, the court said. The court said that a reasonable royalty furnishes a basis for an award only when there are no solid conditions governing the application of an "agreement in principle."

However, as another example, the court held in *Carter Products, Inc. v. Colgate-Palmolive Co*., 214 F.Supp 383 (D. Md. 1963), that a misappropriation of trade secrets entitles the injured party not only to a reasonable royalty, but also to an award of profits on the basis of unjust enrichment, because it is a breach of confidence and a species of fraud. *Carter Products* involved certain secret formulas used by the plaintiff in the manufacture of a pressurized shaving cream, which were used by the defendant in its own similar product. The court explained that, in effect, the courts treat the wrongdoer as a trustee who must be made to hand over the proceeds of his wrong.

44.3 PLAINTIFF'S LOST PROFITS METHOD OF CALCULATING DAMAGES FOR MISAPPROPRIATION OF TRADE SECRET

The general rule in a trade secret case is that a successful plaintiff may recover loss of profits for a misappropriation of his secret. Courts have held or recognized that, in measuring a plaintiff's lost profits from trade secret misappropriation, it is proper to treat sales made by the defendant as if they had been made by the plaintiff, and thus to determine the plaintiff's lost profits by applying the plaintiff's profit margin, as a multiplier, to the defendant's sales volume.

Applying this general rule, the court in *Sperry Rand Corp. v. A-T-O, Inc.*, 447 F.2d 1387 (4th Cir. 1971), affirmed an award of lost profits, including certain overhead costs, in favor of a plaintiff, which lost a government contract as a result of misappropriation of its trade secrets. The plaintiff was a potential bidder on a contract for radar sets when the defendant misappropriated the plaintiff's technical information as well as information regarding the plaintiff's intended bid. Consequently, the defendant underbid the plaintiff and was awarded the contract, thereby depriving the plaintiff of an expected follow-on order as well. The plaintiff also claimed that, having obtained the initial contract, the defendant thereafter would be in a favored position in selling its radar sets in the commercial market. The district court, in addition to ordering the defendant to return the misappropriated materials and to refrain from competing unfairly with the plaintiff for a period of 2 years, awarded the plaintiff the amount of its "lost profits" on the contract and expected follow-on order, including amounts attributable to recovery of fixed and material overhead costs and "additional" general and administrative expenses. On appeal, the court held that the district court was correct in granting the plaintiff its lost profits and in including in such award the designated overhead and administrative costs, pointing out that the plaintiff had been able to prove legal damages in an amount greater than that by which the defendant company had benefited from the misappropriation.

In *Shamrock Technologies, Inc. v. Medical Sterilization, Inc.*, 808 F.Supp. 932 (E.D.N.Y. 1992) (apparently applying New Jersey law), the court held that where the defendant wrongfully used plaintiff's secret process to produce printing ink and sold ink both to plaintiff's customers and to others, the proper measure of damages as to sales to plaintiff's customers was based on plaintiff's average selling price per unit during period of sales less plaintiff's average cost, while the proper measure for sales to others was based on defendant's average profit per unit.

44.4 DEFENDANT'S PROFIT METHOD OF CALCULATING DAMAGES FOR MISAPPROPRIATION OF TRADE SECRET

Where a defendant has made actual profits from trade secret misappropriation, and they are susceptible to calculation, it is proper to use the defendant's profits as a measure of

damages, even if the plaintiff has not shown that it lost any profits and the only advantage to the defendant is that it saved time in developing a new product. See *Jet Spray Cooler, Inc. v. Crampton*, 385 N.E.2d 1349 (Mass. 1979). In *Jet Spray Cooler*, the court said that the measure of damages in cases involving business torts such as the misappropriation of trade secrets entitles a plaintiff to recover full compensation for his lost profits and requires a defendant to surrender the profits that he realized from his tortious conduct. The court explained that it is the policy of the law, for the advantage of the public, to encourage and protect invention and commercial enterprise. This encouragement and protection is afforded trade secrets because the public has a manifest interest not only in commercial innovation and development, but also in the maintenance of standards of commercial ethics. Thus, the court said, while a plaintiff in a trade secret misappropriation case is not entitled to a double recovery, they are entitled to the profits they would have made had their secret not been unlawfully used, but not less than the monetary gain that the defendant reaped from his improper acts.

Similarly, in *Reinforced Molding Corp. v General Electric Co.*, 592 F.Supp. 1083 (W.D. Pa. 1984), an action by a manufacturer of fiberglass products for misappropriation of trade secrets concerning a manufacturing process of coil brace parts, the court held that the appropriate measure of damages would be benefits, profits, or advantages gained by defendant in using trade secrets. The court also held that damages would commence from the time defendant began using the misappropriated trade secret and accrue for the period of time it would have taken defendant to create its product absent its misappropriation, and, in accordance with "head start" doctrine, an accounting of defendant's profits would be appropriate for time it saved by misappropriation.

Reasoning from the rule that the appropriate measure of damages in a trade secret case is the benefits, profits, or advantage gained by the defendant in the use of the secret, the court in *International Industries, Inc. v Warren Petroleum Corp.*, 248 F.2d 696 (3rd Cir. 1957), held that the advantage enjoyed by the defendant is to be measured by what is called the "standard of comparison method," under which the measure of recovery is the difference between the cost of obtaining the result achieved by the use of the infringing method or device and the cost of obtaining the same result by another method, the "standard of comparison," available at the time of the appropriation. The court asserted that there was no substantial distinction between the standard of comparison measure, which measures savings, and a direct measure of the defendant's profits.

However, in *Curtiss-Wright Corp. v. Edel-Brown Tool & Die Co.*, 407 N.E.2d 319 (Mass. 1980), the court held that the lower court incorrectly had limited the plaintiff's recovery to the amount of the defendant's gain because such gain was exceeded by the amount of the plaintiff's lost profits.

44.5 OTHER METHODS OF CALCULATING DAMAGES FOR MISAPPROPRIATION OF TRADE SECRET

In the absence of proper proof as to either the plaintiff's lost profits or the defendant's profits from the sales of a specific trade secret product, or where such measures have been deemed insufficient, the courts have resorted to other measures of damages for trade secret misappropriation.

(a) COST FOR DEFENDANT TO DEVELOP ITS PRODUCT WITHOUT USING PLAINTIFF'S TRADE SECRETS. For example, where a misappropriated device contained several technological innovations, some of which may have been publicly disclosed at the time the

device was misappropriated, the court in *Servo Corp. of America v. General Electric Co.*, 393 F.2d 551 (4th Cir. 1968), held that the measure of damages would be the cost of experimentation to develop the component or components not disclosed and to discover how to combine all components, in addition to the cost of discovering the disclosure of the information that had been publicly disclosed. The court accordingly remanded for consideration of the amount of damages.

The court in *Telex Corp. v. International Business Machines Corp.*, 510 F.2d 894 (10th Cir. 1975), held that it was proper to measure the savings of a trade secret misappropriator according to the owner's cost of development of the trade secret information. The counterdefendant was engaged in a practice of hiring away key employees of the counterplaintiff so as to acquire trade secrets and develop certain products. As to one of the plaintiff's development projects, the defendant did its hiring when the project was approximately half-finished. The defendant subsequently developed its own product and diverted some of the plaintiff's customers to itself, while also gaining other customers. The plaintiff was awarded its lost rentals on the diverted customers. In addition, however, the district court calculated an award by dividing in half the plaintiff's total development cost, since the key employees had been hired away when the project was half-done, and by subtracting therefrom a further amount in consideration of the award of lost rentals to the plaintiff. Affirming the awards, the court of appeals explained that the resulting figure represented the amount by which the defendant had been enriched unjustly. It held that, while the law concerning measure of damages in a trade secret case is far from uniform, a common thread is to make the plaintiff whole, while avoiding double recovery.

In *University Computing Co. v. Lykes-Youngstown Corp.*, 504 F.2d 518 (5th Cir. 1974), the court held it proper for the district court to have instructed the jury that it should consider the development cost incurred by the plaintiff in arriving at the proper damages for the defendant's misappropriation of the plaintiff's computer program, where there was no evidence of any sales that had been lost by the plaintiff or gained by the defendant as a result of the misappropriation.

However, in *Sperry Rand Corp. v. A-T-O, Inc.,* 447 F.2d 1387 (4th Cir. 1971), the court held that the plaintiff, which had been deprived of a contract as a result of the defendant's trade secret misappropriation, was not entitled to recover the amount saved by the defendant in research and development costs while also recovering its own losses on the contract, including amounts attributable to fixed and material overhead and certain "additional" general and administrative expenses, in an amount exceeding the defendant's savings.

(b) COSTS OF OTHER LITIGATION. In *McNamara v. Powell*, 11 N.Y.S.2d 491 (1939), a plaintiff whose invention had been misappropriated was held entitled to recover litigation fees and expenses incurred by him in defending in separate litigation his right to the invention and to letters patent thereon, as an element of compensatory damages for the defendants' misappropriation. The court reasoned that since the defendants' patent application was a part of their scheme to deprive the plaintiff of his invention, and since they apparently anticipated that the plaintiff would find it extremely burdensome to carry on the litigation, the ensuing litigation was undoubtedly the intended result of their actions. The court concluded that the defendants were responsible for the natural and proximate consequences of their *misconduct*, and it accordingly affirmed the trial court's award of damages including such litigation expenses.

(c) EXPENSES INCURRED BY PLAINTIFF TO PROTECT FROM EFFECTS OF DEFENDANT'S MISAPPROPRIATION. A plaintiff in a trade secret misappropriation case was held entitled to recover for out-of-pocket expenses and the time spent by its employees in protecting its business from the effects of the defendants' improper conduct in *Dozor Agency, Inc. v. Rosenberg*, 218 A.2d 583 (Pa. 1966), a case involving diversion of the clientele of an insurance agency. Finding the trial court's award of damages to be inadequate, the court pointed out that there was uncontradicted testimony as to the amount expended by the plaintiff for postage, printing, paper, and special sales expenses incurred to reinstate former policyholders and to protect other policies, and as to proportionate salaries paid certain employees while engaged in efforts to reinstate and protect policies carried by the plaintiff company. The court held that such evidence had been ignored improperly by the trial court, and it accordingly reversed the trial court's decree and remanded for reappraisal of the plaintiff's damages.

44.6 THE ACCOUNTING PERIOD FOR TRADE SECRET MISAPPROPRIATION DAMAGES

The court in the following case held that the period of an accounting for profits from trade secret misappropriation was to commence on a date prior to the date of filing suit: *Colgate-Palmolive Co. v. Carter Products, Inc.*, 230 F.2d 855 (4th Cir. 1956), a case involving misappropriation of secret formulas used in the manufacture of a pressurized shaving cream, held that an accounting period for profits commenced as of the date the defendant began to market its product incorporating the plaintiff's trade secret.

However, in *Vulcan Detinning Co. v. American Can Co.*, 73 A. 603 (1909), the court held that the proper starting date from which a defendant would be held liable for its profits from misappropriation of a secret detinning process was the date of filing of a suit seeking to enjoin continued use of the process and to account for the defendant's profits therefrom. The court found that until the suit was filed, the defendant did not have notice that it was infringing upon the rights of the plaintiff. Although the defendant's president had such notice, that could not be imputed to the defendant, the court said. However, the court said, in continuing to use the secret process after the filing of the complaint containing an explanation of the plaintiff's rights and claims, the defendant became a willful wrongdoer. The court held that so long as a defendant continues use of a process without notice that in doing so he is infringing upon the rights of the plaintiff, he is under no obligation to account to the plaintiff for profits made. Accordingly, the court entered an order directing modification of the lower court's order to the extent that it required an accounting from the date that the defendant commenced use of the secret process. Likewise, in *Reinforced Molding Corp. v General Electric Co.*, 592 F.Supp 1083 (W.D. Pa 1984), the court held that the time for which the defendant was liable to account for its profits commenced as of the date of filing suit.

In general, the duration of an accounting period in a case of trade secret misappropriation may be limited by two factors: the presence of a disclosure that may destroy the secrecy, and thus the trade secret status of the information involved, and the application of the so-called "head start" rule. Under that rule, if the only effect of a trade secret misappropriation is to make it possible for the defendant to develop and market a product sooner than it would have otherwise done, the defendant is deemed to have been unjustly enriched only to the extent, and the period of an accounting may be limited accordingly.

In *Timely Products Corp. v Arron*, 523 F.2d 288 (2nd Cir. 1975), the court held that the time period as to which the owner of a misappropriated trade secret would be entitled

to damages terminated on the date of issuance of a patent for which the owner had applied and that embodied the technology of the trade secret. The court reasoned that such public disclosure cut off the owner's right, under trade secret law, to prevent use or disclosure by others of the matter disclosed. Similarly, in *Tempo Instrument, Inc. v. Logitek, Inc.*, 229 F.Supp 1 (E.D.N.Y. 1964), the court held that one who is alleged to have wrongly utilized a trade secret is accountable under the doctrine of unfair competition only for such use as is made of the secret before it is made public by the issuance of a patent thereon.

The court in *Carboline Co. v. Jarboe*, 454 S.W.2d 540 (Mo. 1970), a case involving the misappropriation of secret formulas and processes used in the manufacture of chemical coatings, held that in computing the amount of the defendant's profits resulting from the misappropriation, the time period was to be limited according to the so-called "head start" rule. The court explained that under that rule, the accounting period was to be restricted to that period of time that would have been required by the defendant to reproduce the plaintiff's products without wrongful appropriation. It accordingly reversed a judgment of the trial court not based on the "head start" rule, and remanded the case for further proceedings on the issue of damages.

(a) PUNITIVE DAMAGES. An award of punitive damages under Virginia law must be based on actual malice. *Peacock Buick v. Durkin*, 221 Va. 1133 (1981); *Jordan v. Sauve and Koons*, 219 Va. 448 (1978). Actual malice may be proved by showing that the Defendant's actions were motivated by "ill will, malevolence, grudge, spite, wicked intention or a conscious disregard of the rights of another." *Peacock Buick*, 221 Va. at 1137; *Lee v. Southland Corporation*, 219 Va. 23, 27 (1978).

Section 59.1-338(B) of the Virginia Uniform Trade Secrets Act states: "If willful and malicious misappropriation exists, the court may award punitive damages in an amount not exceeding twice any award made under subsection A of this section, or $350,000 whichever amount is less."

PART IV

Appendices

Whether valuing intellectual property for an absolute value, licensing, joint venture, or infringement there exist commonalties that the following appendices address. We have attempted to exclude vast appendices that can become a separate document in themselves, but there are instances in which they are an appropriate means by which to avoid distracting discontinuities in the text.

APPENDIX A

INVESTMENT RATE OF RETURN

An investment rate of return represents the compensation demanded by investors for accepting the risk associated with a particular investment. Investment rates of return are associated with all types of investments and assets including real estate, common shares of publicly traded and privately held companies, preferred stock of public and private companies, U.S. Treasury and corporate bonds, capital budgeting decisions, and the value of intellectual property. When determining the value of any type of investment, the rate of return is a critical element for converting expected economic benefits into a present value. A comprehensive discussion of modern investment theory goes beyond the scope of this book. Complete books and careers are dedicated to the study of the relationship between risk and return. This appendix has been included to acquaint the reader with the basic concepts of risk and return and the vital role that these concepts play in determining the value of intellectual property. Two books are recommended at the end of this appendix for more details about investment rates of return.

Investment rates of return used to convert expected streams of income and cash flow into a value are also often referred to as the cost of capital or a discount rate. These rates reflect a measure of investment risk. We will use these two terms interchangeably throughout this discussion.

When aiming to determine the value of an asset or investment, a stream of future economic benefits is defined. The future stream may include dividends, cash flows, royalty income payments, capital appreciation, and/or other forms of economic advantage.

Economic returns from an investment must be determined with consideration for the:

- Amount of the returns
- Form in which they will be provided
- Timing of the returns
- Trend expected in the amount of returns
- Duration of the economic returns
- Risk of receiving the returns

A.1 INVESTMENT RATE OF RETURN

Investment rates of return, whether that of a stock portfolio or an investment in intellectual property, comprise:

- Real *Rate of Return*. Investors demand a *real* rate of return, also referred to as the risk-free rate of return, for delayed use of their funds. This component of return represents the amount that an investor wants for not having access to his or her funds on a risk-free basis. Basically, we are talking about the cost to rent money where there is absolutely no risk of receiving the rent or return of the principle amount invested.

- *Inflation Risk*. Expectations associated with inflation are another component of the overall return demanded by investors. In addition to receiving compensation for delaying access to the use of funds, an investor wants to receive future payments that compensate for any inflation that may occur during the investment period. It does no good to earn 3% on a safe investment for 10 years when inflations is running at 3%, 4%, 5%, or more during the investment period.
- *Risk Premium*. Compensation is also required to compensate investors for the uncertainty of receiving the expected economic benefits associated with an investment along with return of the principle amount initially invested.

Investors expect their investments to provide returns that compensated them for all three of these elements of risk.

A.2 REQUIRED RATE OF RETURN COMPONENTS

The risk-free rate is the basic value of money, assuming that there is no risk of default on the principal and the expected earnings stream is guaranteed. Under this scenario the investor has only sacrificed the use of the money for a period of time. Typically, the rate on long-term U.S. Treasury securities serves as a benchmark for the risk-free rate but because investors are interested in a real rate of return, a portion of the required rate of return must include an amount that is sufficient to offset the effects of inflation. Therefore, the rate of return yielded by long-term Treasury securities represent two components of the required rate of return: the real risk-free rate and the expected inflation rate. In January 2004, the Federal Reserve Bank of St. Louis reported the average rate provided by long-term U.S. Treasuries was 5.01%. Assuming that the long-term outlook for inflation is expected to be 4% then the real, risk-free rate of return that is demanded by investors is 1.01%. This estimate can be proven by looking at the rate of return investors demanded on short-term Treasury securities. In January 2004, the yield to maturity on 1-month Treasury securities was approximately 1%. These securities are also backed by the U.S. government and are basically risk-free. In addition, the impact of inflation during 1 month might be considered negligible, approximating zero. The difference between long-term and 1-month Treasury securities can be interpreted as the long-term inflation expectations.

Unfortunately, most investments are not risk-free and must provide additional return to compensate for other forms of risk. This additional risk is typically referred to as a risk premium. It represents compensation for the possibility that actual returns will deviate from those that are expected and the risk that the principle investment may be returned. By focusing on the yield that is provided by different fixed-income securities, this principle can be demonstrated. The table below compares the yield on selected investments as reported by the Federal Reserve Bank of St. Louis in January 2004:

Comparative Investment Returns

Investment	Yield%
U.S. Treasury Bill (3 month)	0.94%
U.S. Treasury Bill (1 year)	1.28%
U.S. Long-term Treasury Securities	5.01%
U.S. Corporate Bonds, Rated Aaa	5.54%
U.S. Corporate Bonds, Rated Baa	6.44%

Source: *US Financial Data,* The Federal Reserve Bank of St. Louis for January 2004.

Treasury securities and two corporate bond issues with different institutional ratings show different rates of return. While they are all subject, for the most part, to the same inflationary risks, the safety of principal and interest payments is different. The lower the safety, the higher the risk, and consequently the higher the rate of return demanded by investors.

U.S. Treasury securities are considered the safest investments in the world; they are backed by the full faith and credit of the U.S. government. Corporate bonds rated AAA are considered the safest corporate bonds, yet they are riskier than the U.S. government-backed securities. Corporate bonds rated Baa are relatively good investments, but they are the riskiest investment vehicles included in the table. They also provide the highest amount of investment return as compensation for the additional risk. As risk increases, so does the rate of return demanded by investors.

A.3 RATE OF RETURN MODELS

In order to value intellectual property, an appropriate rate of return must be associated with it. Having discussed the factors that affect rates of return and the components of investment returns, a review is now provided of a variety of methods that can be used to determine appropriate rates of return for use in valuing intellectual property.

Briefly described are four different approaches that can be used as a means to develop a required rate of return demanded by equity investors. They are:

- Gordon Growth Model
- Built-up method
- Capital Asset Pricing Model
- Venture Capital

These models allow us to capture the risk premium that investors require above the risk free rate of return and compensation for inflation. Risk is defined as the uncertainty associated with realizing both the timing and amounts of the expected future economic benefits. Three components comprise the risk premium:

- *Maturity Risk*. Also called horizon risk or interest risk, this element is the risk that the value of an investment may increase or decrease over time as the general level of interest rates changes. The longer the maturity of an investment, the greater its susceptibility to changes in general market prices related to market interest rates. Over time, the real rate of return and inflationary expectations may change and an investment with a long time horizon or maturity is more susceptible to this element of risk.
- *Systematic Risk*. Also called market risk this element is the uncertainty associated with the sensitivity of future returns on a particular investment to movements in returns provided by the investment market as a whole. The overall investment market can be represented by returns measured on the Standard & Poor's (S&P) 500 Index.
- *Unsystematic Risk*. Also called specific risk or residual risk, this is the uncertainty associated with factors beyond the overall general market risk. It is the risk not included in the systematic risk. If the investment that an investor is contemplating is a diversified portfolio of common stock, then it is likely that no elements of unsystematic risk are associated with the investment. When this is not

the case, then additional compensation is required for risk derived from specific industry conditions or those attributed to a specific company.

(a) GORDON GROWTH MODEL. Following is a simple illustration of this model for estimating the cost of equity (required return on an equity investment). The common presentation of this model is to solve for the value of an asset or investment as shown here:

$$PV = \frac{NCFo(1+g)}{k-g}$$

Where:

PV = *The value of an investment*

$NCFo$ = *Net cash flow in period 0, the period immediately preceding the valuation date*

k = *Discount rate (cost of capital)*

g = *Expected long-term growth rate in net cash flow to the investor*

If this equation is being used to value a share of common stock, then *NCFo* equals the dividend stream, which is known. The values for g and k can be determined by researching the estimates of Wall Street analysts.

We are more interested for our purposes in determining the value of k for use in valuing an intellectual property. The equation then is algebraically transformed so that it can be solved for k as follows:

$$k = \left(\frac{NCFo(1+g)}{PV} + g\right)$$

The inputs for our purposes must be determined from proxies that can be found in the investment market. By searching for investments in the public market with risk similar to the intellectual property being valued we can find the inputs for *PV*, *NCFo*, and g and then solve for k.

An important condition for this model is that the cash flow (NCFo) is well defined. Most useful is the condition where the cash flow is mature and has reached a steady-state condition where a constant growth rate is a reasonable expectation. When a mature cash flow stream is not yet established, one of the other rate of return models may turn out to be more appropriate.

(b) BUILD-UP METHOD. The build-up method, it can be argued, is subjective, but it can be used to directly reflect the amount of risk inherent in the major risk categories discussed previously. The method lists each of the components of risk and assigns an amount of return to compensate for each risk component. The general formula for this model is:

$$\text{Ri} = \text{Rf} + \text{Rmp} + \text{Ru} + \text{Ro}$$

Where:

Ri = *Required return for a specific investment*

Rf = *Risk free rate of return*

Rmp = *Risk premium associated with the investment market combining the maturity and systematic risk premiums*

Ru = *Risk premium for unsystematic risk associated with a specific industry or company*

Ro = *Risk premium for other specific risks associated with a particular technology, such as risks of development failures*

An example is presented here:

Build-up Rate of Return	
Risk Component	**Required Return**
Risk-Free Rate of Return	2.0%
Market Premium	7.0%
Company/Industry Risk Premium	5.0%
Special Risk Premium	5.0%
Total Required Rate of Return	**19.0%**

The built-up method is quite attractive because it addresses each of the risk components individually and can reflect an individual investor's own perceptions of the relative degree of risk presented by each of the components. Unfortunately, quantification of the exact amount of return that is necessary to compensate for each risk component is not easily accomplished. Too much conservatism in setting the rates can make an otherwise viable investment appear too risky. A rosy outlook can encourage investment in a project that will yield a return that is too low in relation to the accepted risk.

A common method for estimating the market premium (maturity and systematic risk premiums) is to consider historical data. The average excess return of a broad portfolio of stock, such as the S&P 500 over the return provided by U.S. Treasury securities provides an indication of the market premium risk. This requires an important assumption. When we are valuing a technology at the present date, we are really looking for expected, or future, rates of return. Relying on historical data requires that we assume the historical risk premium required will be adequate for the future.

A market risk premium, as well as a premium for unsystematic risk associated with specific risks of an industry or company, can be obtained from data compiled by Ibbotson Associates, Inc. Annually Ibbotson publishes *Stock, Bonds, Bills & Inflation* studies that provide the data needed to estimate *Rmp* and *Ru.* The book is called *SBBI Valuation Edition*.

(c) CAPITAL ASSET PRICING MODEL. The Capital Asset Pricing Model (CAPM) is one of several factor models. These models associate the proper rate of return to various investment factors. In the case of CAPM, the appropriate rate of return is determined by one factor—the volatility of investment returns relative to the investment returns that can be achieved by a broad market portfolio. The equation that describes the model is as follows:

$$Re = Rf + B(Rm - Rf)$$

Where:

Re = *The equity rate of return*

Rf = *The risk-free rate of return*

Rm = *The rate of return provided by the overall market port-folio of investments*

B = *Beta, a measure of the volatility for a specific investment relative to the market portfolio*

Application of CAPM is traditionally associated with assessing the risk and return for specific stock positions taken by investors. The risks and return of a particular stock are related to its asset base, industry position, and competitor attacks, as well as to changes in inflation and other economic forces. The Capital Asset Pricing Model can be used to estimate the required rate of return for specific intellectual property by analyzing the

required rates demanded by investors on specific stocks that operate in the same industry as that of the intellectual property. Analysis of a company's stocks that are dominated by the type of intellectual property being studied will more directly reflect required rates of return for intellectual property in specific industries.

(i) CAPM and Beta. Beta is a measure that indicates a company's susceptibility to changing conditions. These changes include inflation rate trends, monetary policy, world oil prices, and other factors that affect the rates of return on the entire market. Beta is a broad measure of the amount of risk inherent in a specific investment when compared to the diversified risk of a broad market portfolio.

If the stock of a company fluctuates more than the price of the broad market portfolio, then the stock, and the underlying business assets, are more susceptible to macroeconomic shifts than a broad market portfolio. If the stock's price over the past is more stable than the broad market then the stock is considered less risky. A common stock that has a beta of 1.0 moves in perfect unison with the overall broad market. If the market rises by 10%, then the specific stock with beta equal to 1.0 will also rise 10%. This stock is no more or less volatile than the broad market. Where beta is less than 1.0, the underlying stock moves in the same direction as the market but to a smaller degree and is less volatile than the overall market and less risky. Where beta is greater than 1.0, the underlying stock moves in the same direction as the market but to a larger degree and is more volatile than the overall market and is riskier.

Beta values are calculated for specific stocks by many investment advisory services and brokerage houses. A risk measure for valuing intellectual property can be determined by studying the betas of publicly traded companies that are highly dependent upon the same type of intellectual property for which a value is desired. If the risk of comparable and public companies in the same industry is the same as those affecting the subject intellectual property, then a study of their betas can serve as a risk benchmark.

(ii) CAPM and Ibbotson Associates, Inc. The studies conducted annually by Ibbotson Associates, Inc. have examined total long-term returns comprising dividends, interest payments, and capital appreciation. The investments studied include all New York Stock Exchange stocks, corporate bonds, and U.S. Treasury securities; bonds, bills, and notes. Using these studies, the return from investment in a broad market portfolio, *Rm*, can be determined for insertion into the CAPM model.

(d) VENTURE CAPITAL. So far this appendix has discussed how to determine appropriate rates of return for an equity investment where risk quantification is possible by comparative analysis. CAPM is typically used where commercial viability of the investment is either already proven or highly likely. Rates of return for investments possessing similar risk characteristics serve as the basis for development of an appropriate rate. Investments in emerging technology carry much higher risks with considerable potential for complete loss of the initial investment. In addition to the risks previously discussed such as inflation, competition, changing economic climates, and the like, emerging technology carries additional risks. Additional risks include the possibility that laboratory-scale success may not survive the transition to pilot plant production, or that pilot plant–scale successes may not be economically successful at full-scale levels of commercial production. Embryonic technology investments may not even be defined past the pencil and paper stage of development where laboratory experimental success isn't even ensured.

These types of intellectual property investments involve substantial risks, and investors expect substantial "pay days" if the commercial viability ever materializes. The seed

money for such risky investments are provided more and more by venture capitalists. Sometimes the word "venture" is replaced with "vulture" because of the seemingly extraordinary rate of returns that these investors require. But, considering the high potential in these cases for the total loss of millions of dollars of seed money, the required investment returns aren't really out of line.

At various stages of development, the venture capital required rate of return changes with the amount of risk that is perceived at each stage. Following is an estimate of the amount of return required at different development stages:

Venture Capital Rates of Return	
Stage of Development	**Required Rate of Return**
Start-Up	50%
First Stage	40%
Second Stage	30%
Third Stage	25%

The various levels of venture financing can be expressed as -follows.

(i) Start-Up. Start-up is a company with an idea and not much else. This is the riskiest level of embryonic intellectual property investment and requires the largest amount of return. The funds are used for basic research and possibly development of a prototype. At this stage, revenues are not even part of management goals.

(ii) First Stage. First-stage companies may have a prototype that has proven its capabilities but further development is required before commercial scales of production can be achieved. Positive net cash flows may still be several years away.

(iii) Second Stage. Second-stage companies may have experienced success in the commercial production of the product or service but expansion of market penetration requires substantial amounts that a bank may be unwilling to provide. At this point, the ability to make a profit may be already proven but rapid expansion requires more than present operations can provide.

(iv) Third Stage. Third-stage financings begin to blur with fast growth companies that can get limited bank loans or additional funds from a public offering. Strong profit levels may be consistently achieved, but more funds are needed for national or global expansion.

A specific industry example considered here is the drug industry. Hambrecht and Quist, a venture capital investor, uses the following investment rate of return requirements for discounting cash flows derived from commercialization of biotechnology and pharmaceutical technology. Ashley Stevens of the Boston University Community Technology Fund discussed these rates at a Licensing Executives Society conference in Orlando, Florida. The table below shows how the rates are related to the risk of different biotechnology and pharmaceutical projects.

After product launch, the remaining categories of business risk begin to fall into categories that are typical of ordinary businesses. Rapid growth products and mature products carry investment risk that can be quantified by performing a weighted average cost of capital analysis as previously discussed.

Venture capital companies are not long-term investors. They typically try to get out of the investment in 5 to 7 years with a three- to tenfold increase in the original investment. This is usually accomplished by selling the interest in the developed company to a larger corporation or taking the developed company public.

A.4 WEIGHTED AVERAGE COST OF CAPITAL

The discussion thus far has presented various concepts and methods that help define the rate of return on equity investments. However, investments are usually financed by a combination of equity and borrowed funds. Corporate investments typically must pass hurdle rates in order to be considered as viable opportunities. Because debt and equity funds are used to finance these investments, the return provided must be sufficient to satisfy the interest due on the debt and also provide a fair rate of return on the equity funds. The hurdle rate must be this weighted average cost of capital, at a minimum.

A corporation that is financed with both debt and equity might have a capitalization structure comprising 25% debt and 75% equity. A good bond rating might allow the corporation to finance debt at 6.0%. An appropriate equity rate, as determined from one of the models above, might be 15.0%. Following is the weighted average cost of capital. The tax deductibility of interest expense makes the after-tax cost of debt only 60% of the stated interest rate for corporations that pay a combined state and federal income tax of 40%. Equity returns are in no way tax deductible. When the cost of these capital components are weighted by their percentage of the total capital structure, a weighted average cost of capital of 12.15% is the result. This is the amount of return that the company must earn on its investments.

Weighted Average Cost of Capital				
Capital Component	Percent	Rate of Return	After-tax Cost	Weighted Cost
Debt	25%	6.0%	3.6%	0.90%
Equity	75%	15.0%	15.0%	11.25%
				12.15%

A multinational corporation, for which a 12.15% weighted average cost of capital is appropriate, may be a well-diversified basket of investments. Some of the investments may be more risky than others. Overall, the rate of return that these investments must earn is 12.15%. When valuing a specific project, asset, or intellectual property the risk rate to use is that which reflects the risk of the specific project or asset and not the overall rate that is acceptable to a diversified corporation.

The weighted average cost of capital for a small company, or subsidiary, with risk similar to that of an intellectual property being valued, would comprise an equity and debt rate that reflect the risk and return dynamics that are unique to the industry of the defined business enterprise and intellectual property. As discussed in previous chapters, the business enterprise is the sum of the fair market value of the invested capital (debt and equity). This is also represented by the sum of net working capital (monetary assets), tangible assets, and the intangible assets. Just as it is possible to allocate the weighted average cost of capital (WACOC) among the debt and equity components of the invested capital, it is also possible to allocate a portion of the WACOC to the asset components.

Following is an allocation of the weighted average cost of capital for a business enterprise allocated among the business assets. The various rates of return assigned to each of the assets reflect their relative risk.

Weighted Average Cost of Capital Allocated to Business Enterprise Asset Categories

Asset Category	Asset Category Value	Percent of Total	Required Rate of Return	Weighted Return	Allocated Total Return
Working Capital	25	4.3%	3.0%	0.13%	1.07%
Fixed Asset	50	8.7%	6.0%	0.52%	4.29%
IA & IP	500	87.0%	13.2%	11.50%	94.63%
Total	575	100.0%		12.15%	100.00%

A.5 APPROPRIATE RETURN ON MONETARY ASSETS

The monetary assets of the business are its net working capital. This is the total of current assets minus current liabilities. Current assets comprise accounts receivable, inventories, cash, and short-term security investments. Offsetting this total are the current liabilities of the business such as accounts payable, accrued salaries, and accrued expenses. Working capital is considered to be the most liquid asset of a business. Receivables are usually collected within 60 days, and inventories are usually turned over in 90 days. The cash component is immediately available and security holdings can be converted to cash with a telephone call to the firm's broker. Further evidence of liquidity is the use of accounts receivable and/or inventories as collateral for loans. In addition, accounts receivable can be sold for immediate cash to factoring companies at a discount of the book value. Given the relative liquidity of working capital, the amount of investment risk is inherently low. An appropriate rate of return to associate with the working capital component of the business enterprise is that which is available from investment in short-term securities of low risk levels.

A.6 APPROPRIATE RETURN ON TANGIBLE ASSETS

The tangible or fixed assets of the business comprise production machinery, warehouse equipment, transportation fleet, office buildings, office equipment, leasehold improvements, office equipment, and manufacturing plants. An indication of the rate of return that is contributed by these assets can be pegged at about the interest rate at which commercial banks make loans, using the fixed assets as collateral. While these assets are not as liquid as working capital, they can often be sold to other companies. This marketability allows a partial return of the investment in fixed assets of the business should the business fail. Another aspect of relative risk reduction relates to the strategic redeployment of fixed assets. Corporation assets that can be redirected for use elsewhere have a degree of versatility, which can still allow an economic contribution to be derived from their employment even if it isn't from the originally intended purpose. While these assets are more risky than working capital investments, they possess favorable characteristics that must be considered in the weighted average cost of capital allocation.

Fixed assets that are very specialized in nature must reflect higher levels of risk, which of course demands a higher rate of return. Specialized assets are those that are not easily redeployed for other commercial exploitation or liquidated to other businesses for other uses.

A.7 APPROPRIATE RETURN ON INTANGIBLE ASSETS AND INTELLECTUAL PROPERTY

Intangible assets are considered to be the most risky asset components of the overall business enterprise. These assets may have little, if any, liquidity and poor versatility for redeployment elsewhere in the business. This enhances their risk. Customized computer software that is installed and running on a company's computer may have very little liquidation value if the company fails. The investment in a trained workforce may be altogether lost, and the value of other elements of a going concern is directly related to the success of the business. A higher rate of return on these assets is therefore required. Because the overall return on the business is established as the weighted average cost of capital, and because reasonable returns for the monetary and tangible assets can be estimated, we are then in a position to derive an appropriate rate of return to be earned from the intangible assets. The following equation presents the means by which the 13.2% rate was derived for the intangible assets and intellectual property in our example:

$$WACOC = \frac{Vm(Rm)}{Vbev} + \frac{Vt\,(Rt)}{Vbev} + \frac{Vi(Ri)}{Vbev}$$

Where:

WACOC is the weighted average cost of capital for the overall business enterprise.

Vm, *Vt*, and *Vi* are the fair market values of the monetary, tangible, and intangible assets respectively.

Rm, *Rt*, and *Ri* are the relative rates of return associated with the business enterprise asset components.

Vbev is the fair market value of the business enterprise, which is the total of *Vm*, *Vt*, and *Vi*.

If values are known or can be estimated for all but one of the aforementioned components, then the equation can be solved for the missing component. Typically, we are trying to find an appropriate rate of return for association with the intangible assets and intellectual property.

If the WACOC that is developed is for a diversified multinational corporation, the proper rate that should be used in conjunction with a specific intellectual property investment could be far greater. The WACOC represents an overall return from the diversified investments or asset base of the business. The rate attributed to a specific intellectual property must reflect the various risks associated with the division within which the specific property is used.

Thus, the process may first require determination of an appropriate WACOC for the whole business. Followed by a determination of a WACOC for each operating division, working toward the business segment in which a specific intellectual property resides in a top-down approach.

The example that was presented yielded a 12.15% WACOC. This was based upon use of an equity rate of return of 15%. Such a rate would imply that the business is commercially viable and that the associated intellectual property has also been proven. Embryonic and emerging intellectual property entail more risks and, thus, would most likely be analyzed using a venture capital rate of return.

Overall, the business enterprise comprises various types of assets, each possessing different degrees of investment risk that correlate with the weighted average cost of capital. An analysis can be completed for any company so that the appropriate investment rate of return can be isolated for specific intellectual property.

A.8 PREJUDGMENT INTEREST RATES

The purpose of including prejudgment interest as part of a damage award is to place the injured party in the same position they would have attained but for injury. For infringement cases, if the infringed had properly received royalty payments or lost profits, they would have reinvested the funds and earned compound returns on the invested payments. Typically the courts have used safe investment rates of return such as that earned from investing in government securities. In *Polaroid Corporation v. Eastman Kodak Co.*, 16 USPQ2d 1481 (D. Mass. 1990), the district court used a Treasury bill rate for the calculation of prejudgment interest. In *Sun Studs, Inc. v. ATA Equipment Leasing, Inc.*, 17 USPQ2d 1768 (D. Or. 1990), the district court based the prejudgment interest calculation on the short-term borrowing rate actually charged the patentee.

These decisions do not necessarily place the patentee in the position that it would have otherwise attained. The proper selection of the prejudgment interest rate must consider the amount that the patentee would most likely have earned. Corporations do not invest to earn Treasury security rates of return. This is an important point. Corporations invest to earn at least their weighted average cost of capital. Corporations invest to earn a fair rate of return that compensates the equity investors and the debtors of the corporation.

The amounts invested in a company come from equity shareholders and from those that provide the company with loans. Each has an expectation of the rate of return that will be earned from the different investments made. The amounts the debtors expect to earn are specified in loan agreements as the interest rate that the company must pay on the borrowed funds. The amounts that equity investors expect to earn are reflected in the way they price the stock of the company. When the balanced amount of the equity and debt rates is calculated, the company must earn the weighted average cost of capital.

The total investments of a company might include some of the following types of activities:

- Construction of buildings from which to operate
- Purchase and installation of manufacturing equipment
- Funding of research and development for the introduction of better products and services
- Training programs for personnel in sales, finance, manufacturing, and operations to improve efficiency
- Payments for the development and installation of computer systems to improve the foundations of management decision making
- Development of raw material resources such as oil fields, gravel pits, or farm land

Some of the investments are also in cash accounts to serve as a buffer against bad times. Just as individuals keep funds in low interest checking accounts, corporations keep funds in various accounts that provide the liquidity needed for emergencies or sudden opportunities. While this means that some of a company's investments might be maintained in Treasury securities or checking accounts, it does not mean that the low rates of return provided by these liquid investments are the ultimate goal of the company. They are just a portion of the total goal, which is to attain investment returns equaling the weighted average cost of capital. Some of this return comes from checking account interest. Some of the return comes from producing products on company machinery in company buildings. Some of the return comes from the high risk and high rewards of research and development. When these returns are all combined and balanced, the company earns the weighted average cost of capital.

When the infringed party is an individual, such as an inventor, the same principles apply. Prejudgment interest calculations should be based on an investment rate of return that would place the individual in such a position as would have been attained but for infringement. Treasury security interest rates can still be inappropriate. If the individual can show a track record of personal investment that is different from Treasury rates of return, then the past investment rates of return earned by the individual from investments should prevail. An individual that has always invested in stock mutual funds could reasonably be expected to have continued such a policy had he or she received the royalty payments or lost profits. It can even be argued that the royalty or lost profits would have placed the individual in a position allowing for more aggressive investments with higher risk, delivering higher returns. For an individual patentee who has a track record of investing in stocks, the prejudgment interest calculation should consider the investment returns the individual would have earned from stock mutual funds. If the individual regularly stuffed money under his or her mattress, then a prejudgment interest calculation based on a zero rate of interest would put the patentee in the position that most likely would have been attained.

Prejudgment interest calculations must consider the investment policies, goals, investor and debtor obligations, and investment practices of the infringed party. Standardized use of Treasury security interest rates for all cases is a cop-out. Such a practice is just as improper as using a standardized royalty rate of 2% of sales for all cases or a 40% incremental profit margin for lost-profit calculations. The amount of prejudgment interest comprising damages awards is becoming a substantial part of total awards. Detailed analysis should go into selecting the fairest interest rate to be used in the calculation.

A.9 REFERENCES

Tom Copeland, Tim Koller, and Jack Murrin (McKinsey & Company, Inc.), *Valuation: Measuring and Managing the Value of Companies*, (Hoboken, NJ: John Wiley & Sons, 1990).

Shannon P. Pratt, *Cost of Capital*, Second Edition (Hoboken, NJ: John Wiley & Sons, 2002).

APPENDIX **B**

THEORETICAL FOUNDATIONS FOR THE DETERMINATION OF A FAIR RATE OF RETURN ON INTELLECTUAL PROPERTY

Dr. John A. Del Roccili

The basis for the determination of a fair royalty rate for a specific asset can be derived from the business enterprise valuation equation discussed in Chapter 1. This states that every business enterprise comprises a portfolio of assets that includes monetary assets, tangible assets, intangible assets, and intellectual property. This implies the market value of the business equals the sum of the assets that constitute the business. That is:

$$BEV = MA + TA + IA + IP$$

where:

BEV = Business Enterprise Value

MA = Monetary Assets

TA = Tangible Assets

IA = Intangible Assets

IP = Intellectual Property

This portfolio of assets is expected to generate an overall rate of return, r_{bev}, which is simply the weighted average expected return of the individual assets in the company with the weights being the fraction of the business enterprise value invested in the asset.

$$r_{bev} = w_{wc}r_{wc} + w_{ta}r_{ta} + w_{ia}r_{ia} + w_{ip}r_{ip}$$

Here the r_i's (where $I = bev, ma, ta, ia$, and ip) are the expected returns on the individual assets, and the w_i's are the weights. Note that w_i is the proportion of the portfolio's dollar value invested in that asset and that the w_i's must sum to 1.0.

Multiplying through by BEV and assuming that a company will invest in an asset up until the point where the expected return is equal to the marginal product of the asset yields the following expected profit equation:

$$\pi = \partial\pi / \partial maMA + \partial\pi / \partial taTA + \partial\pi / \partial iaIA + \partial ip / \partial ipIP$$

This suggests the expected profit function is homogeneous of degree 1 because by Euler's theorem we know that the value of a linearly homogeneous function can always be expressed as the sum of terms, each of which is the product of one of the independent

variables and the first-order partial derivative with respect to that variable.[1] This property means that if each asset is paid the amount of its marginal product, the total profit will be exactly exhausted by the distributive shares for all the assets constituting the enterprise.

This implies that a fair rate of return on intellectual property can be estimated through an allocation of the expected return or weighted average cost of capital among the business enterprise assets of the company. This approach is described in Chapter 5. The value of intellectual property and intangible assets is commonly established by first determining the value of the entire business enterprise, via the market or income approach, and then allocating this value to all the other asset categories. This leaves a residual amount that can be ascribed to intellectual property. If the individual asset categories are first valued, then their aggregated values must comport with the value of the entire business enterprise.

The importance of Euler's theorem relates to the fact that the values one can attribute to a particular asset are tied to its marginal contribution to profit, which in turn is reflective of its relative riskiness. Further, it states that the sum of the marginal products of each factor times the level of use of that factor exactly and identically adds up to total profit. This suggests that the value that can be placed on an individual asset is *bounded* by the enterprise relationship and the rates of return attributable to the other assets employed by the enterprise.

Thus, while the relationship does not provide you with an exact formula for determining the fair rate of return for intellectual property, it does provide a method with reasonable bounds for establishing fair value. First, we have to make the implicit assumption that businesses tend to employ their assets efficiently and that the marginal product of the asset is equal to its expected return. Second, we assume that the business enterprise can be expected to earn a fair rate of return equal to its weighted average cost of capital. Then, we have to estimate both the business enterprise value and the value of the assets composing the enterprise using the methods described in Chapters 4, 5, and 6. Since we know how to determine the weighted average cost of capital as well as the appropriate rates of return for different types of assets, using Euler's theorem, we can solve for the fair rate of return on intellectual property. This is accomplished by determining the expected profit of the enterprise and substituting the appropriate rates of return for each asset except intellectual property, along with the estimated values for each of the assets. The rate of return on intellectual property can then be obtained by solving the following equation:

$$\partial\pi / \partial ip = (\pi - (\partial\pi / \partial maMA + \partial\pi / \partial taTA + \partial\pi / \partial iaIA) / IP)$$

1. For a discussion of Euler's theorem see Eugene Silberberg, *The Structure of Economics: A Mathematical Analysis* (New York: McGraw-Hill Book Company, 1978) pp. 90–91.

APPENDIX C

THE USE AND ABUSE OF IOWA CURVES WHEN QUANTIFYING APPRAISAL DEPRECIATION

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The purposes of this appendix are fourfold:

1. To discuss the origination and development of Iowa-type survivor curves and their general application in the appraisal process
2. To discuss misapplications commonly found in appraisal practice concerning the use of Iowa-type survivor curves to estimate appraisal depreciation when conducting a cost approach to value
3. To discuss the fallacious assumptions implicit in the misapplication of the Iowa-type survivor curves in the quantification of appraisal depreciation
4. To discuss the effect on appraisal results of the misapplication of the Iowa-type survivor curves

To reduce confusion, it is vital that a complete and unambiguous distinction be made between depreciation in appraisals and depreciation in the context of financial or tax reporting. Throughout this appendix, the depreciation under discussion is *appraisal* or *valuation depreciation*, which can be defined as the total decrease in *value* of property from physical, functional, and economic causes as measured against the cost of reproduction new of the property.

The depreciation discussed here should not be confused with financial or tax accounting depreciation, which is the systematic allocation of the costs of an asset over the years of the asset's estimated useful life. This appendix discusses methods used to quantify the *change in value*, not the allocation procedure used to spread asset costs against revenues over estimated useful lives.

C.1 APPRAISAL DEPRECIATION

Appraisal depreciation is the decrease in value of the property from physical, functional, and economic causes. These decreases are measured against the cost of reproduction new of the property. This definition suggests three distinct attributes of depreciation: physical, functional, and economic.

The *physical attribute* is physical deterioration or depreciation or the loss in value caused by wear and tear in operation and exposure to the elements.

The *functional attribute* of depreciation (sometimes called functional obsolescence) is the loss in value of the property as a result of the development of new technology. This includes changes in design, materials, or processes resulting in overcapacity, inadequacy, excess construction, lack of utility, or excess variable operating costs.

The *economic attribute* (economic obsolescence) is the loss in value resulting from influences external to the property itself. Economic obsolescence may be the result of a number of causes, such as the economics of the industry, including reduced demand for the product: loss of material and labor sources; changes in the local economy, including shifting property use patterns; legal changes, including legislation, ordinances, zoning, administrative orders; and encroachment of objectionable influences.

These comments should be considered in the context of an appraisal valuation implementing the cost approach to value. That is, after an appraiser has quantified the cost of reproduction new (CRN), that CRN is reduced for all elements of appraisal depreciation (physical, functional, and economic). Furthermore, if *all elements* of appraisal depreciation are not recognized and quantified and appropriately deducted from the CRN, then the resultant value conclusion is in error or is incomplete.

C.2 IOWA-TYPE SURVIVOR CURVE

Iowa-type survivor curves are based on a set of empirical data collected (mainly in the 1930s) for the purpose of statistically predicting future service expectancy (remaining service) for physical properties.

The techniques used and methods applied are exactly analogous to those used by the insurance industry for the purpose of predicting human mortality (life expectancy) when determining appropriate insurance premium rates. The only distinction to be made is that the life insurance companies are investigating the life or longevity characteristics of human beings, and the studies that developed the Iowa-type survivor curves were developed to predict the longevity or service life experience for physical, inanimate objects.

The development of the Iowa-type survivor curves was done in a manner directly analogous to that used by insurance companies to calculate human mortality (survivor) curves. Human mortality curves were first developed by the famous astronomer Edmond Halley almost 300 years ago. The seminal statistical analyses for industrial property were conducted under the auspices of the Iowa Research Station now known as Iowa State University. The University issued four bulletins—Bulletin 103, 125, 155, and 156. The original publishing dates were 1921, 1935, 1942, and 1942, respectively. Since the initial publication, revised and augmented editions of the bulletins have been made available. These bulletins, plus the textbook titled *Engineering Valuation and Depreciation*, also issued by Iowa State University, form the core reference texts for the study of industrial property survivor curve characteristics.

Since original publication, the Iowa-type survivor curves have been applied widely (especially in the public utility area) in the estimation of industrial property service lives. To a much lesser extent, the Iowa-type survivor curves have been applied to calculate the existing depreciation of property for valuation purposes.

In a valuation, the appraiser may have the following options with respect to the use of survivor curves:

1. Construct a complete survivor curve from pertinent property data
2. Construct a survivor curve using data to form a partial (stub) curve that can be mathematically extended to form the complete curve

3. Match partial or stub curve data to the standard Iowa-type curves and select a best fit
4. Select, on a judgment basis, an Iowa-type curve based on knowledge of the property

Generally, the appraiser has insufficient data for the first option. The second option does not offer any particular advantage and often is beyond the capabilities of the appraiser. Therefore, the appraiser usually is left with the latter two choices.

For purposes of illustration, two simple examples of complete survivor curves will be discussed. With a complete survivor curve, a large amount of useful information is obtained. Four main categories of information pertinent to this paper that can be ascertained from a survivor curve are:

1. Retirement patterns
2. Average service life
3. Average remaining life
4. Condition percent

Retirement patterns for industrial properties are used to categorize the type of survivor curve selected. In addition to the calculation or estimation of an average service life for a group of property units, it is quite useful to know if most of the retirements take place before the average service life, at the average service life, or after the average service life.

If one follows the placement of industrial property from initial installation until final retirement and calculates how long each property unit stayed in service until retirement, one would be able to calculate the *average* service life attained for all the property units. For example, if there were two units of property placed in service at the same time, and the first unit lasted 15 years and the second unit lasted 25 years, the average service life of those two units would have been 20 years. This, in essence, is the theory behind the calculation of average service life.

In our simple two-unit example, after 10 years of service, the first unit would have 5 years remaining life and the second unit would have 15 years remaining life for an *average* remaining life of 10 years.

It is useful to depict these characteristics graphically. Exhibit C.1 represents the service life pattern of our hypothetical two-unit group of industrial assets placed in service simultaneously. Quite simply, it is a graph (survivor curve) showing the number of units that survive at any particular time as a function of time.

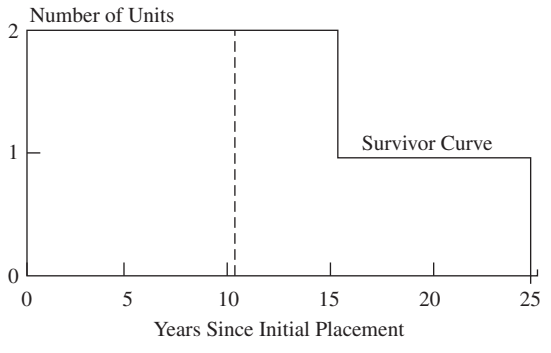


EXHIBIT C.1 SURVIVOR CURVE

The average service life of the units can be calculated by finding the area under the survivor curve. In this example, the area is 40 unit-years (15 years times two units plus 10 years times one unit). The average service life then is 40 unit-years divided by two units, or 20 years.

Similarly, the average remaining life at any point (e.g., after 10 years) can be calculated by finding the area under the survivor curve to the right of the appropriate age under question. When 20 unit-years (the number of unit-years to the right of the dotted line) is divided by the number of surviving units at age 10 (i.e., two units), an average remaining life of 10 years results.

The concept of condition percent is more subtle. In general terms, condition percent is future service compared to total service. What the math is saying is "Compared to the total service available from the particular group of assets, how much service is left?" The complement of condition percent is depreciation; "How much service has been expended?"

Referring to the two-unit example, condition percent is (at 10 years) the area to the right of that age divided by the number of surviving units (as noted above, this is the calculation of remaining life), divided by the average service life.

A two-unit group is unrealistic in actual practice. A more realistic example can be found in Exhibit C.2. Here we have 100 original units placed in service simultaneously. Some of the units are retired relatively soon, while others are retired relatively late. The pattern of retirements is represented by the lower graph. One can see from the retirement graph that retirements peak between 9 and 10 years.

The upper graph is the survivor curve developed by reflecting the retirements shown in the lower graph. The survivor curve shows that all units survive at age zero, while the last unit retires at age 16 years.

If one calculated the length of service for each unit as they were retired, summed all the service lengths, and divided by the total number of original units, one would have calculated the average service life of the original 100 units. This procedure is mathematically equivalent to calculating the area under the survivor curve.

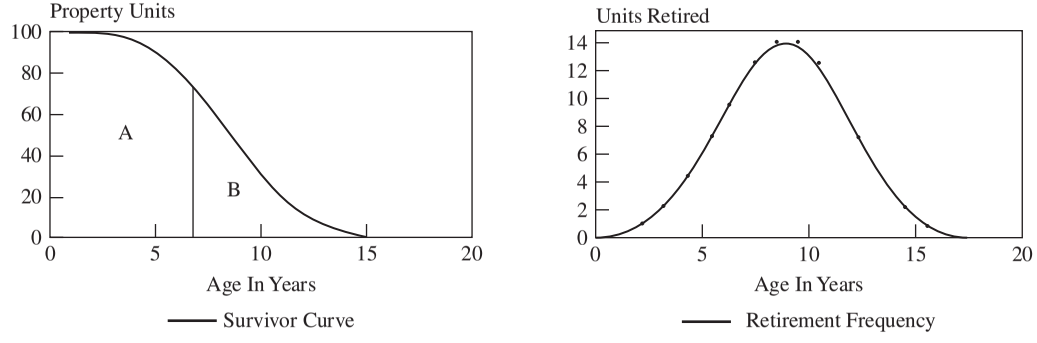
The average remaining life (of the surviving units at a particular age) is, as shown with the two-unit example, the area to the right of the particular age in question (7 years in the Exhibit C.2 example) divided by total number of surviving units at a particular age in question. Condition percent is calculated as shown in the two-unit example.

The pertinent calculations follow Exhibit C.2 for average service life, average remaining life, and condition percent, respectively.

The Iowa-type survivor curves incorporate the preceding information (and other information not pertinent herein) in what is called the family of Iowa curves.

There are currently four standard Iowa-type survivor curves. These curves depict how units of property retire from a group based on their age. The graphs in Exhibit C.3 describe the differences among these curves.

The S, L, and R Iowa-type survivor curves intuitively seem reasonable when considering how assets might retire in terms of the group's average service life. The R-type curve is characteristic of many physical assets, that is, those designed and built to provide service. Generally, the retirements of property that fit this pattern occur near or sometimes after their average service life. The L-type curves are also characteristic of physical property. However, the L-curves have a relatively high early retirement rate. Many times this early retirement rate is caused by the assets being exposed to life termination from causes unrelated to the physical life of the asset, for instance, changes in customer demand or need for more capacity.



$$\text{Average Service Life} = \frac{\text{Area A \& Area B}}{\text{Total Units}} = \frac{\text{645 Unit-Yrs + 205 Unit-Yrs}}{\text{100 Units}} = 8.5 \text{ Years}$$

$$\text{Average Remaining Life} = \frac{\text{Area B}}{\text{Surviving Units}} = \frac{\text{205 Unit-Yrs}}{\text{73 Units}} = 2.8 \text{ Years}$$

$$\text{Condition Percent} = \frac{\text{Average Remaining Life}}{\text{Average Service Life}} \times 100 = \frac{\text{2.8 Years}}{\text{8.5 Years}} \times 100 = 33\%$$

EXHIBIT C.2 IOWA-TYPE SURVIVOR CURVE

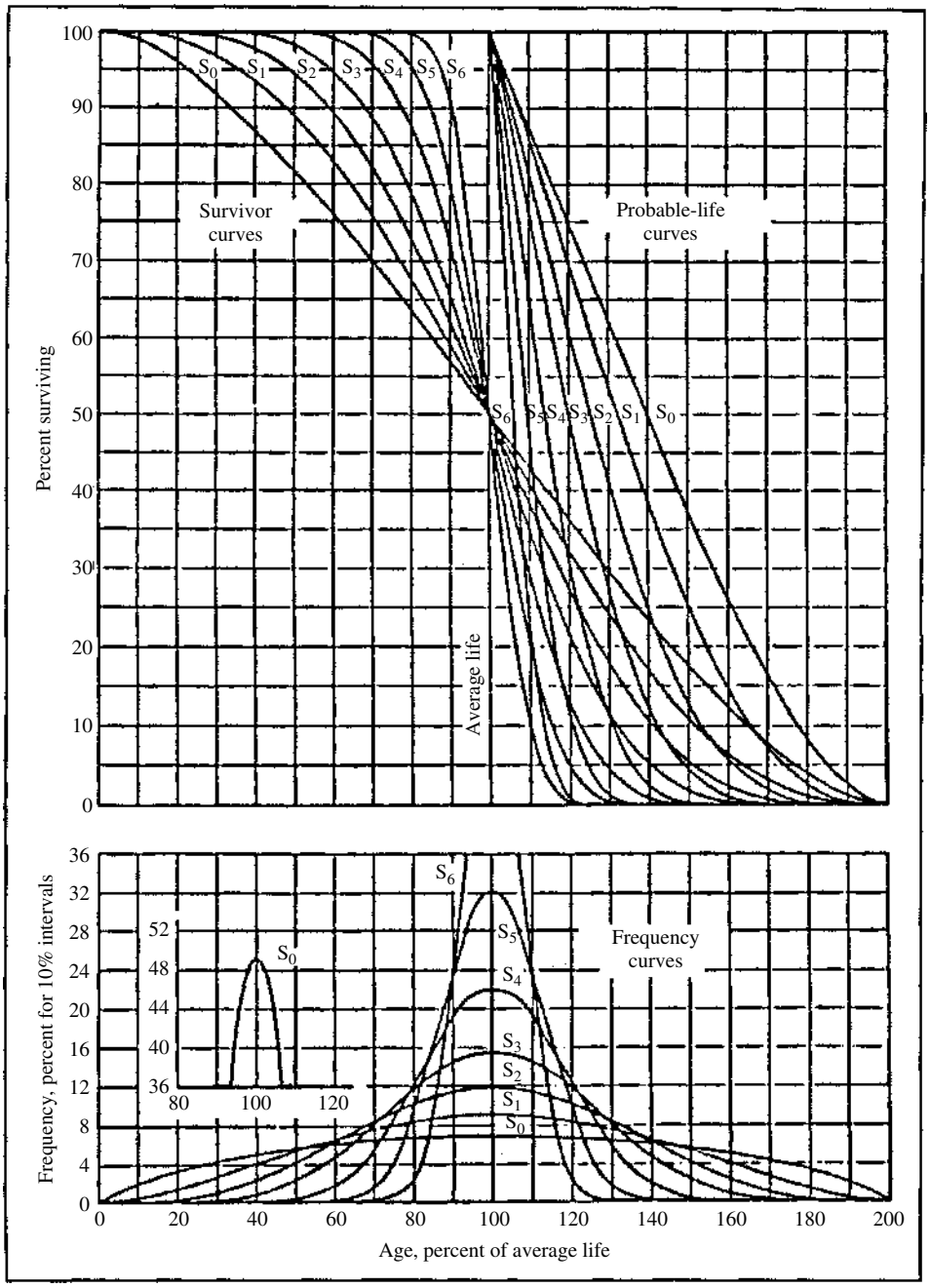


EXHIBIT C.3 GENERALIZED IOWA CURVE

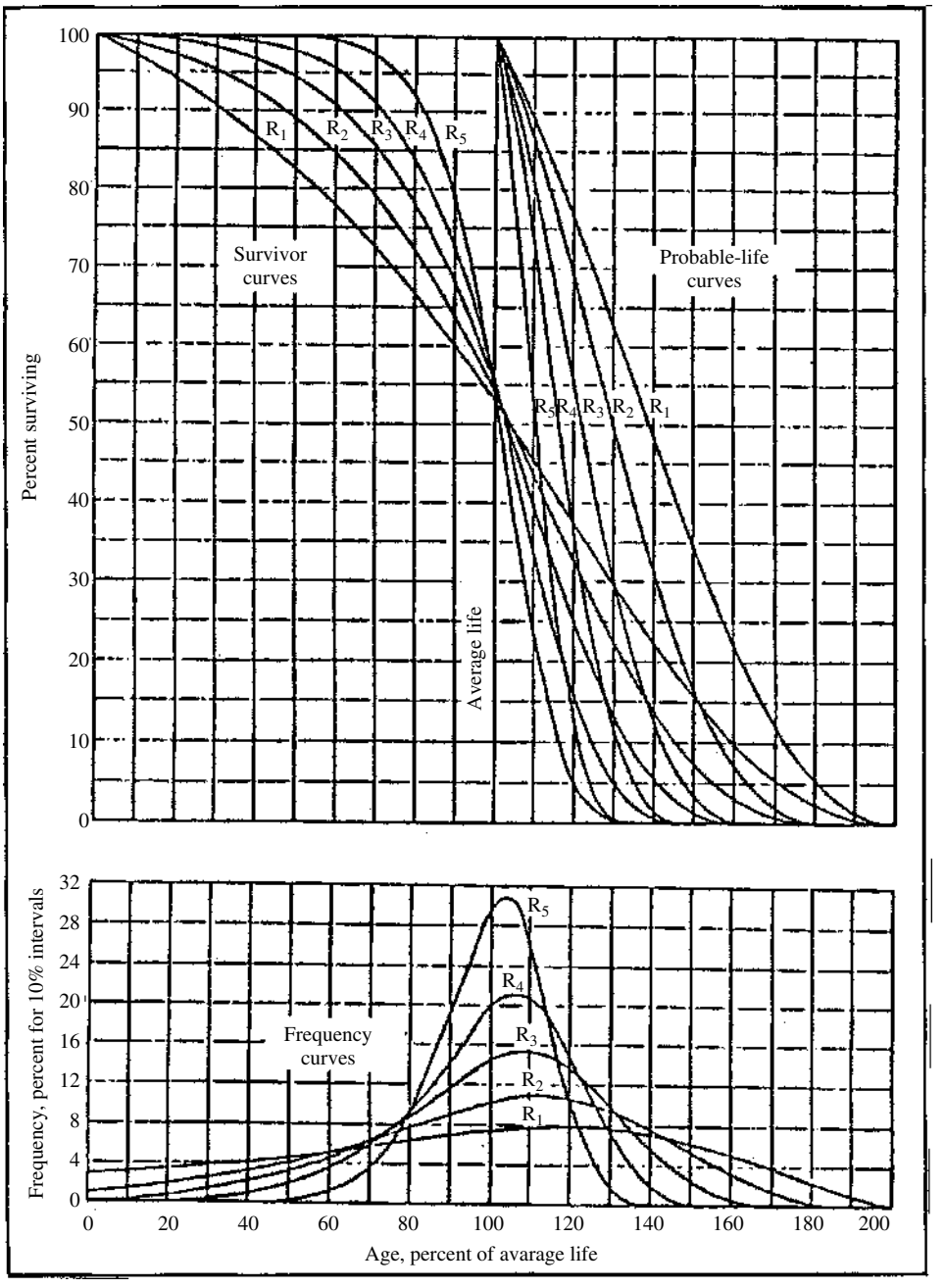


EXHIBIT C.3 GENERALIZED IOWA CURVE *(CONTINUED)*

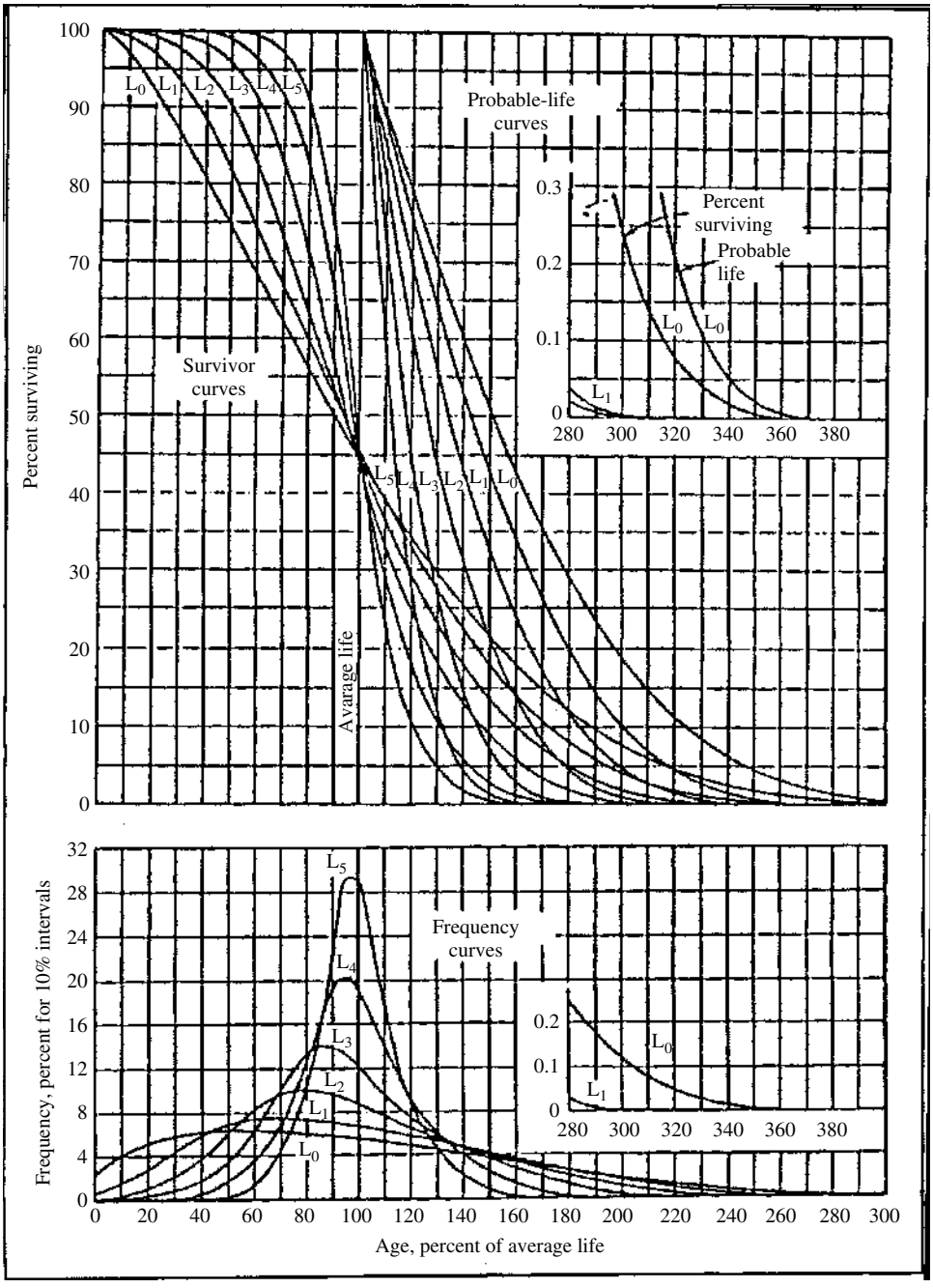


EXHIBIT C.3 GENERALIZED IOWA CURVE *(CONTINUED)*

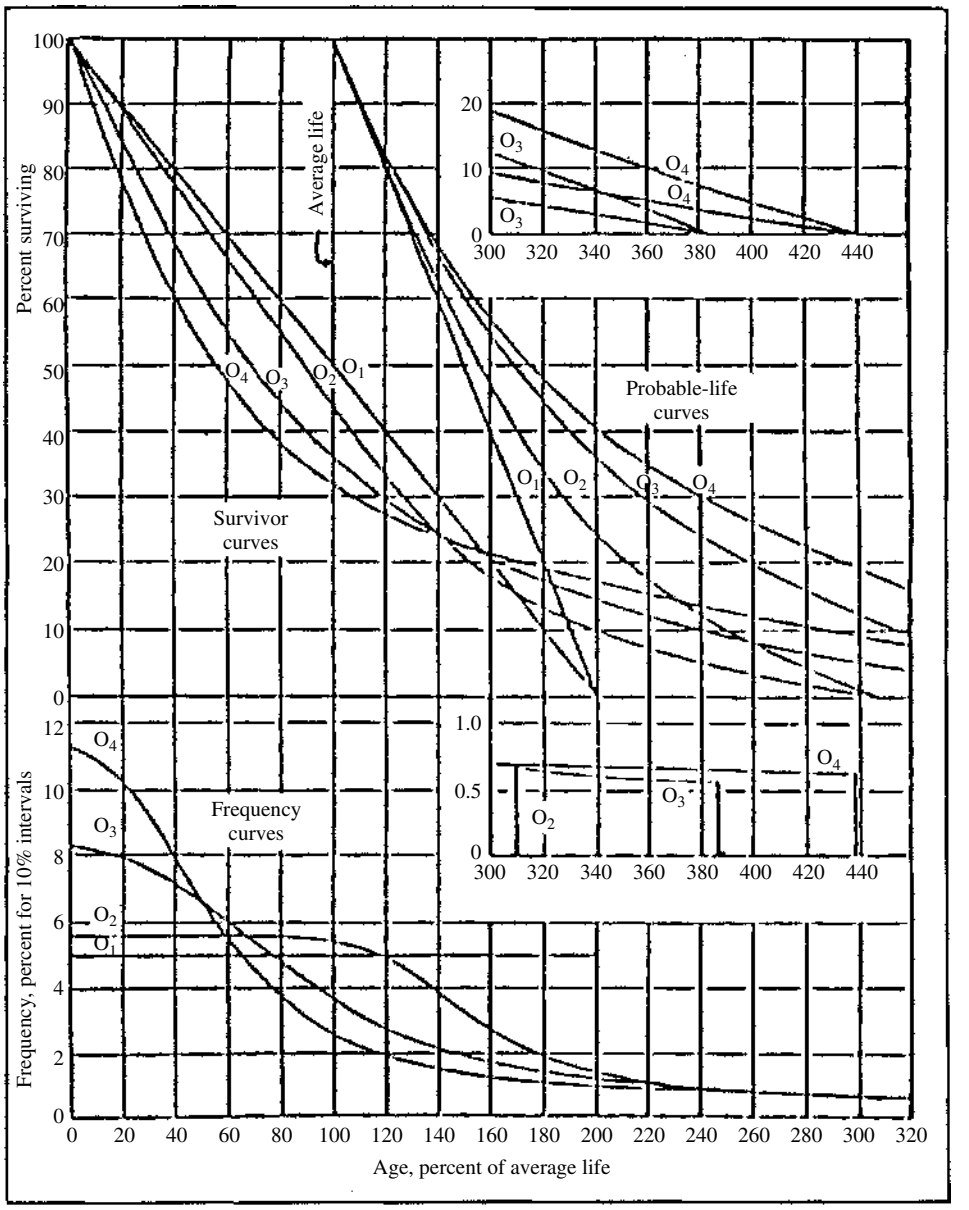


EXHIBIT C.3 GENERALIZED IOWA CURVE *(CONTINUED)*

The 0-type survivor curves are most difficult to comprehend. With 0-type survivor curves, "infant mortality" (many early retirements) is characteristic. Generally, the rate of retirement decreases with age. Usually 0-type survivor curves are representative of the life characteristics of intangible assets, such as a newspaper subscriber list or a group of service contracts. It is very unusual for an 0-type survivor curve to be representative of physical assets.

Note that the retirement curves do not have specific years displayed along the horizontal axis. Instead, age was represented as a percent of average service life. This attribute exists

because the retirement curve (and corresponding survivor curve) has been generalized. To convert the generalized curve to a specific curve (years along the horizontal axis), multiply the percentages of average service life by the actual service life under study. The generalizing feature allows convenient tabulation of the Iowa-type survivor curve information.

The Iowa-type survivor curves are in general use but are not the only curves available to estimate service life and other characteristics of physical property. There is nothing magic about these curves. If the property under valuation exhibits characteristics that conform to the Iowa-type curve characteristics, it is possible to use the curves in a useful manner. However, their use must not be capricious. The remaining portion of this appendix will discuss the use and abuse of Iowa curves in the quantification of appraisal depreciation.

C.3 APPRAISAL DEPRECIATION AND IOWA CURVES

Perhaps the most unfortunate consequence of the dogmatic use of Iowa-type curves to quantify appraisal depreciation is that they often substitute "cookbook" appraisal procedures for in-depth specific knowledge of the property under investigation. Many appraisers are unaware of the myriad assumptions associated with the formalistic application of Iowa curves. What follows is by no means a complete list of assumptions normally made:

- Average service life.
- Retirement pattern.
- Constant life and retirement pattern.
- Specific Iowa curves "fit" specific property categories.
- Group characteristics can be applied to single assets.
- A constant return "of" and "on" investment in a specific asset.

Furthermore, the formalistic application of Iowa-type curves ignores the laws of supply and demand, general economic conditions, and valuation judgment.

In our discussion of misapplications, fallacious assumptions, and effects on appraisal results, it is useful to start with a general explanation of the theory involved in the application of Iowa-type curves to develop condition percent.

C.4 VALUATION THEORY OF CONDITION PERCENT

The fundamental assumption an appraiser makes when applying Iowa-type curves to quantify condition percent (the complement of which is depreciation) is that the Iowa-type curve information relative to remaining life and average service life is a good mathematical model to quantify future operation returns.

Perhaps this is a good time to define "operation returns." The total operation returns of an asset are a composite of the return "on" (the rate of return on a specific investment) and the return "of" (original investment reversion to the property owner) the asset. To use a financial investment as an example, a lender expects to achieve a certain rate of return "on" (interest) a loan. He or she also expects to have the loan repaid in full—the return "of." He or she expects a return "on" and a return "of" investment.

An appraiser using the Iowa-type curves to quantify condition percent is assuming that the return "of" and the return "on" the investment in the future is constant.

The assumption of constant return "of" and "on" investment is important because it is the logical foundation for using future remaining life divided by average service life to quantify condition percent. Each future year of serviceability is given equal weight. If

the returns are assumed constant (i.e., it is the same as saying economic and functional obsolescence is quantifiable using this method or is equal to zero) in the future, the mathematical model holds together.

Some appraisers use a present worth factor in the calculation of future operation returns; the use of this present worth factor will be discussed later.

C.5 IOWA CURVE MISAPPLICATION AND UNDERLYING FALLACIOUS ASSUMPTIONS

A common misapplication is to use Iowa-type curves developed using statistically significant samples of mass assets to quantify the condition percent of a single large asset. That is, the group theory of depreciation that is embodied in Iowa-type curve analysis is used for single assets. A typical example would be the misuse of an Iowa-type curve to quantify the condition percent of a building.

Another serious misapplication is to assume that a group of assets intrinsically has retirement characteristics that allow the application of a specific Iowa curve and life without an actual investigation of the curve type and life characteristics.

No unique Iowa curve will faithfully predict, for a specific group of assets, service life, remaining life, and the concomitant condition percent. Groups of identical assets owned by different operating entities can have greatly varying retirement patterns and corresponding life and condition percent characteristics. The reasons for the wide fluctuation are variation in use, maintenance practices, retirement practices, and operating conditions.

Appraisers who dogmatically apply a specific curve shape and life from the available family of Iowa curves are ignoring the variations. The appropriate procedure would be to perform a life analysis of the specific group of assets under investigation to ascertain which, if any, specific Iowa-type curve is applicable.

The most profound misapplication of Iowa-type curves for the quantification of appraisal depreciation results from the assumption that Iowa-type survivor curves quantify all forms of depreciation—physical, functional, and economic. The assumption is distinctly incorrect. Iowa survivor curves or other survivor curves cannot, do not, and were never meant to quantify economic depreciation.

Economic depreciation is the result of forces affecting value outside of the control of the property owner. The statistical analyses behind the development of Iowa-type survivor curves does not address laws of supply and demand, market share, available equipment in the used market, extent and quality of competition, product life cycle, economic cycle, and a host of other factors that directly affect the fair market value of physical assets. It is virtually impossible to quantify depreciation completely without market or future expected income information. Once must remember that the goal of an appraiser in quantifying appraisal depreciation using the cost approach is to arrive at a conclusion representative of the asset's fair market value.

The use of Iowa-type curves and the underlying assumption of constant operation returns assumes that all of the preceding exogenous factors do not affect the assets under investigation.

A brief review of the recent economy of the United States demonstrates the fallacy of this assumption. An analysis of opposite ends of the economy—"high-tech" manufacturing and basic manufacturing—has shown that operation returns are not constant (or nearly so) over time and can, in fact, vary widely both positively and negatively.

The economic value of a vast quantity of basic industrial equipment—for example, refinery equipment, steel manufacturing equipment, foundry equipment—has dropped precipitously in a relatively short time. This type of discontinuous event cannot be captured using the mathematical models available in Iowa-type survivor curves.

On the high-tech side of the U.S. economy, an example of corporations with assets with greatly diminished value would be electronic firms that have been adversely affected by the international competition from Japan. Other examples exist. The point is that the value of assets can change dramatically.

The final misapplication of Iowa-type survivor curves discussed herein is technical in nature. The widespread use of this technical approach and the corresponding large effect on value conclusions cause the technical discussion to be germane and important.

Some appraisers, after making the assumption of equal operation returns (or nearly equal), include a further "refinement" by using a present worth factor to discount future operation returns. The theory behind the discounting is that future operation returns (same as future serviceability) are worth less to an investor than operation returns immediately available. The concept of adjusting future returns for the present worth effect is not unreasonable in theory, but we have found that in actual practice it results in unrealistic conclusions. The selection of the appropriate discount factor is arbitrary and, in some cases, completely incorrect. For instance, some appraisers use an average return on industrial stocks over a historical time frame. Another example might be the current prime rate available to industrial concerns.

One should never lose sight of the fact, when using a mathematical model to quantify some valuation attribute, that it is incumbent upon the appraiser to check out or verify the model. Does the use of the model make sense? Does the model provide reasonable results at the limits? Can a logical causal relationship be developed between the model and the attribute under investigation?

When appraisers use the present worth concept, they are introducing a variable that has little to do with the quantification of appraisal depreciation. When an appraiser uses an interest factor, he or she is making the implicit assumption that the interest factor has some effect on appraisal depreciation. Furthermore, he or she is making the implicit assumption that the higher the inflation rate, the lower the appraisal depreciation. This assumption is demonstrably incorrect. Exhibit C.4 shows the sensitivity of the resultant condition percent as a function of the interest factor or discount factor assumed.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average Service Life (Years)	Average Remaining Life (Years)	Discount Factor Assumption (Percent)	Present Worth of Remaining Life (Years)	Present Worth of Average Service Life (Years)	Condition (Percent)	Depreciation (Percent)
30	15	0	15.0	30.0	50	50
30	15	3.5	11.5	18.4	63	37
30	15	5	10.4	15.4	68	32
30	15	10	7.6	9.4	81	19
30	15	25	3.9	4.0	98	2

EXHIBIT C.4 SENSITIVITY OF CONDITION PERCENT TO DISCOUNT FACTOR

Each horizontal line in the table represents a calculation of condition percent. The average service life and average remaining life have been held constant. The variable in each calculation is the discount rate or interest rate assumption found in column (3). Columns (4) and (5) were calculated by taking the present worth of an ordinary annuity for the 15-year remaining life and 30-year average service life using the various interest rate assumptions. Column (6) is calculated by dividing column (4) by column (5) and multiplying by 100%. Column (7) is calculated by subtracting column (6) from 100%.

Theories should be tested at their limits. Let us assume from Exhibit C.4 that we are attempting to quantify appraisal depreciation for two groups of assets of identical age, appearance, construction, and utility. Let us further assume that one group of assets is in operation in the United States and another group of assets is in operation in Argentina. It has been determined that both groups of assets have a 30-year average service life and a 15-year average remaining life. For the sake of this example, assume that the appropriate interest factor in the United States is the 5% return and the appropriate interest factor in Argentina is the 25% return. (Returns reflect the different inflation expectations of both countries.)

In this example, the only difference is in the investor's perception of future inflation. The investor assumes higher inflation in Argentina and, therefore, requires a return of 25%, while the investor in the United States assumes modest inflation, so a return of 5% is adequate. Using the Iowa curve and present worth method as the mathematical model to quantify condition percent results in the identical equipment being in 68% condition in the United States and 98% condition in Argentina. The mathematics behind the model suggests that somehow future inflation has an effect on the physical deterioration and functional obsolescence! It is obvious that physical property doesn't somehow "heal" itself as inflation rates rise.

We have found through long experience that any use of an interest factor cannot be defended logically because such use produces unrealistically high condition percent.

C.6 EFFECTS OF MISAPPLICATION OF IOWA CURVES ON APPRAISAL RESULTS

One effect of the dogmatic application of Iowa curves for the quantification of depreciation is to preclude an investigation of the real parameters affecting the value of the assets under appraisal. It is human nature to become enamored with mathematically sophisticated models that can give one a false sense of security when one is trying to quantify real market conditions. This effect is qualitative in nature. It may preclude the appraiser's investigating relevant information that would allow a true quantification of value.

Because Iowa curves or other mortality curves cannot predict economic conditions and the result of those economic conditions on future operation returns, the assumption that somehow economic depreciation is magically quantified with the application of the condition percent mathematics results in appraisal values that can be grossly overstated. This overstatement is especially possible when one is quantifying depreciation of high-tech or specialized industrial equipment or property with long life. The market for specialized or high-tech equipment can be very thin, and when economic returns are reduced by competition or technical obsolescence, the alternative use of the assets may be nil.

Perhaps a good way to end this paper would be to quote Robley Winfrey, the author of *Iowa State University Bulletin 125*. On page 9, the following paragraph is found:

> While the author strongly recommends the development and use of retirement data and survivor curves as the basis of estimating probable life of property units, he does not mean to infer that

> expert judgment should be done away with in favor of pure statistical treatment. Each individual item, each group of items, and each property or company must be dealt with in light of its present and probable future economic trends, art of manufacture, and management policies. Tables of probable service life, type survivor curves statistical methods are simply means of recording past experience to use in predicting what future service might be.

In other words, there is no substitute for the actual study of the property under investigation. Application of market-supplied information results in appraisal values that can withstand scrutiny.

APPENDIX D

FINANCIAL AND BUSINESS INFORMATION SOURCES

We often are asked about how to obtain the financial information that can be used in the return on investment models we recommend. It can be a special problem for those who are evaluating a licensing transaction *into* an industry with which they are unfamiliar. The same problem can arise when evaluating the suitability of a joint venture partner from the financial viewpoint. The only answer is to become familiar with a new industry—what drives it, who its major players are, what its outlook is, and what its vulnerability is. The following sources are available.

D.1 A STARTING POINT

We suggest the following references, since many of the information sources are arranged by Standard Industrial Classification (SIC) code.

Executive Office of the President, Office of Management and Budget, *Standard Industrial Classifications Manual*.

Congressional Information Service (a private firm), *American Statistics Index: A Comprehensive Guide and Index to the Statistical Publications of the United States Government*. This is a very comprehensive index of U.S. government sources.

D.2 FINANCIAL DATA

Armed with the SIC code of the industry to be researched, one can first extract the names of the companies within that industry and then view their financial performance in the following sources. We cite the sources in their hard-copy format, although many are also available in electronic form.

(i) Moody's Investors Services, 99 Church Street, New York, NY 10007. This firm publishes several series of information that provide detailed balance sheet and income statement data on a current and historical basis, together with company background and securities.

Industrial Manual—Annual two-volume publication that provides information on companies listed on the New York and American Stock Exchanges

Moody's Industrial News Reports—Published twice each week to update on a current basis the *Industrial Manual*

Public Utility Manual—Contains similar information on over 475 electric and gas utilities, gas transmission companies, telephone and water companies

Public Utility News Reports—Published twice weekly, and updates the annual *Manual*

International Manual

Bank and Finance Manual
Municipal & Government Manual
OTC Industrial Manual
Transportation Manual

Bond Survey—Published weekly; provides an economic overview and review of current bond offerings, changes in ratings, and yields of various bond groupings

(ii) Standard & Poor's Corporation, 25 Broadway, New York, NY 10004. This firm publishes balance sheet and income statement data, as well as company information and industry data in several forms:

Corporation Records—Company history and historical financial information

S&P Reports—Current financial and market data on:

New York Stock Exchange companies
American Stock Exchange companies
Over-the-counter companies

The Outlook—Published weekly, provides selected information on industries and individual companies

Statistical Service, Current Statistics—Published monthly and annually: provides bond prices and yields, earnings, preferred stock prices, and stock price indexes for industry groups

Stock Guide—Provides abbreviated financial information on over 5,300 common and preferred stock issues

Bond Guide—Summarizes information on over 6,700 bond issues

Earnings Guide—Provides consensus of Wall Street earnings estimates on over 3,300 publicly traded stocks

Industry Surveys—Two-volume annual publication with market data and forecasts by industry groupings

(iii) Value Line Publishing, Inc., 711 Third Avenue, New York, NY 10017. This firm's offerings include a wide range of investor-related information:

The Value Line Investment Survey—Composite industrial data and yields of various types of bonds and debt

Investment Survey—Individual financial information on approximately 1,600 companies

Value/Screen II—A computerized version of the investment surveys, providing this financial information on disk monthly with software to manipulate it

(iv) C.A. Turner Utility Reports, P.O. Box 1050, Moorestown, NJ 08057

Financial Statistics of Public Utilities

(v) Thomson Financial, 195 Broadway, New York, NY 10007

Monthly Comments—Observations and earnings estimates on individual companies, as well as industry groups

(vi) Capital Publications, Inc., 1101 King Street, P.O. Box 1454, Alexandria, VA 22313-2054

Blue Chip Economic Indicators—Monthly publication summarizing what economists are projecting about the U.S. outlook

(a) COMPANY ANNUAL REPORTS

(i) Ibbotson Associates, 225 North Michigan Avenue, Suite 700, Chicago, IL 60603

Stocks, bonds, bills, and inflation

(ii) National Quotation Bureau, Inc., The Harbor Side Financial Center, 600 Plaza III, Jersey City, NJ 07311-3895.

The NQB Monthly Price Report—Monthly publication of stock prices of over-the-counter and other small stock issues

(iii) Prentice-Hall, Tax & Professional Practice Division, Englewood Cliffs, NJ 07632.

Almanac of Business and Industrial Financial Ratios—Provides balance sheet and income statement financial ratios for all major U.S. industry groups

(iv) The Robert Morris Associates, One Liberty Place, 1650 Market Street, Suite 2300, Philadelphia, PA 19103-7398.

Annual Statement Studies—Provides summaries of balance sheet and income statement statistics for 382 industries identified by titles and SIC codes

RMA also provides a wide variety of information on *lending and credit analysis*, as well as international lending practices and credit information.

(v) Gale Research Company, Book Tower, Detroit, MI 48226.

Ward's Business Directory of U.S. Private and Public Companies—Summary description and financial data on approximately 133,000 companies

(vi) CompuServe, 5000 Arlington Centre Blvd., P.O. Box 20212, Columbus, OH 43220. CompuServe is an online database system that provides access to an extraordinary amount of business information for more than 10,000 public companies, including business descriptions, stock price information, and financial statements. The system also provides access to newspaper and magazine archives that can be searched by keyword.

(b) STAT-USA. STAT-USA is a service of the U.S. Department of Commerce, and is *the* site for the U.S. business, economic, and trade community, providing authoritative information from the federal government. Access to this Web site is via www.STAT-USA.gov. Two of its premiere services include:

1. State of the Nation—Access this area for current and historical economic and financial releases and economic data. Stay informed with direct access to the federal government's wealth of information on the U.S. economy. Access to these files is provided for subscribers only.
2. GLOBUS & NTDB—Access this area for current and historical trade-related releases, international market research, trade opportunities, country analysis, and the trade library.

Also posted on this site are the speeches and comments of Federal Reserve Chairman Alan Greenspan. Regularly, Mr. Greenspan testifies before Congress about the health and prospects of the nation. His speeches are a succinct description of the U.S. economy.

(c) SEC—EDGAR. The place to go for companies' 10Ks and other SEC filings is the EDGAR site of the Securities and Exchange Commission. At this location you will find access to the filings of all public companies. EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system, performs automated collection, validation, indexing, acceptance, and forwarding of submissions by companies and others who are required by law to file forms with the U.S. Securities and Exchange Commission (SEC). Its primary purpose is to increase the efficiency and fairness of the securities market for the benefit of investors, corporations, and the economy by accelerating the receipt, acceptance, dissemination, and analysis of time-sensitive corporate information filed with the agency.

Not all documents filed with the Commission by public companies will be available on EDGAR. Companies were phased in to EDGAR filing over a 3-year period, ending May 6, 1996. As of that date, all public domestic companies were required to make their filings on EDGAR, except for filings made in paper because of a hardship exemption. Third-party filings with respect to these companies, such as tender offers and Schedules 13D, are also filed on EDGAR.

Some documents are not yet permitted to be filed electronically, and consequently will not be available on EDGAR. Other documents may be filed on EDGAR voluntarily, and consequently may or may not be available on EDGAR. For example, Forms 3, 4, and 5 (security ownership and transaction reports filed by corporate insiders) and Form 144 (notice of proposed sale of securities) may be filed on EDGAR at the option of the filer. Similarly, filings by foreign companies are not required to be filed on EDGAR, but some of these companies do so voluntarily. (Note: Until recently, this was also the case with Form 13F, the reports filed by institutional investment managers showing equity holdings by accounts under their management. However, on January 12, 1999, the SEC released a rule to require electronic filing of the form as of April 1, 1999.)

It should also be noted that the actual annual report to shareholders (except in the case of investment companies) need not be submitted on EDGAR, although some companies do so voluntarily. However, the annual report on Form 10-K or 10-KSB, which contains much of the same information, is required to be filed on EDGAR.

Filers may choose to accompany their official filings with a copy in PDF. In order to read a PDF document, you need an Adobe Acrobat reader.

Direct access to this site can be found at sec.gov/edaux/searches.htm.

D.3 CD-ROM DATABASES

COMPUSTAT, Standard & Poor's Compustat, Englewood, CO

Disclosure/Worldscope/Global, Disclosure Inc., Bethesda, MD

DIALOG OnDisc, Dialog Information Services Inc., Palo Alto, CA

Financial Times Full Text, FT Business Enterprises Ltd., London, England

Company and Industry Reports, LEXIS-NEXIS, Dayton, OH

Moody's International Company Data, Moody's Investors Service, Charlotte, NC

OneSource CD/Corporate—International Public Companies, OneSource Information Services Inc., Cambridge, MA

Compact D/Canada, Disclosure Inc., Bethesda, MD

Value Line Data Base II, Value Line Inc., New York, NY

D&B EUROPA, Dun & Bradstreet Ltd., High Wycombe, Bucks, England

ASTREE (l'annuaire commercial electronique), Bureau van Dijk SA, Brussels, Belgium

German Business CD-ROM, Data Media GmbH, Koln, Germany
TSR-Company Information Files, Tokyo Shoko Research Ltd.,Tokyo, Japan
EURODUN, Dun & Bradstreet France S.A., Paris, France
KOMPASS EUROPE, Reed Information Services, West Sussex, England

D.4 ECONOMIC DATA

(i) U.S. Bureau of the Census, *Current Population Reports*. Every five years, the Bureau publishes economic census data on agriculture, mineral industries, manufacturing, retail trade, wholesale trade, transportation, governments, construction industries, and service industries.

(ii) Bureau of Labor Statistics, *Monthly Labor Review*

OBERS Area Economic Projections (1985)

(iii) Federal Reserve Bank of St. Louis, P.O. Box 66953, St. Louis, MO 63166-6953

U.S. Financial Data—Weekly review of U.S. economic activity with yields and interest rates on selected securities

(iv) U.S. Department of Commerce

U.S. Industrial Outlook—Annual publication covering international economic outlook, as well as industry reviews and forecasts for all major industry groups

D.5 INTERNATIONAL DATA

U.N. Yearbook of International Trade Statistics

U.N. Demographic Yearbook

UNESCO Statistical Yearbook

International Monetary Fund:

Government Finance Statistics Yearbook

Balance of Payments Statistics

Direction of Trade Statistics

The Economist (private publication)

D.6 SOURCES OF SOURCES

(i) *Where to Find Business Information,* John Wiley & Sons, Inc., 1982. Lists sources of business information by subject. As an example, under the heading "Energy, Solar—World Solar Markets," one finds a reference to a monthly report that monitors worldwide solar energy use published by the *Financial Times* in London.

Other sample references include "Exploration and Economics of the Petroleum Industry," "Fusion Power Report," and "Pharmaceutical Marketletter."

(ii) *Instant Information,* Joel Makower and Alan Green, Tilden Press, Inc., 1987. Provides lists of organizations arranged by state, as well as an index by organization and subject.

Provides the name and address of the organization, as well as a brief description of its activities. Examples are entries ranging from the Naval Blood Research Laboratory in Boston to the Pilgrim Society in Plymouth, MA.

(a) CORPORATE LIBRARIES. Many large corporations maintain libraries and information services that are available to the public and that, of course, are concentrated in the industrial interests of the company. Other examples are the Cast Iron Soil Pipe Institute in McLean, VA, and the Brown Swiss Cattle Breeders Association of the USA in Beloit, WI.

(i) ***Litigation Services Resource Directory,*** **John Wiley & Sons, Inc., 1992.** This annual publication lists books, encyclopedias, and magazine or journal articles grouped by subject, as well as professional and technical associations and institutes.

(ii) ***Encyclopedia of Business Information Sources,*** **Paul Wasserman et al., Gale Research Company, 1988**

(iii) ***Directory of Industry Data Sources, The U.S. and Canada,*** **Ballinger Publishing Company, 1982**

(iv) ***Executive's Business Information Source Book,*** **Phil Philcox, Prentice-Hall, 1990.**

(v) ***Manufacturing USA: Industry Analyses, Statistics, and Leading Companies,*** **Arsen J. Darnay, Gale Research, Inc., 1989**

(vi) ***The Business Information Source Book,*** **Gustav Berle, John Wiley & Sons, Inc., 1991**

(vii) ***Thomas Register,*** **Thomas Publishing Company, One Penn Plaza, New York, NY 10001.** Twenty-six volumes listing companies by products and services, cross-indexed to company profiles and catalog files. Also offered in regional format and electronically. If one wants to know who makes what, this is the place to start.

(viii) ***Encyclopedia of Business Information Sources,*** **Gale Research, Gale Group.** Approximately 21,000 citations of all types arranged by subject

(ix) ***Handbook of Business Information: A Guide for Librarians, Students, and Researchers,*** **Diane Wheeler Strauss, Libraries Unlimited, Inc., 1988.** A comprehensive source of sources

Corporate Technology Directory **(*CORPTECH*), Corporate Technology Information Service, Inc., 12 Alfred Street, Suite 200, Woburn, MA 01801-9998.** Information on approximately 35,000 companies that manufacture or develop high-technology products. Four volumes published annually, cross-referenced by business, product, and location.

(x) DIALOG, Dialog Information Services, Inc., 3460 Hillview Avenue, Palo Alto, CA 94304. Through its DIALOG information service, this firm offers a huge array of online databases, from general business data to specific company and industry information. Searching is facilitated, and one can collect a great deal of information in a short time.

D.7 ROYALTY RATE INFORMATION

Presented below are sources of information for royalty rates from real-world market transactions. The sources presented include:

- Intellectual Property Research Associates
- RoyaltySource
- The Financial Valuation Group
- Licensing Economics Review

(a) INTELLECTUAL PROPERTY RESEARCH ASSOCIATES. Intellectual Property Research Associates (IPRA) was founded in 1993 by Russell L. Parr, CFA, ASA, to research the value of intellectual property, including patents, trademarks, and copyrights. The company has gathered an impressive amount of information on royalty rates and intellectual property values. The information in their publications includes details about the companies involved in a particular transaction as well as a description of the intellectual property that was transferred and the financial terms associated with each reported transaction. The results of their research are available to you in the various reports listed below. The reports offered by IPRA are:

- *Royalty Rates for Trademarks and Copyrights,* second edition
- *Royalty Rates for Technology,* second edition
- *Royalty Rates for Pharmaceuticals and Biotechnology,* fourth edition

All three of these books can be ordered directly from ipresearch.com.

(i) *Royalty Rates for Trademarks and Copyrights*, Second Edition. Too often, people think of t-shirts, caps, or key chains when they hear about licensing transactions. Too often, they think only of trinkets and trash. However, this old-fashioned approach to licensing is increasingly outdated. Licensing has become the ultimate marketing strategy, and the approach to licensing and merchandising has changed dramatically in the last 10 years. Increasingly, corporate America and European companies think of licensing and merchandising as part of a longer-term strategic commitment, rather than a short-term approach for increasing revenues. In addition to royalty income, licensing provides significantly increased consumer awareness that could only be otherwise obtained from increases to already hugely expensive advertising campaigns. Trademark and copyright royalty rate information is provided in this book for companies in the following industries:

Airline	Furniture
Apparel	General merchandise
Architecture	Movies
Art	Music
Boats	Party Goods
Celebrities	Publishing
Communications	Restaurants
Corporate names	Sports
Electronics	Toys
Food	University names
Franchises	Medical

(ii) ***Royalty Rates for Technology*****, Third Edition.** This new report gives you information about technology royalty rates. It also shows other measures of technology value, including license fees and milestone payments. *Royalty Rates for Technology* gives you the information you need to negotiate valuable license agreements. The trend for royalty rates continues upward. Large corporations are looking at their intellectual property portfolios as key assets that deserve specialized management. They are establishing subsidiaries with the sole purpose of managing and licensing their technology. Many other companies are completely dependent on their technology for continued survival in the marketplace, and these forces are driving the royalty rates to new levels. *Royalty Rates for Technology* will let you see the new levels to which royalty rates are rising. Royalty rate information is provided for technology transfers that have happened in the following industries:

Royalty Rate Information

Aeronautics	Electronics	Natural resources
Agriculture	Entertainment	Photography
Automotive	Financial	Semiconductors
Chemistry	Food	Sports
Communications	Franchises	Steel
Computer hardware	Glass	Toys
Computer software	Household products	Waste treatment
Construction	Mechanical	
Electrical	Medical	

(iii) ***Royalty Rates for Pharmaceuticals and Biotechnology*****, Fifth Edition.** *Royalty Rates for Pharmaceuticals and Biotechnology* is a comprehensive tool to help you maximize the value of biotechnology and pharmaceutical technology. It shows how to price technology for licensing and strategic alliances.

Part One presents the theory of quantifying technology value and royalty rates for use in transferring technology. This section introduces a business framework to use as the foundation of technology valuation, reviews the most commonly used royalty rate derivation methods, and explains the strengths and weaknesses of each. Subsequent chapters demonstrate how to estimate the investment risk associated with different stages of technology and use of investment rate of return analysis to value technology and derive royalty rates.

The second part of this report presents detailed financial information about third-party transactions that center on the transfer of biotechnology and pharmaceutical technology. The players are identified, the technology is described, and all of the financial terms available are reported. Details are reported for license agreements and strategic alliances.

(b) ROYALTYSOURCE. Whether for negotiation, valuation, or infringement damage measurement, this division of AUS Consultants has been investigating and tracking royalty rate information from arm's-length licensing transactions for over 15 years. The result of this continuous investigation has yielded a searchable database of technology and trademark sale and licensing transactions that can minimize the time spent to research the marketplace for this information.

RoyaltySource continues to research all forms of media for reported transactions. Their intellectual property transaction database includes:

- Licensee and licensor, including industry description or code
- Description of the property licensed or sold

- Royalty rate details
- Other compensation, such as upfront payments or equity positions
- Transaction terms, such as exclusivity, geographical restrictions, or grant-backs
- Source of information

Customized searches are provided from a consultant that works with you to find exactly what you need. Access to this database is via royaltysource.com.

(c) THE FINANCIAL VALUATION GROUP. The Financial Valuation Group is an Internet site that provides a broad range of services to those involved in the appraisal professional. The services are primarily directed at professionals who are focusing on the valuation of businesses. However, they have developed a proprietary database of empirical research on intellectual property. This research is a compilation of intellectual property transactions gleaned from publicly available documents. Industries covered include sporting goods, software, pharmaceuticals, apparel, medical, restaurants, and telecommunications. The database is searchable by Standard Industrial Classification (SIC) code or North American Industry Classification System (NAICS) code. Reports on individual transactions can be purchased online, but the identities of the licensor and licensee are not provided. Information can be obtained at fvgi.com.

(d) LICENSING ECONOMICS REVIEW. This bimonthly newsletter, published by AUS Consultants, reports intellectual property transaction data for all forms of intellectual property. Transactions involving licenses, gifts, outright sales, and strategic alliances are reported. The information in each issue includes details about the companies involved in a particular transaction as well as a description of the intellectual property that was transferred and the financial terms associated with each reported transaction. The newsletter also reports the financial terms of infringement litigation damages awards and settlements. Contact Beth McAndrews at (856) 234-1199, AUS Consultants, for a free examination issue of this publication.

D.8 PUBLICATIONS

Listed below are some of the books that we have in our library along with the publishers' description of each book.

(i) *Trademark Valuation*, Gordon V. Smith, John Wiley & Sons, 1996. Trademarks are among the most intangible of assets, yet they can have enormous value for an enterprise. The pink color of Owens-Corning insulation, McDonald's golden arches, the unique shape of the classic Coke bottle, these words, symbols, and colors embody the goodwill of the companies and institutions they represent. Potent cultural icons, trademarks are associated with quality, security, and even a sense of belonging in the minds of consumers. But how, exactly, do you determine the value of your trademark? How do you know if you are getting the best return on investment from your trademark? And what are the potential advantages and disadvantages of licensing your trademark, or even selling it outright?

The first guide devoted exclusively to an increasingly important area of intellectual property, *Trademark Valuation* provides answers to these and all your questions about how to value your trademark and to develop strategies for exploiting its full potential.

Gordon V. Smith, a consultant with more than three decades of experience advising clients on the value of their intellectual property, dispels common myths and misconceptions about trademarks and replaces them with logical, down-to-earth, practical guidance. Employing his unique talent for translating complex legal and financial concepts into plain English, he acquaints you with all the key legal and financial concepts, terms, principles, and practices, and guides you step-by-step through the entire valuation process. And, perhaps most importantly, he shows you how to use the information derived from your valuation to develop surefire strategies for getting the most out of your trademark.

With the help of dozens of case studies, Smith places the subject of trademark management in a contemporary, real-world context. He examines the role of crucial factors such as trademark longevity and offers guidelines for analyzing current and future market trends. He explores the implications of the emerging world marketplace. And he considers various worst-case scenarios, including infringement and piracy bankruptcy, acts of consumer terrorism, and other potential crises that can have a disastrous effect on the value of a trademark.

Trademark Valuation is required reading for valuation experts, trademark specialists, and licensing executives, as well as the accountants and attorneys who work with them. It is also a valuable reference for advertising executives, business appraisers, and institutional investors.

(ii) *Intellectual Property: Licensing and Joint Venture Profit Strategies*, 2nd Edition, Gordon V. Smith and Russell L. Parr, John Wiley & Sons, 1998. Companies are increasingly looking to their intellectual property (patents, trademarks, formulas, copyrights, brand names, distributions systems, etc.) as a profit center. As they try to extract more value from their holdings, some of which have been left dormant for years, many are looking beyond their own core products to partnerships with outside industries. Intellectual property owners need to know how to exploit their product to the fullest extent.

(iii) *Early-Stage Technologies: Valuation and Pricing*, Richard Razgaitis, John Wiley & Sons, 1999. This popular book is a complete guide to technology risk management, valuation, and pricing. It shows how to identify key early-stage technologies and determine the value to individual companies, as well as provides methods for pricing precommercial products for sale or licensing. Topics include methods of valuation, the identification of risk factors, sources of value, the psychology of buying and selling, equity realizations, and negotiation strategies. Written by a professional who has spent his career making business decisions about embryonic technology investments, this book is definitely worth reading.

(iv) *The Valuation of Technology: Business and Financial Issues in R&D*, F. Peter Boer, John Wiley & Sons, 1999. "*The Valuation of Technology* is a timely and thoughtful book on a critical issue in the global business arena. Peter Boer's insights constitute important reading for leaders in all fields."—Jeffrey E. Garten, Dean. Yale School of Management

"*The Valuation of Technology* fills a critical void for those executives who wish to upgrade technology decision making from an art to a more definable science."—George B. Rathmann, Chairman and CEO, ICOS Corporation

Technology valuation has replaced risk management as the management approach to analyzing the profitability of current and future technology projects. *The Valuation of*

Technology: Business and Financial Issues in R&D explores the link between research and development and shareholder value in a comprehensive way, providing mathematical models for the valuation of R&D projects and answering critical questions on how to analyze technology initiatives and forecast their future value. This professional reference creates a common language for understanding the financial issues relating to R&D and provides analytical tools that businesspeople, scientists, and engineers can use to assess new technologies, R&D projects, and R&D budgets—thereby facilitating communication and producing more enlightened decisions. It also identifies several common fallacies in performing valuation of technology-based properties, including adding together enterprises with different time horizons and failing to recognize the value of risk-minimization strategies. Among the many remarkable features of *The Valuation of Technology* are that it offers quick, easy models for technology valuation that readers can use immediately; includes a method for the quantitative valuation of technology projects; shows readers how to build a project spreadsheet and assign value to research projects; and comes with a disk containing templates for a selection of mathematical models provided in the book.

(v) ***Value Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value*****, Patrick H. Sullivan, John Wiley & Sons, 2000.** Intellectual capital provides a significant competitive advantage for companies. Intangible assets—product innovation, patents, copyrights, know-how, and corporate knowledge—have become as important as brick, mortar, and equipment. This informative reference provides strategies to meet the needs of those interested in the financial implications of intellectual capital. This book provides a corporate and financial executive's handbook to the new world of intangible assets and explains the new, boundary-expanding world of intellectual assets in which translating an innovative idea into bottom-line profits involves a tightly focused strategy with clear directives for making it happen.

(vi) ***Technology Licensing: Corporate Strategies for Maximizing Value*****, Russell L. Parr and Patrick H. Sullivan, John Wiley & Sons, 1996.** Russell Parr and Patrick Sullivan, along with a team of distinguished experts working at the front lines of technology licensing, reveal how today's top technology-based companies are maximizing the value of and return on their intellectual property. They also offer hands-on advice and guidance on how you can do the same in your company. With the help of numerous real-life case studies that demonstrate licensing strategies now used by DuPont, Xerox, Kodak, AlliedSignal, Hewlett-Packard, Dow Chemical, and other industry leaders, they tell you everything you need to know to:

- Determine where technology licensing best fits in your company's overall business strategies
- Establish a successful licensing program tailored to your company's vision and goals
- Create and successfully manage a technology portfolio
- Quickly and easily calculate royalty rates
- Put the lessons learned at top technology-based companies to work in your company

"Technology licensing strategies are now key instruments for accomplishing the corporate visions set forth by future-thinking companies. Look at any corporate mission

statement and you will find the seeds of a strategy-based technology licensing program."—Russell Parr and Patrick Sullivan

In today's volatile, hypercompetitive global marketplace, cooperation and the sharing of intellectual property are keys to success. Of course, one of the most valuable forms of intellectual property is technology. More often than not, innovation and increased market penetration are the direct result of combining technologies from a variety of sources. Consequently, many companies have begun to devote more and more of their strategic efforts to discovering the best ways to manage technology so as to maximize value and return. For instance, AT&T has set up an independent business group to manage its intellectual property as a separate profit center, while other companies continue to run licensing through their legal and R&D departments. Which approach makes the most sense for your company, and why? Get the answers to these questions and many others in *Technology Licensing*.

(vii) *Valuation: Measuring and Managing the Value of Companies*, third edition, Tim Koller, Jack Murrin, and Tom Copeland, John Wiley & Sons, 2000. Hailed by financial professionals worldwide as the single best guide of its kind, *Valuation* provides crucial insights into how to measure, manage, and maximize a company's value. This long-awaited third edition has been updated and expanded to reflect business conditions in today's volatile global economy. In addition to all new case studies, it now includes in-depth coverage of real options and insurance companies, along with detailed instructions on how to drive value creation, and expert advice on how to manage difficult situations. It describes techniques for multibusiness valuations, valuation within an international context, and valuation for restructurings and mergers and acquisitions. It includes a companion Web site featuring an interactive valuation-modeling application.

Written for those wanting to improve their ability to create value for the stakeholders in their businesses. It addresses estimating the value of alternative corporate and business strategies, assessing major transactions such as mergers, divestitures, recapitalizations, and share repurchases.

APPENDIX E

SAMPLE ROYALTY RATE INFORMATION

In the resource appendix we identified several sources of information for finding royalty rates associated with license transactions. This appendix provides sample and summary information from several of the sources listed in the resource appendix.

E.1 TECHNOLOGY ROYALTY RATES

Exhibit E.1 summaries royalty rates across all the industries covered in *Royalty Rates for Technology, Third Edition*. Industries covered by this book include: Aeronautics, Agriculture, Automotive, Chemistry, Communications, Computer Hardware, Computer Software, Construction, Electrical Electronics, Entertainment, Financial, Food, Franchises, Glass, Household Products, Internet, Mechanical, Medical, Natural Resources, Photography, Semiconductors, Sports, Steel, Toys, and Waste Treatment.

The royalty rates reported are grouped by rate, as a percent of sales, and graphed by the frequency of their appearance. Excluded from this graph are instances where royalty

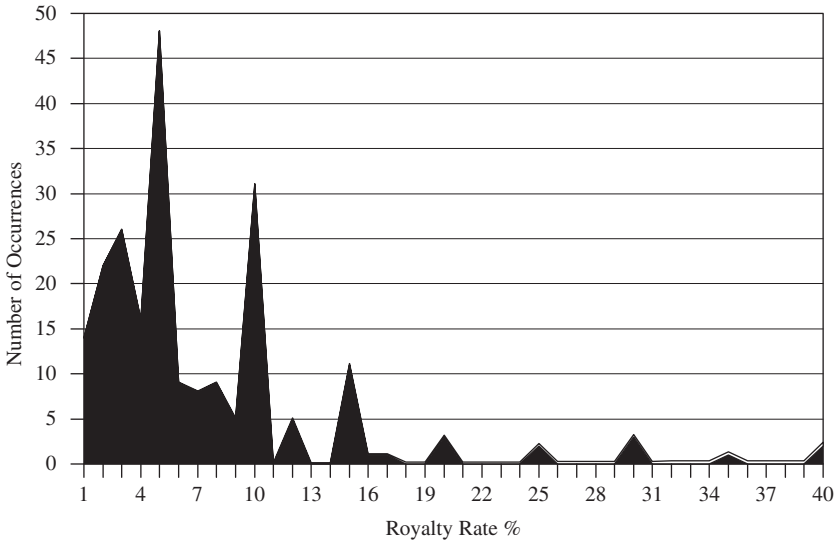


EXHIBIT E.1 TECHNOLOGY ROYALTY RATE FREQUENCY

rates are specified on a per unit basis. Generally royalty rates range between 1% and 40% of sales but the vast majority of royalty rates are 15% of sales or less.

A cumulative analysis of the same information provides the following insight:

28% of the royalty rates are 3% or less,
36% of the royalty rates are 4% or less,
58% of the royalty rates are 5% or less,
62% of the royalty rates are 6% or less,
66% of the royalty rates are 7% or less,
70% of the royalty rates are 8% or less,
73% of the royalty rates are 9% or less, and
87% of the royalty rates are 10% or less.

Presented below are sample licensing agreement summaries from *Royalty Rates for Technology, 3rd Edition.*

AUTOMOTIVE—AUTOMATICALLY DIMMING MIRRORS

Licensor: Research Frontiers Incorporated
Licensee: Global Mirror GmbH & Co. KG
Royalty: 5% to 8% of net sales

Research Frontiers Incorporated announced that Global Mirror GmbH & Co. KG has obtained a worldwide license to manufacture and sell automatically dimming SPD rear-view mirrors using Research Frontiers' fast-responding SPD light-control technology. The license covers rear-view mirrors for trucks and other commercial vehicles such as vans, buses, sport utility vehicles and other light trucks, as well as passenger cars, motorcycles, boats, trains, and aircraft. The license also restricts new licenses from being granted in the truck mirror original equipment market for a period of time if certain sales milestones are met with respect to commercial vehicles in Classes 5 through 8 with gross vehicle weights in excess of 16,000 pounds. Under the agreement, new licenses covering SPD mirrors can still be granted to third parties in the passenger car, sport utility vehicle, motorcycle, and light truck markets, in the heavy truck aftermarket, and with respect to all vehicles weighing 16,000 pounds or less. In addition to minimum annual, under the agreement with Global Mirror, Research Frontiers will receive a rate of between 5% to 8% of net sales of licensed products.

The market for self-dimmable rear-view mirrors has reportedly grown, as of 1999, at a 35% annual rate since 1992. At present, electrochromic self-dimming mirrors are utilized in many automotive models and account for about 6 million of the estimated annual worldwide production of 150 million rear-view mirrors for new cars and trucks. Currently, less than 5% of all vehicles worldwide have automatic dimming interior mirrors, but industry participants estimate that eventually one half of the 50 million light vehicles produced every year will contain an automatically dimming mirror.

Research Frontiers is a technological leader in the development and licensing of suspended particle devices (SPDs)—electrically operated light control devices using proprietary particle suspensions and films. SPD technology permits light transmission to be electrically controlled instantly either automatically by means of a photocell or other sensing or control device, or adjusted manually by the user. Devices which can use SPD technology include variable light transmission "smart" windows, variable light transmission eyewear (including prescription and nonprescription sunglasses and sports goggles), self-dimmable automotive

sunroofs, sunvisors, and rear-view mirrors, as well as enabling brighter easier to read flat panel information displays for use in computers, television, telephones, and other electronic instruments. Research Frontiers currently has agreements in effect covering smart windows, automotive mirrors and sunvisors, eyewear, displays, and other products with major international corporations and holds or has rights in about 350 patents and patent applications on SPD technology throughout the world.

Global Mirror GmbH the world's largest manufacturer of commercial vehicle mirror systems is an affiliated group of companies that operate five manufacturing facilities on four continents. (December 7, 1999)

AUTOMOTIVE—DIESEL ENGINES

Licensor: Reg Technologies, Inc.
Licensee: Advanced Ceramics Research
Royalty: 5% on sales

Reg Technologies, Inc. and Advanced Ceramics Research entered into a license agreement for the Rand Cam™ Technology based motors for 10 horsepower or less for the SBIR No 1-144 Navy Contract for the remote piloted applications. Advanced Ceramics will be using the technology in remotely piloted vehicles it is building under a Navy contract. Under the agreement REGI U.S., Inc will receive a royalty fee of 5% of the purchase price for commercial and Navy applications for the Rand Cam Engine, and 30% of the value of the Navy phase I contract (typically $50,000 to $100,000), plus 50% of the value of the phase II contract (typically $500,000 to $750,000).

Reg Technologies, Inc., is based in Richmond, British Columbia, and develops and builds an axial vane-type rotary engine known as the Rand Cam™ Direct Charge (RC/DC) Engine. This type of rotary engine incorporates winged rotor technology that improves sealing and reduces friction. The patent for the RC/DC engine was issued on July 4, 1995, but no marketable product has been developed yet. Reg Technologies owns 51% of Rand Energy Group, which in turn owns 52.5% of REGI US, Inc. REGI U.S. Inc. is in the business of designing, developing, testing, and manufacturing axial vane type rotary engines.

Advanced Ceramics Research is based in Tucson, Arizona. The company was founded in 1989 to develop high temperature and high strength ceramic materials and processes. The two main business areas are: Fibros Monoliths (FM) and Rapid Prototyping/Rapid Manufacturing (RP/RM). Services and products offered include: AquacoreTM (water-soluble core material), lab mills, and gel casting slurries (for casting of large, complex, ceramic parts). (April 2002)

COMMUNICATIONS—CDMA

Licensor: Qualcomm
Licensee: China Unicom Limited
Royalty: 5.25% of sales

Qualcomm and China Unicom have agreed to a framework agreement, but no contracts or license agreements have been signed. The reported royalty rate that Qualcomm would receive from China Unicom in exchange for Qualcomm's CDMA technology is 5.25% of sales.

Qualcomm was founded in 1985 and developed the Code Division Multiple Access (CDMA) technology, which is now used in wireless networks and handsets around the

world. By making efficient use of the radio frequency spectrum, CDMA allows more people to use the airwaves simultaneously, without static or interference. The telecommunications industry is now migrating to CDMA2000 technology.

China Unicom Limited operates one of the largest cellular communications companies in China. Based in Hong Kong, China Unicom conducts business in 21 provinces and numerous municipalities throughout the country, providing nationwide radio paging, international and domestic long distance telephone services, data communications including Internet and IP telephony services and other related value-added services. (June 17, 2000)

COMPUTER HARDWARE—PC SMART CONNECTOR

Licensor: Acticon Technologies LLC
Licensee: Keithley Instruments
Royalty: 3% on sales

Acticon Technologies LLC and Keithley Instruments entered into a license agreement under which Keithley agreed to pay a *3% royalty* for past and future sales of its "smart connector" PC cards used in mobile computer communications. As part of the agreement, Acticon agreed to withdraw its patent infringement lawsuit against Keithley. Keithley also acknowledged that Acticon's "smart connector" patents were valid and infringed. General Patent Corporation has negotiated twenty-eight license agreements on behalf of Acticon for the smart connector technology. As of the date of the Keithley license, General Patent Corporation had brought six patent infringement actions relating to the Acticon patents, all of which resulted in the defendants licensing the Acticon patents. There are three other lawsuits currently pending.

Acticon Technologies LLC is based in Suffern, New York, and is a wholly owned subsidiary of General Patent Corporation International, an intellectual property management firm. Acticon was established in 1996 to develop applications for four patents related to data communications and computer connectivity. Acticon was subsequently spun off as a separate limited liability company in 2000. The patents owned by Acticon relate to modem technology and computer connectivity crucial to the Internet, networking, and other types of computer communications. According to Acticon, over 80% of PC card modems and PCMCIA form-factor I/O devices are licensed under the Acticon patents.

Keithley Instruments is based in Cleveland, Ohio and designs and manufacturers electronic testing and measurement devices. By building from its strength in electrical measurement solutions for research, Keithley has become a production test technology leader through working partnerships with leaders in fields as diverse as global communications, semiconductors, and components manufacturing. With more than 600 sales representatives in more than 80 countries, sales for 2002 exceeded $96 million. The company has subsidiaries or sales offices in Belgium, China, Finland, France, Germany, Great Britain, India, Italy, Japan, Korea, the Netherlands, Sweden, and Taiwan. (October 2001)

ELECTRONICS—CD-R TECHNOLOGY

Licensor: Royal Philips Electronics
Licensee: Various
Royalty: 3% of sales

Royal Philips Electronics' CD-R technology is licensed to a number of manufacturers, all of which enjoy the following terms: an upfront payment of 3,000,000 Japanese Yen,

and a running royalty of 3% of the net selling price of each CD-R disc, with a minimum of 10 Yen per unit sold. Those companies that join the reward program have an alternative royalty of US$0.06 during the reward period, and the licensee also has the right to use applicable CD-R system logos.

Licensees include Burstein Technologies, Eastman Kodak Company, Gigastorage Corporation, Imation Corporation, Lead Data, Inc., Mitsui Advanced Media, Inc., MRT Technology LLC, Prodisc Technology Recordable, Media Corporation, Ritek Corporation, and TDK Electronics Corporation.

Royal Philips Electronics, a subsidiary of Koninklijke Philips Electronics N.V., manufactures lighting products, consumer electronics (audio/video), monitors, shavers, steam irons, semiconductors, color picture tubes, DVD recorders, medical imaging equipment, and dental care (electronic toothbrushes). In 2002 Philips had sales of EUR 31.8 billion and employed 170,000 people, and had about 150 operation sites in 35 countries. (April 2003)

ELECTRONICS—BAR CODE SCANNER

Licensor: Symbol Technologies, Inc.
Licensee: PSC, Inc.
Royalty: 3% of sales but 9% of sales litigation award

PSC, Inc. announced it will appeal a February 2000 district court decision requiring that PSC is obligated to pay Symbol Technologies, Inc. a *9% royalty* on certain handheld scanners not sold directly to retailers. The parties agreed to the 9% royalty rate in 1991, prior to PSC's acquisition of Spectra-Physics' Data Capture Group in July 1996. Because Spectra-Physics had an agreement with Symbol that carried a *3% royalty* for handheld scanners, PSC began paying Symbol a 3% royalty according to the terms of the Spectra-Physics agreements. The decision did not specify the amount owed to Symbol by PSC. It is estimated that PSC's past royalty exposure based on the ruling is between $3 and $6 million.

Symbol Technologies, Inc. is based in Holtsville, New York, and is a provider of wireless networking and information systems that facilitate the access, capture, and transmission of information over local area networks, wide area networks, and the Internet. Symbol possesses three core technologies for the design and manufacture of products: bar code reading devices, mobile computing devices, and network systems. The company manufactures and markets scanner integrated mobile and wireless information management systems and also provides service on these systems. Symbol's products are used in markets such as retail, transportation, parcel delivery and postal service, warehousing, hospitality, healthcare, education, and government. PSC Inc. is based in Rochester, New York, and manufactures bar code scanning and automatic data collection solutions. Its product line includes laser and nonlaser based handheld and fixed position bar code scanners, portable data terminals, warehouse management software, bar code scan engines and verifiers, and automated carton dimensioning systems. PSC's products are used in automated data collection solutions in retail, manufacturing, warehousing, logistics and package handling markets. (February 2000)

ENERGY—HYDROGEN REACTOR

Licensor: Hydro Environmental Resources, Inc.
Licensee: Allied Energy Inc.
Royalty: $500,000 license plus stock plus 5% to 8% royalties

Hydro Environmental Resources, Inc. (HERI) and Allied Energy Inc. entered into a non-exclusive worldwide license agreement that gives Allied Energy the right to market and manufacture HERI's ECHFR system. The ECHFR is a fuel reactor that produces clean burning hydrogen gas at a low pressure from any water source. HERI's ultimate objective is to build, market and operate a stationary power site using an ECHFR system capable of supplying power for a city of approximately 3,000 people. HERI plans to market the ECHFR technology in areas underserved by conventional power companies, including Indonesia, China, Philippines, Malaysia, Middle East, and parts of Central and South America.

Allied Energy Inc. agreed to pay HERI a one-time fee of $500,000 and 1,500,000 shares of Allied Energy common stock upon the successful completion of a demonstration test using the HERI reactor. Allied Energy has also agreed to pay HERI a royalty of 5% of net sales for products manufactured by Allied and 8% of net sales for products manufactured by HERI. Allied has the right to grant sublicenses to third parties if the terms and conditions are approved by HERI.

Hydro Environmental Resources, Inc. was formed in November 1998 to design, build, and manage inexpensive and environmentally friendly fuel and power producing systems for remote areas of the world that are without electricity and other sources of power. Since its inception, HERI's primary activity has been the development of its Electro-Chem Hydrogen Fuel Reactor (ECHFR). (October 2001)

FOOD—DIARY PRODUCTS

Licensor: Friesland Brands B.V.
Licensee: Dutch Lady Milk Industries
Royalty: 2% on net sales

Dutch Lady Milk Industries Berhad was granted a five-year license from Friesland Brands B.V. to use proprietary intellectual property, including trademarks and know-how. Friesland Brands will also provide Dutch Lady Milk with technical assistance. Dutch Lady Milk will be the sole Malaysian licensee of Friesland's branding. Under the agreement, Friesland will receive a royalty equivalent to 2% of net sales after withholdings for Malaysian taxes.

Friesland Brands B.V. is a wholly owned subsidiary of the Dutch company, Friesland Coberco Dairy Foods, that develops, produces, and sells a variety of branded dairy products and fruit-based drinks. The company was formed in its current state in 1997 with the merger of four large dairy cooperatives: Coberco, Friesland Dairy Foods, Twee Provicien, and De Zuid-Oost-Hoek. The company has a strong presence in Western Europe, Central Europe, Western Africa, and Southeast Asia. Friesland Coperco operating companies carry out operations in these areas.

Dutch Lady Milk Industries Berhad is a Malaysian company that produces and sells sweetened condensed milk, milk powder, dairy products, and fruit juice drinks. The company, Dutch Baby Milk, was established in 1965 to replace imported sweetened condensed milk with domestically produced products. Since its establishment, the company has expanded its product line to include full cream milk, yogurts, and sterilized milk. In 1983, the company changed its name from Dutch Baby Milk to Dutch Lady. (December 26, 2001)

FOOD PACKAGING

Licensor: EarthShell Corporation
Licensee: Sweetheart Cup Co.
Royalty: 20% of sales

EarthShell Corporation licensed its packaging technology to Sweetheart Cup, giving Sweetheart Cup the exclusive right to manufacture and sell EarthShell packaging products in North America. The two companies signed the deal for a ten-year period. This agreement enables Sweetheart to become the primary supplier of EarthShell Packaging plates, bowls, cups, and hinged-lid sandwich containers in North America, and closely follows the announcement of separate agreements signed in the last 90 days with DuPont and Green Earth Packaging. During the first five years, the two companies have set incremental sales goals, finishing with a sales goal of $500 million annually. EarthShell's standard licensing structure provides for a 20% royalty payment on sales of EarthShell Packaging. Sweetheart Cup will purchase the capital equipment necessary to manufacture EarthShell plates, cups, bowls, and hinged-lid sandwich containers.

EarthShell Corporation is an environmental packaging technology company that licenses its products for commercialization. EarthShell packaging is designed to be environmentally friendly, created by combining starches and inorganic materials such as limestone to form cups, plates, bowls, and hinged-lid containers and sandwich wraps. Sweetheart Cup Co. began in 1911 as an ice cream cone bakery in Massachusetts. The company has evolved over the years to be the largest manufacturer of single-use disposable food and beverage containers. Still a privately owned company, Sweetheart Cup operates 19 manufacturing and warehouse facilities across the United States and Canada. In Canada the products are sold under the name Lily Cups. (October 10, 2002)

MECHANICAL—AIR PURIFICATION

Licensor: Microgenix Ltd.
Licensee: Voicenet Australia Ltd.
Royalty: 5% of sales

Voicenet Australia Ltd. announced it had signed an exclusive license agreement for the rights to manufacture, distribute, market and sell the Microgenix air purification system in the Australasian region (defined to include Australia, New Zealand, Indonesia, Malaysia, Philippines, Singapore, Vietnam, Thailand, and Taiwan). The Microgenix Air Purification System was developed specifically to address the problems of poor air quality and cross-infection within enclosed environments and can be used in conjunction with any air handling or air conditioning systems. The unique advantage of the Microgenix System is that it has been scientifically proven to eliminate up to 100% of all known airborne virus and bacteria. In independent tests at the Centre for Chemical and Biological Defence Research at Porton Down in the United Kingdom, the Microgenix System proved 99.85%–100% effective against simulated Anthrax. Potential markets for the Microgenix products include, transport, hospitals, defence, offices, and public buildings. Voicenet will pay a royalty of 5% of sales to Microgenix.

Voicenet Australia Ltd. is publicly listed on the Australian Stock Exchange and has offices in Australia, the United States, and Chile. The core of the company's product range is the Voicenet Multi Services Platform (MSP). The MSP platform provides a delivery mechanism for what is known within Voicenet as "Interaction Relationship Management" (IRM) technology. This is the ability to host and launch multiple applications which are

affiliated with Customer Relationship Management (CRM), Computer Telephony Integration, Voice Portals, Speech enabled IVR, Web content delivery, Telemarketing, Text to Speech delivery, corporate customer access applications, and the like.

Microgenix Ltd. is based in Toronto, Canada, and produces air purification units developed specifically to address the problems of poor air quality within enclosed environments. Microgenix air purification systems can be used in conjunction with any air handling or air conditioning system to help eliminate airborne virus and bacteria. (July 2002)

MEDICAL—DRUG ABUSE DETECTION

Licensor: NASA
Licensee: LifePoint Inc.
Royalty: 1% to 3% of sales

The U.S. Navy issued an expanded license to LifePoint Inc. for its Flow Immunosensor Technology. The initial license was granted to LifePoint in 1991. The Flow Immunosensor Technology is a next generation kinetic immunoassay that provides the unique capabilities of rapidity, simplicity, quantitation, and lab-quality accuracy, which, for the first time, provides the ability to obtain rapid and accurate diagnostic testing results on-site. In addition, LifePoint and the U.S. Navy jointly own a second patent on the technology, which resulted from a cooperative research and development agreement. The expanded license now has a field-of-use on all possible diagnostic uses for saliva in addition to the original field-of-use allowance, which was the detection of drugs of abuse and anabolic steroids in urine samples. The U.S. Navy will receive a royalty rate of 3% on the technology related portion of the disposable cassette sales and 1% on instrument sales with a minimum royalty of $50,000 in the first year and $100,000 for all other years until the license expires in 2011.

LifePoint, Inc. is a development stage company focused on the commercialization of the flow immunosensor technology licensed from the Naval Research Laboratory. This proprietary technology, when used in conjunction with saliva as a noninvasive test specimen using the Company's proprietary collection technology, will allow LifePoint to develop a broadly applicable noninvasive, rapid, on-site diagnostic test system. The product can be used for rapid diagnostic testing for screening (cardiovascular disease, osteoporosis, cancer), rapid testing (heart attack, drug overdose), and therapeutic drug monitoring in nonmedical environments such as the workplace, home health care, ambulances, pharmacies, and even law enforcement. The first product under development is for the simultaneous detection of drugs of abuse and alcohol. (May 4, 1999)

E.2 TRADEMARK ROYALTY RATES

The chart below summaries royalty rates across all the industries covered by *Royalty Rates for Trademarks and Copyright, 2nd Edition.* Too often people think of t-shirts, caps or key chains when they hear about licensing transactions. Too often they think only of trinkets and trash. However, this old fashioned approach to licensing is increasingly outdated.

Licensing has become the ultimate marketing strategy and the approach to licensing and merchandising has changed dramatically in the last ten years. Increasingly, corporate America and European companies think of licensing and merchandising as part of a longer-term strategic commitment, rather than a short-term approach for increasing revenues. In addition to royalty income licensing provides significantly increased consumer awareness that could only be otherwise obtained from increases to already hugely expensive advertising campaigns.

Industries covered by this book include: Airline, Apparel, Architecture, Art, Boats, Celebrities, Communications, Corporate Names, Electronics, Food, Franchises, Furniture, General Merchandise, Internet Domain Names, Medical, Movies, Music, Party Goods, Publishing, Restaurants, Sports, Toys, University Names.

Exhibit E.2 summaries royalty rates across all the industries and products covered in this book by the number of times the rate was mentioned throughout the book. The royalty rates reported in this book are grouped by rate and graphed by the frequency of their appearance, providing the following distribution. Excluded from the graph are two instances where royalty rates of 35% were negotiated and one instance where a royalty rate of 45% was negotiated. The most frequently reported royalty rate was 10%.

Presented below are several sample licensing agreement summaries from *Royalty Rates for Trademarks & Copyrights, 2nd Edition:*

Design Center Dinosaurs were licensed to an apparel manufacturer in Japan for use on general apparel. The agreement called for Design Center to receive a 4 percent royalty on the wholesale selling price of the goods. The agreement required an initial up-front license fee of $20,000 and provided for $100,000 of guaranteed minimum royalties.

Disney licensed the use of a portfolio of its characters to Sun Green River Company Ltd., a Japanese manufacturer, for use on apparel (swimwear and suspenders) in Japan. Disney will get a 10 percent royalty on the wholesale selling price of the garments.

Donna Karan International Inc. granted Designer Holdings Ltd. a 30-year license for production, sales and distribution of men's and women's wear under the DKNY Jeans label. The company said it would receive $60 million plus royalties under the agreement. It said it received $6 million upon signing and it will receive another $54 million over the next four years. The agreement was subject to review under the provisions of the Hart-Scott-Rodino Act.

After the transition of production, which was expected to take place on June 1, 1997, Donna Karan said it would receive an annual 7 percent royalty on total sales and an additional 2 percent administrative fee on international sales, subject to guaranteed minimum payments. In addition, Designer Holdings was to fund extensive advertising programs in 1997 which were expected to increase consumer awareness of the DKNY brand across all its product categories.

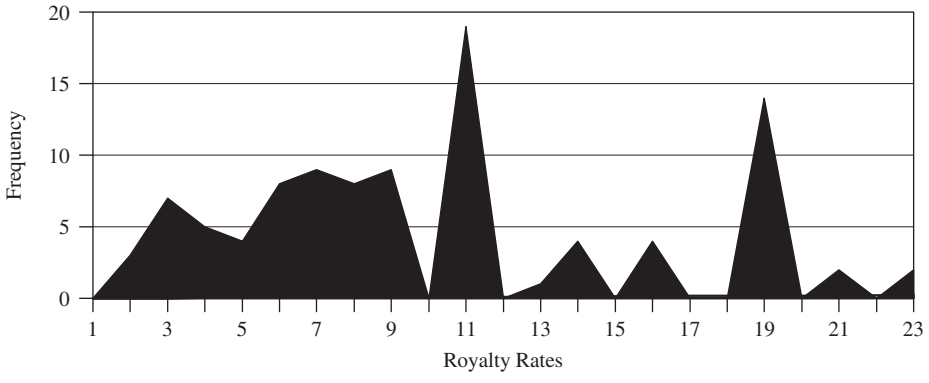


EXHIBIT E.2 TRADEMARK & COPYRIGHT ROYALTY RATE FREQUENCY

Donna Karan, Chairman and Chief Executive Officer, said that DKNY was initially conceived as a jeans company. As DKNY grew, it went on to become many other things including jeans. The move to license the jeans trademark was based on the belief that the optimal time to separate DKNY jeans from the rest of the company had come, so that it could grow and realize its full potential.

Separately, Designer Holdings said it intended to file an offering with the Securities and Exchange Commission to raise $100 million through the sale of convertible preferred securities. Designer Holdings said it intended to use the proceeds to finance the growth of the DKNY Jeanswear business and its Calvin Klein Jeans business. (September/96)

Later in the same year the following story was reported in Licensing Economics Review.

Donna Karan International Inc. terminated, by mutual agreement, a jeans license agreement with Designer Holdings Ltd. Under the termination agreement Donna Karan returned a $6 million payment to Designer Holdings as well as a $1.26 million advance royalty payment. Donna Karan said the $6 million was in connection with the license agreement, related to the design, start-up and development costs previously incurred by the company in developing its DKNY Jeanswear line. In addition, Donna Karan said, in order to assure a smooth transition for the DKNY Jeanswear business, it would purchase all sales and marketing plans, patterns, samples, fabrics, and other materials developed in connection with the jeanswear business. Both parties have agreed to cooperate fully with each other in effecting an orderly transition. The termination agreement was brought on when the companies encountered difficulties coordinating the design schedule of Donna Karan International with the manufacturing schedule of Designer Holdings. The companies were also unable to agree on the extent of the product line necessary to be competitive in the jeanswear market and therefore, both parties felt that it was in their best interests to terminate the license agreement.

Subsequently Donna Karan entered into another deal as reported in a later issue of Licensing Economics Review.

Donna Karan International Inc. signed an exclusive 15-year licensing agreement with Liz Claiborne Inc. to make and market Donna Karan's popular DKNY jeans and activewear. The deal marks the first time Liz Claiborne has struck a licensing deal with another brand name. It has gained the rights to make, distribute and advertise Donna Karan's DKNY jeans items, including basic five-pocket denim pants, jumpers, and t-shirts. Liz Claiborne, which makes and sells mid-priced, relatively conservative women's and men's apparel under its own name in department stores and its own retail and outlet stores, also will begin opening DKNY jeans stores in 1999. Additionally, Liz Claiborne will produce the DKNY Active line, an upscale, fashionable sporting line of apparel due to be expanded in spring 1999. DKNY is the brand of Donna Karan's less-expensive, more-casual clothing line.

Liz Claiborne paid Donna Karan an undisclosed up-front fee and will pay royalties on sales. Although the companies wouldn't disclose the amount of royalties to be paid by Liz Claiborne, under a now-defunct licensing arrangement with Designer Holdings Ltd., Donna Karan received royalties of 7% of sales and an up-front payment of $6 million with a promise of $54 million during the subsequent four years. One person familiar with the Liz Claiborne agreement said that although the royalties would be

about the same as those of the Designer Holdings deal, the lump-sum payments would be "significantly less."

Big League Chew is a shredded bubble gum product that lets kids make believe they are using chewing tobacco, just like their professional baseball heros. The gum is shredded and comes in a foil pouch. The product was developed by Yankee ex-pitcher Jim Bouton, partly because he disliked the taste of chewing tobacco. Amurol, a subsidiary of Wrigley Company pays royalties to manufacture and distribute the product ranging from 2.5% to 5% on sales.

The *Cheers* television show ended but the bar is not closed and has expanded operations around the world. Marriott Corporation planed to established 46 airport restaurant/bars over a five-year period that would be modeled after the best known bar in American—*Cheers*. Locations are planned for the United States, New Zealand, and Australia.

Two locations are operating with one at Detroit Metropolitan Airport and the other at the Minneapolis-St. Paul International Airport. The restaurant/bars locations are arranged like the bar on the television show and come complete with two robots that mimic the banter of the television characters Norm Peterson and Cliff Clavin. Samuel Adams lager is flown in from Boston and much of the drink and food offerings are named for the show's characters. While eating, customers can watch *Cheers* reruns on a big screen television set. Marriott acquired the exclusive licensing agreement for *Cheers* from Paramount Pictures last year and agreed to pay a royalty of 4% of sales.

Mattel's Barbie is going to college in a big way. She is a Nittany Lion cheerleader and also a booster for Florida, Michigan, and 16 other colleges. Barbie's latest makeover is the University Barbie. Many of the buyers are veteran Barbie collectors, who want to be the first to get the first doll of the line. Some enthusiasts said they were put off by the fact that Barbie had the same outfit for each school—a cheerleading outfit with a university logo. A hairbrush and pompoms come with the blonde-haired doll, which is sold only in a school's vicinity. Buyers in Florida, for example, cannot purchase a Penn State doll in their area. The doll sells for around $21 in some schools and up to $29 in others. Mattel decided to work with three colors at first: red, blue, and orange. The schools that had those colors were chosen first. Then the field was narrowed based on school and stadium size, fan enthusiasm, football and basketball rankings, and collegiate licensed product sales. The 19 schools are: Arkansas, Arizona, Auburn, Clemson, Duke, Florida, Georgetown, Georgia, Illinois, Miami, Michigan, Nebraska, North Carolina State, Oklahoma State, Penn State, Tennessee, Texas, Virginia, and Wisconsin. Next year, another three undisclosed colors will be added to the mix. Schools get a percentage sales, which has university vendors breaking out their Barbie calculators. University of Nebraska-Lincoln as an example gets a 7.5% royalty.

Ohio State University licenses use of its name for an eternity. A funeral director is distributing a casket made by a western Michigan company that bears the OSU colors and logo, so that school spirit can last for eternity. Oak Grove International Inc. of Manistee, Michigan, has licensed OSU's scarlet and gray colors and its logo to produce the official Buckeye casket. It sells for $3,200 to $3,500. The caskets are made from scarlet-colored fiberglass and have a gray-velvet interior, with silver hardware. The university logo is gel-coated on the outside surface. The head panel on the inside lid is decorated with a choice of the OSU block "O" monogram or the Brutus Buckeye

mascot monogram. OSU will receive a $50 royalty for each casket that is sold. The company also has a license to make caskets featuring the colors and logo of Texas A&M University. (February/96)

In June of 1999 a lawsuit between Ohio State University and Ohio University was settled regarding their trademark dispute about the word "Ohio," a fight involving millions of dollars from the sales of sweatshirts, hats and other paraphernalia. Both schools confirmed the agreement Thursday and said attorneys were meeting to work out details.

Ohio University's trademark royalty revenue is about $100,000 a year, about half from items with the Ohio trademark. Ohio State gets about $3 million a year in royalty income, but little of that is from merchandise with just Ohio on it, said Anne Chasser, OSU licensing director. The Big Ten school has an enrollment of 55,000 and a large sports following, particularly for its nationally ranked football team and this year's basketball team, which went to the Final Four. Ohio University is a smaller, Mid-American Conference school 65 miles southeast of Columbus in the Appalachian town of Athens. Its enrollment is about 19,500.

In the early 1990s, Ohio University obtained a trademark registration for the word "Ohio" on uses such as athletic clothing. Ohio State did not respond until it discovered in 1997 that its rights to such names as Ohio Stadium might technically be in jeopardy. Ohio University said it would allow such uses to continue. But Ohio State, concerned that the trademark might overly restrict its future uses of Ohio, challenged the registration. The schools' legal affairs and public relations offices began a high-profile fight in December 1997. That's when Ohio State sent its objections to the U.S. Patent and Trademark Office over Ohio University's exclusive right to the word. Their dispute was headed for the Trademark Trial and Appeal Board in Washington (June 1999).

Notre Dame requires potential licensees to go directly through the university, not a marketing group. Notre Dame handles its own licensing. Its 8% royalty fee is one of the highest for a college logo and is based on the wholesale price of its licensed goods.

E.3 PHARMACEUTICALS & BIOTECHNOLOGY ROYALTY RATES

Exhibit E.3 below summaries a collection of royalty rates from *Royalty Rates for Pharmaceuticals & Biotechnology, Fifth Edition*. All of the transactions listed are associated with pharmaceutical and biotechnology therapies.

Technology Description	Fee	Royalty	Licensor/Licensee
Adenocard, Heart Disease Treatment	$0	25%	Medco Research/Fujisava
Alzheimer's Diagnostic Test Techn.	$45	5%	Cornell University/ Biopharamceutics, Inc.
TGF-beta-2 tissue repair research	$60,000	NA	Celtrix/Genzyme
Cephalsporin Compound	$14,000	NA	Glaxo Holdings/Lucky Ltd. (Korea)
Collagenase Ointment	$150	NA	Soloca Basel/BioSpecifics
Antiviral Composition and Methods	0	5%	State Univerity of NY/ Biopharmaceutics

EXHIBIT E.3 ROYALTY RATE REPORT FOR PHARMACEUTICALS & BIOTECHNOLOGY ANALYSIS OF LICENSE FEES AND ROYALTY RATES (FEE PRESENTED IN THOUSANDS OF DOLLARS)

Option for Contraceptive Regime	$157	3%–5%	Gynex/Organon
Cough Medicine	NA	7%	P&G/Upjohn
Cypress Stem Cells Research	NA	3%	University of Arizona/Cryo-Cell
Dermataology Product	$100	15%	DermaSciences/Trans CanaDerm
Diabetes Treatment	$9,000	10%	Ajinomo/Sandoz
Deltiazem Heart Drug Marketing	$25,000	35%–40%	Biovail Corp./Forest Labs
DNA Binding Invention	NA	4%	Princeton University/OnocorPharm, Inc.
Genetic Research	NA	8%	Genetic Therapy/National Institute of Health
Genetic Abnormality Prenatal Test	NA	per unit	Aprogenec/Dianon
Hepatitis A Vaccine	$2,500	15%	Medeva/American Biogenetics
Human Growth Hormone	$1,000	$5,000	DuPont-Merck/Bio-Technology General
Influenza Drug	NA	6%	Biota/Glazo
Heart Disease Integrelin Drug	$20,000	NA	Schering-Plough/COR Therapeutics
Intron A and Pegnology	$6,000	NA	Schering/Enzon
Lubrin Vaginal Dryness Product	Purchase	3%–4%	Upsher-Smith Labs/Bradley Pharma.
MichellamineB/Tropical Vine Leaves	NA	3%–5%	University of Yaunde/National Cancer Inst.
Microsponge Delivery System	$6,000	NA	Advanced Polymer Systems/Ortho Pharma.
Monoclonal Antibody 45-J Test Kits	$1,000	NA	American Biogenetics/Yamanouchi Pharm.
Neupogen for Chemotherapy	NA	3%	Amgen/Memorial Sloan-Kettering Cancer
Nifedipine Crystals Composition	$36,000	NA	Bayer AG/Pfizer
Nucleic Acid Probe Technology	NA	4%	Molecular Biosystems/DuPont
Oncolysin B for Non-Hodgkins Lymph.	$5,000	NA	Immunogen/Rousell Uclaf
Osteoporis Compound	$2,000	NA	Bone Cancer Intl./Smith-Kline Beecham
Oral Contraceptive	$175	30%	Gynex/Organon Group
Tree Clonal Material	$195	per tree	International Timber/Madison Avenue Cap.
Polymerase Chain Reaction Techn.	Purchase	9%	Roche/Cetus (seller)
Hypoix Tumor Cell Radiosensitizer	NA	10%	Roberts Pharma./Dupont-Merck
Diagnostic Test Kit Technology	$110	6%	Disease Diagnostics/Meridian Diagnostics
Collaboration for Drug Design	$6,000	NA	Agouron/Schering-Plough
Single-chain Antigen Protein	$1,800	NA	Enzon/Bristol-Meyers Squibb
Spirulina	NA	8%	Spirulina Research/Cynatech
Transforming Gowth Factor Beta	$4,000	NA	Celtrix/Genentech
Tropical Plants	$1,000	NA	Costa Rica/Merck
Gene-based Vaccines	$1,250	NA	Vical/Merck
Wart Removal Products	$1,300	6%	Taumura/Bradley Pharmaceuticals
Water-Jel Burn Dressings	NA	5%	Trilling Medical/Pifzer

EXHIBIT E.3 ROYALTY RATE REPORT FOR PHARMACEUTICALS & BIOTECHNOLOGY ANALYSIS OF LICENSE FEES AND ROYALTY RATES (FEE PRESENTED IN THOUSANDS OF

Presented below are sample licensing agreement summaries from *Royalty Rates from Pharmaceuticals & Biotechnology, 5th Edition*:

IMMUNOTOXIN—MDX-RA

Licensor: Baylor College of Medicine

Licensee: Medarex, Inc.

Royalty: 10% of net sales dropping to 5% of sales after payment of $1 million in royalties

Medarex, Inc. is a leading human monoclonal antibody-based company with integrated discovery, development, and clinical supply manufacturing capabilities. Medarex is able to create fully human monoclonal antibodies in our genetically engineered "HuMAb-Mice." These mice are "transgenic"—that is, the mouse genes for creating antibodies have been inactivated and have been replaced by human antibody genes. To date, 15 companies have acquired the rights to use Medarex's HuMAb-Mice in their development of new products, including major pharmaceutical and biotechnology companies such as Novartis, Amgen, Immunex, Schering AG, and Centocor.

As new disease-related targets are continually being discovered through genomic and other research programs, Medarex intends to use its HuMAb-Mice and additional human antibody technology to develop therapeutic products for itself and for its existing and prospective corporate partners. To this end, the company has recently entered into a strategic alliance with Eos Biotechnology to develop and commercialize at least six and up to nine genomics-derived antibody-based therapeutic products for the treatment or prevention of life threatening diseases that may include breast, colorectal, and prostate cancers.

Medarex believes that genomic and other research techniques are leading to the discovery of an unprecedented number of potential targets for therapeutic antibody products. To date, the FDA has approved nine monoclonal antibody-based products for sale. The estimated 1999 revenues for the six highest selling of these antibodies are $1.3 billion worldwide. The majority of these antibodies have been on the market for less than three years. Most of the antibodies currently in development, and all of the antibodies that form the basis of these approved products, have been made in normal, or "wild type," mice and subsequently made "chimeric" or "humanized," leading to a product that contains both human and rodent proteins. These remaining rodent proteins may be recognized by a patient's immune system as "foreign," potentially limiting the utility of the product or causing allergic reactions. Instead of engineering mouse antibodies to make them humanized, Medarex has genetically engineered mice so that they make fully human antibodies.

The potential of Medarex's engineered mice to rapidly generate high affinity, fully human antibodies has led to numerous corporate partnerships under which biopharmaceutical companies have acquired the right to use Medarex's HuMAb-Mice. The company initiated or expanded six corporate partnerships in 1998, and an additional six in 1999. The company is currently negotiating additional arrangements, and expects to enter into several new or expanded corporate partnerships in 2000 and in each of the next several years.

HBI, which was acquired by the company on February 28, 1997, had entered into an exclusive license agreement with Baylor College of Medicine to market, manufacture, grant sublicenses and sell HBI's 4197X-RA Immunotoxin (also known as MDX-RA). Baylor may terminate this license agreement if a Product License Application is not filed with the U.S. Food and Drug Administration ("FDA") by December 31, 2000. Pursuant

to this agreement, the company is obligated to pay Baylor a royalty equal to a maximum of *10% of the net sales* of the product until $5,000 in royalties are paid and *5% of net sales* thereafter.

The trial safety committee suspended MDX-RA after 565 patients had been treated. The reason for the suspension was the occurrence of serious adverse events in seven placebo treated patients and six patients given active drug. The company is currently analyzing the side effects and product formulation to try to determine the cause of the side effects.

The company holds a nonexclusive license from Sanofi, S.A., a French pharmaceutical company, to use its patented method for conjugating antibodies involving the particular toxin and linker used by the company in the manufacture of MDX-RA. A **royalty of $1.00 per treatment unit** of MDX-RA is payable to Sanofi for sales in countries where Sanofi has patent rights until royalties of $1 million are paid, after which the royalty rate is reduced to **$0.75 per treatment unit** *(2001 10K).*

INFLUENZA DRUG

Licensor: Biota Holdings Ltd.
Licensee: Glaxo Wellcome, Plc.
Royalty: 6% on sales

Biota Holdings Ltd. said the first widely-available anti-influenza drug in the world and a diagnostic test, which identifies the viral infection, could be available after 1998. The influenza compound GG-167 is undergoing tests around the world by British pharmaceuticals giant Glaxo Wellcome Plc. The compound was expected to be submitted for approval to the U.S. Food and Drug Administration (FDA) and other regulators in late 1996 or 1997. Marketing approval might be gained by the end of 1998. Glaxo Wellcome holds the worldwide marketing and development rights to the drug and is conducting all the research. Under a deal signed in 1990, Biota is entitled to **6% percent** of the gross revenue of the drug, which analysts have estimated could sell A$500 million (US$360 million) a year. Influenza reportedly affects 10% of the world's population each year, and kills 10,000 people annually in the United States alone

Clinical trials of the drug, which would be administered by an inhaler into the lungs and possibly through a nasal spray, showed that it seemed to have no significant side effects.

INTERFERON GAMMA-1B

Licensor: Connetics Corporation and Genentech, Inc.
Licensee: InterMune, Inc.
Royalty: 0.25% to 0.50% of net sales

InterMune, Inc. develops and commercializes innovative products for the treatment of serious pulmonary and infectious diseases and cancer. InterMune has two commercial products, growing product revenues, and advanced-stage clinical programs, which target a maximum market opportunity of approximately $4.5 billion. In the United States, the company markets its lead product, Actimmune™, for the treatment of chronic granulomatous disease, a life-threatening congenital disorder of the immune system, and severe, malignant osteopetrosis, a life threatening congenital disorder causing an overgrowth of bony structures. Worldwide, InterMune markets Amphotec™ for the treatment of invasive aspergillosis, a life-threatening systemic fungal infection.

InternMune has mid- or advanced-stage trials underway for Actimmune and Amphotec in a range of new disease indications, including:

- Idiopathic pulmonary fibrosis, a life-threatening lung condition;
- Infections caused by a type of bacteria known as mycobacteria (mycobacterial infections), such as tuberculosis and atypical mycobacterial infections;
- Infections caused by various fungi that attack patients with weakened immune systems (systemic fungal infections), such as cryptococcal meningitis and invasive aspergillosis;
- Ovarian cancer, as well as other types of cancer, a life-threatening disease caused by uncontrolled growth of cells; and
- Cystic fibrosis, a congenital disorder that leads to chronic pulmonary infections in children.

Actimmune™ is currently approved for the treatment of chronic granulomatous disease and severe, malignant osteopetrosis. Chronic granulomatous disease is a life-threatening congenital disorder that causes patients, mainly children, to be vulnerable to severe recurrent bacterial and fungal infections. This results in frequent and prolonged hospitalizations and is commonly a cause of death. In 1990, Actimmune™ was approved by the FDA for the treatment of chronic granulomatous disease based on its ability to reduce the frequency and severity of serious infections associated with this disease. Overall, patients treated with Actimmune™ had 67% fewer disease-related infections and hospitalizations compared to the placebo group. There are approximately 400 patients with chronic granulomatous disease in the United States for whom treatment with Actimmune™ may be appropriate, and there is no FDA-approved treatment specifically for this disease other than Actimmune™. Based on the indicated dosage levels of 100 micrograms of Actimmune™ three times per week, the annual cost per patient is approximately $25,000. Accordingly, we believe that chronic granulomatous disease represents a maximum annual market opportunity of approximately $10 million in the United States.

Severe, malignant osteopetrosis is a life-threatening, congenital disorder that results in increased susceptibility to infection and an overgrowth of bony structures that may lead to blindness and/or deafness. In February 2000, the FDA approved Actimmune™ for the treatment of severe, malignant osteopetrosis and granted Actimmune™ orphan drug status for this indication. The disorder primarily affects children, and no other effective treatment is currently available other than Actimmune™. There are approximately 400 patients with severe malignant osteopetrosis in the United States for whom treatment with Actimmune™ may be appropriate.

InterMune believes the most significant near-term use of Actimmune™ is for the treatment of idiopathic pulmonary fibrosis, which afflicts approximately 50,000 persons in the United States. The company is conducting a clinical trial by which it intends to provide sufficient data for approval, known as a Phase III pivotal clinical trial, to test the efficacy of Actimmune™ for the treatment of this condition. InterMune has also commenced enrollment in a Phase III pivotal clinical trial of Actimmune™ for the treatment of multidrug-resistant tuberculosis.

In August 1998, InterMune entered into an agreement with Connetics Corporation under which the company obtained an exclusive sublicense under the rights granted to Connetics by Genentech through a license agreement relating to interferon gamma-1b. InterMune also agreed to assume many of Connetics' obligations to Genentech under that license agreement. InterMune entered into an agreement with Connetics in April 1999 in

order to broaden the scope of rights granted to it. In June 2000, InterMune entered into an assignment and option agreement with Connetics, by which Connetics assigned the Genentech license to InterMune. The agreement with Genentech terminates on the later of May 5, 2018 and the date that the last of the patents licensed under the agreement expires.

InterMune's licensed rights include exclusive and nonexclusive rights. The exclusive rights are to commercialize Actimmune™ in the United States for the treatment and prevention of all human diseases and conditions, including infectious diseases, pulmonary fibrosis and cancer, but excludes arthritis and cardiac and cardiovascular diseases and conditions. The nonexclusive rights include the right to commercialize Actimmune™ for gene therapy in the United States, except for cardiac and cardiovascular diseases and conditions. In Japan, InterMune has the exclusive license rights to commercialize interferon gamma-1b for all infectious diseases. The company also has the opportunity, under specified conditions, to obtain further rights to interferon gamma-1b in Japan. Under the Genentech license, InterMune pays Genentech royalties on the sales of Actimmune™, and make one-time payments to Genentech upon the occurrence of specified milestone events. InterMune must satisfy specified obligations under the agreement with Genentech to maintain its license from Genentech. The company is obligated under the agreement to develop and commercialize Actimmune™ for a number of diseases.

Through the Assignment and Option Agreement with Connetics, beginning on January 1, 2002 InterMune is obligated to pay to Connetics a royalty of 0.25% of our U.S. net sales for Actimmune until cumulative U.S. net sales surpass $1 billion. Thereafter, InterMune is obligated to pay a royalty of 0.5% of its U.S. net sales. Until April 2004, Connetics has an option under the Assignment and Option Agreement to obtain the exclusive, royalty-free right to commercialize Actimmune™ for dermatological diseases in the United States. If Connetics exercises its option, then it will make one-time payments to InterMune upon the occurrence of milestones. Connetics also has a first right of negotiation to become InterMune's marketing partner for the sale of Actimmune™ to dermatologists for diseases that are not primarily dermatological in origin *(2001 10K)*.

COUGH MEDICINE

Licensor: The Procter & Gamble Co.
Licensee: Upjohn Company and Johnson & Johnson
Royalty: 7% of sales

A federal jury in Delaware ruled that Upjohn Co. (currently Pharmacia & UpJohn) and Johnson & Johnson infringed Procter & Gamble Co.'s patent for an over-the-counter cough and cold remedy. P&G's Richardson-Vicks Inc. unit markets Dayquil for Sinus under the patent and has licensed American Home Products' Advil for Sinus. The jury found that Upjohn's Motrin lB Sinus compound and Johnson & Johnson's Sine-Aid IB, made by its McNeill-PPC Inc. subsidiary, had infringed on the patent since December 1993. The companies owe P&G damages of 7% of those products' sales since that date, the jury said. Richardson-Vicks had requested damages of $1 million from Upjohn and $300,000 from McNeill. Richardson-Vicks attorney John Sweeney said damages awarded by the jury would amount to $300,000 to $400,000 for Upjohn and less than that for McNeill. U.S. District Judge Sue Robinson must decide whether to grant Richardson-Vicks' request to bar Upjohn and McNeill from selling their products. The products can be sold pending the judge's decision.

The patent in dispute is for a compound that combines 200 milligrams of the painkiller ibuprofen with 30 milligrams of the decongestant pseudophedrine. The combination

provides greater relief for sinus headaches than either medication taken alone. Upjohn and McNeill said the patent was invalid because the combination was obvious and was not new.

CYCLIN DEPENDENT KINASC ASSAY TEST KIT

Licensor: Paracelsian Inc.
Licensee: Calbiochem-Novabiochem International Inc.
Royalty: Royalties of up 10% of net sales over $1 million

Paracelsian, Inc. is a development stage company, which develops and applies bioassays to monitor environmental toxins, to determine the quality of herbal products, and to identify therapeutic compounds from herbal sources. To date, the company has develped specific need-driven bioassay systems for three markets: (1) environmental testing, (2) herbal supplements, and (3) drug discovery and development. The company has developed a highly sensitive, user friendly, cost effective testing system for the detection and quantification of highly toxic environmental chemicals generally known as dioxin and dioxin-like compounds. It is called the Ah-IMMUNOASSAY® Kit (AH-1 Method). Since the discovery of the dioxin compounds, during the late 1950s, extensive research has been undertaken into their chemical and biological properties. And as more information becomes available, it is now clear that the original and narrowly defined group of 'dioxins' is becoming more expansive to include many other highly toxic, chemically similar compounds.

Paracelsian Inc. signed an exclusive licensing agreement with Calbiochem-Novabiochem International Inc. to license Paracelsian's cyclin dependent kinasc, or CDK 1, assay. Paracelsian said the licensing agreement calls for Calbiochem-Novabiochem to have exclusive rights to the CDK 1 assay for use as a research test kit for determining CDK 1 levels in cell or serum in laboratory animals. The agreement also calls for Calbiochem-Novabiochem to help bring licensed products using the CDK 1 assay to market and to promote the sales of those products. Paracelsian said it would receive an initial license fee and an accelerating step royalty that increases to 10% on net sales of more than $1 million. Paracelsian said its CDK 1 assay involves manipulation of a biochemical process known as signal transduction, a form of information processing within a cell. Many prevalent cancers, as well as heart disease, AIDS and viral infections are distinguished by an over-expression of CDK 1 and associated enzyme activity.

Calbiochem-Novabiochem International, of San Diego, markets research biochemicals, combinatorial peptide chemistry, antibiotics and assays. Paracelsian discovers pharmaceuticals from herbal sources and develops and markets tests for cancer diagnosis and environmental carcinogens. (LER March 1996)

PROTEOMICS TECHNOLOGY

Licensor: Icon Genetics, AG
Licensee: Large Scale Biology Corporation
Royalty: 2% of net sales

Large Scale Biology Corporation is using its proteomics and functional genomics technologies to develop products which it believes will allow diseases to be rapidly and correctly diagnosed, and treated with safe and effective personalized therapies which can be efficiently delivered. The company is focused on proteins, the fundamental "nanomachines" of biology that carry out the myriad functions necessary to keep us alive, and when made incorrectly or in the wrong amounts can lead to disease. All biological processes, including diseases and

responses to therapeutics, involve changes in proteins. LSBC's technologies are in three major areas: *Proteomics*—the study of proteins in living organisms; *Functional genomics*-the study of how, when, where, and which proteins are made in living organisms; and *Biomanufacturing*—the production of proteins.

LSBC believes that it can apply its technologies to enable the transformation of information on its proteins and gene function into product opportunities, such as drugs, drug targets, therapeutics, diagnostics, the evaluation of drug effectiveness and toxicity, and the production of therapeutic proteins.

From inception in 1987 until February 1999, LSBC's main focus was the development of our Geneware technology. In February 1999, the company acquired its proteomics subsidiary and since the acquisition, has used its proteomics and functional genomics technologies to develop products that are proteins or that impact proteins.

In 1999, the company entered into a license agreement with Icon Genetics, AG, and the International Institute of Cell Biology, National Academy of Sciences of Ukraine. The company's Chief Executive Officer and Chairman of the Board serves as Chairman of the Supervisory Board of Icon Genetics. Another of the company's directors is a member of the Supervisory Board and a principal shareholder of Icon Genetics AG. The license provides the company with an exclusive, worldwide, fully paid-up license to specified technology for a license fee payable in eight quarterly installments of $37,500. An additional $200,000 was paid upon achievement of specified milestones. A research services agreement was entered into during 2000 that provided for payments of $200,000 to Icon Genetics, AG. The company was also granted a worldwide, nonexclusive license to technology, subject to a 2% royalty on the sale of products developed with such technology. Under these agreements, the company paid $450,000 and $213,000 in 2000 and 1999, respectively, to Icon Genetics and the International Institute of Cell Biology *(2001 10K).*

PSYCHIATRIC AND PSYCHOTIC THERAPY

Licensor: Titan Pharmaceuticals, Inc.
Licensee: Novartis
Royalty: 8% to 10% of sales

Titan Pharmaceuticals, Inc. is a biopharmaceutical company developing proprietary therapeutics for the treatment of central nervous system (CNS) disorders, cancer, and other serious and life threatening diseases. The company's product development programs focus on large pharmaceutical markets with significant unmet medical needs and commercial potential. It currently has nine products in development, seven of which are in clinical development, with two products in expanded human trials for safety and efficacy, known as Phase III clinical trials. Titan has five products in trials for preliminary efficacy and dosing and in trials for initial human safety and evidence of efficacy, known as Phase II and Phase I/II clinical trials, respectively. In addition to these programs, Titan has two products in preclinical development. It is independently developing its product candidates and also utilizing strategic partnerships, including collaborations with Novartis Pharma AG and Schering AG, as well as collaborations with several government-sponsored clinical cooperative groups. These collaborations help fund product development and enable the company to retain significant economic interest in our products.

In January 1997, Titan acquired an exclusive worldwide license under U.S. and foreign patents and patent applications relating to the use of iloperidone, the scientific name for Zomaril, for the treatment of psychiatric and psychotic disorders and analgesia from Aventis SA (formerly Hoechst Marion Roussel, Inc). The Aventis agreement provides

for the payment of royalties on net sales and requires us to satisfy certain other terms and conditions in order to retain our rights, all of which have been met to date. In November 1997, Titan granted a worldwide sublicense, except Japan, to Novartis under which Novartis will continue, at its expense, all further development of Zomaril. Novartis will make Titan's milestone payments to Aventis during the life of the Novartis agreement, and will also pay to Aventis and Titan a royalty on net sales of the product, providing Titan with a net royalty of 8% on the first $200 million sales annually and 10% on all sales above $200 million on an annual basis *(2001 10K).*

APPENDIX F

OVERVIEW OF NEW PRODUCT DIFFUSION SALES FORECASTING MODELS

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F.1 INTRODUCTION

New product sales forecasting approaches can be as simple as "guesstimating" the first-year sales of a given product, escalating it for future year forecasts by an annual growth rate until a specific level of saturation is reached. This simple approach assumes that sales will continually grow throughout the product's life cycle. Is there justification for assuming that sales will grow in such a pattern—other than as the result of an inexpensive and easy-to-apply forecasting tool? Although there are a myriad of both qualitative and quantitative methods for new product sales forecasting, from simple growth escalation to forecasting with econometrically estimated demand functions, a question arises as to whether there is a causal theory of new product sales in the market research academic literature that lends guidance to the type of forecasting method chosen. The purpose of this report is to provide a brief summary of market research literature regarding the forecasting of sales of new products with guidance that goes beyond an ad hoc choice of a forecasting tool. The guidance provided by years of market research will lead to the recommendation of a forecasting model that has been developed from product adoption theory and rigorously tested in its ability to perform. Thereby, the justification and documentation for the choice of such a model structure in a business plan is one that is based on market research theory and robust empirical testing.

F.2 NEW PRODUCT SALES FORECASTING MODELS: PRODUCT DIFFUSION

A large literature in marketing research strongly demonstrates that product sales life cycles follow an S-curve pattern. An S-curve pattern implies that new product sales initially grow at a rapid rate, then the rate of growth tapers off, and finally declines with time. Historical analysis of new product sales curves indicates this is one of the most common patterns, if not the most common pattern, of new product sales over time.

The new product sales model we will recommend explains this S-curve shape based on diffusion theory. Diffusion theory is actually a theory of communication regarding how information is dispersed within a social system over time. Because people place different emphases on how much they rely on media and interpersonal communication for new ideas and information, they "adopt" new products either earlier or later in a product's lifecycle. The consumer product adoption process based on relative adoption time categorizes individuals as innovators, early adopters, early majority, late majority, and laggards. Exhibit F.1 shows the cumulative percentage of the potential market (i.e., total number of adopters) that has made an initial purchase of a new product. As you move up and to the right of the S-curve in Exhibit F.1, as you look at the rate of adoption of a new product over time by first-time purchasers, you initially have the innovators buying the product, then early adopters, and so on as you move up the S-curve, until you get to the point of market saturation, where the last set of first-time buyers is known as the laggards.

Exhibit F.2 shows the time of adoption of buyers for the product. If buyers are to the left of the vertical line in their time of adoption, they are innovators, early adopters, or part of the early majority; if to the right, they are the late majority or the laggards.

Exhibit F.3 displays different types of S curves developed from alternative types of product sales forecasting models. They will be discussed in detail in a latter section of this investigation.

The S-curve model is what is known as a "single-purchase" model in that it forecasts sales of products that are typically bought just once, or infrequently, such as consumer durables or industrial products such as mainframe computers. In addition, the model can be used to forecast trial or first-time purchases for repeat-purchase goods such as snack foods and detergents, but it does not provide a forecast of repeat-purchase levels. In order to estimate repeat-purchase sales and differentiate them from trial sales, businesses would typically need to carry out test markets or simulated test markets and apply different forecasting methods that would provide a steady-state market share estimate rather

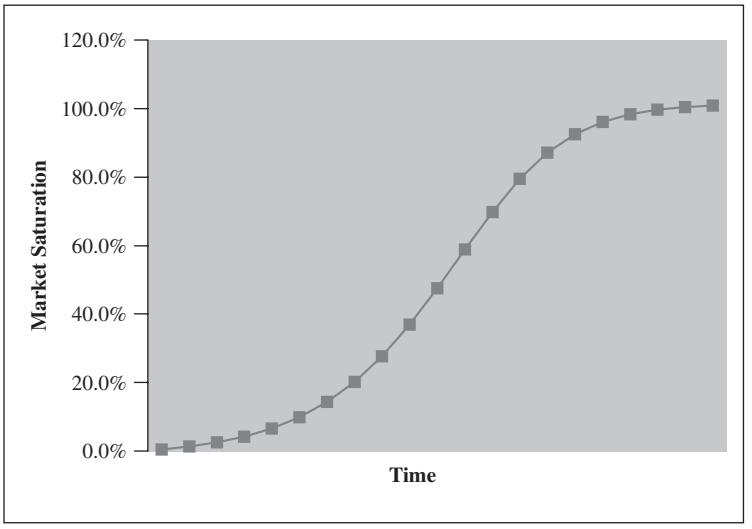

EXHIBIT F.1 S-CURVE EXAMPLE

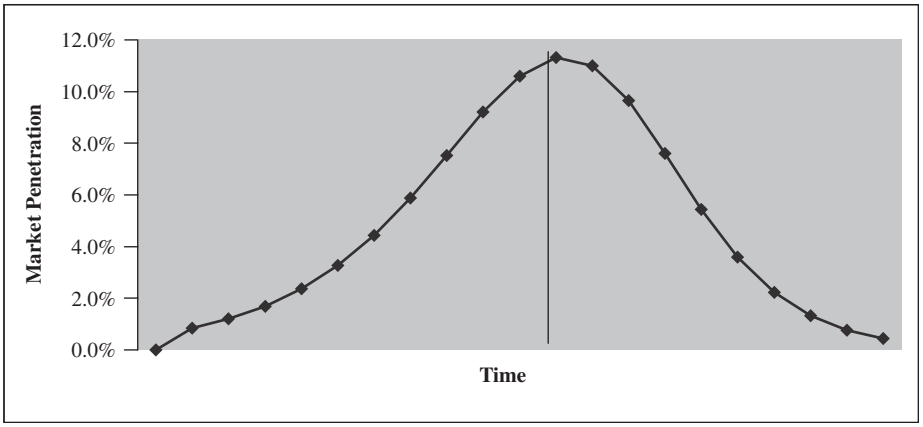

EXHIBIT F.2 TIME OF ADOPTION OF INNOVATION

than a time-based adoption curve, as is provided by diffusion models. However, all products, regardless of how often they are purchased, have a first-purchase sales volume curve (Mahajan and Wind 1986).

Diffusion models are dependent on a number of assumptions, each of which should be considered prior to implementing such models. The assumptions include:

1. The product whose sales are being forecast by the model is a product that is destined to be a successful new product introduction. Estimates of new product failure rates vary from 33% (Booz, Allen & Hamilton, Inc. 1982) to 60% (Silk and Urban 1978) or higher. The present model is appropriate only for successful new product entries. The present model cannot predict which new product launch will be successful; it is instead designed to project sales volume over time for those product launches that are successful.
2. Potential market size. The model requires that the user input an estimate for the total market size for the particular brand within the product category (i.e., total

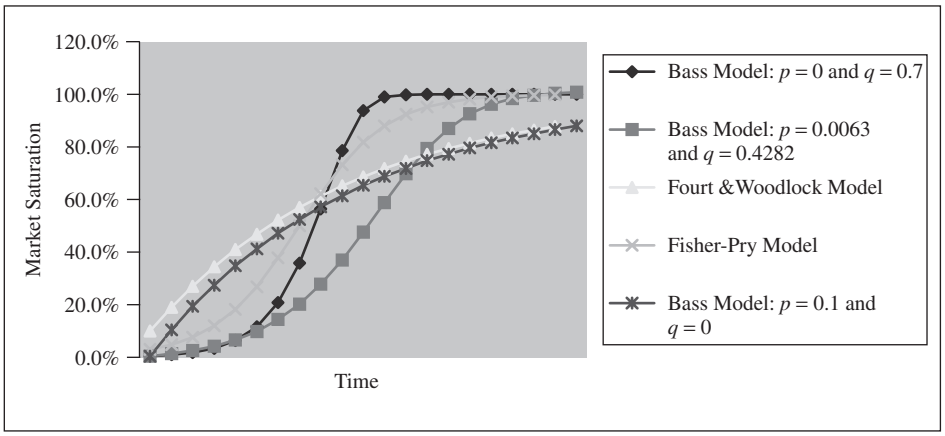

EXHIBIT F.3 S-CURVES FOR THE DIFFUSION OF INNOVATIONS

number of adopters of the branded product). To the extent that this estimate is inaccurate, the new sales forecasts will also be inaccurate. The user firm may choose to use historic sales data; however, it needs to produce an estimate of potential market size, and then estimate the brand's share within the market.

3. The nature of the competition. When the user estimates its brand's market share within the product category, a number of underlying assumptions about competitive response underlie such an estimate. It is possible that competitive response, such as imitative competitive alternatives, or heavier promotional responses, will adversely affect the share of the new product's sales. Again, to the extent that the market share estimate is inaccurate, the new product sales estimates will also be inaccurate.

The model recommended here has been developed from theoretical work in the area of diffusion processes and the customer new product adoption process. Diffusion process models attempt to forecast the market penetration rates of innovative products (air conditioners, cell phones, the Internet, hybrid gas/electric cars, a new brand of coffee, etc.) over time. The customer adoption process refers to differences among customers in the degree to which they are innovative, and thus willing to try a new product. Some customers are very innovative and are the first to try new products, whereas others are less so, and typically wait until many of their neighbors, friends, and so on have already bought the new product before they do the same. The speed of adoption of a new product has been shown to be a function of several factors including (Rogers 1983, 2003):

- The product's relative advantage over existing products
- The degree to which the new product is compatible with existing operations and attitudes
- The degree to which the new product is simple (rather than complex)
- The degree to which the new product can be tried on a limited basis
- The degree to which the product is observable

To the extent that a new product possesses each of these characteristics, its likelihood of success in the market is improved. The first two factors, relative advantage and compatibility, are particularly critical (Rogers 2003). However, models that have attempted to use managers' input regarding these factors have not fared particularly well.

F.3 TYPES OF PRODUCT DIFFUSION MODELS

There are at least three major types of models that have been proposed for forecasting new product first-purchase sales (models are discussed in following sections):

1. Pure Innovative Models (e.g., Fourt and Woodlock 1960)
2. Pure Imitative Models (e.g., Fisher and Pry 1971, Mansfield 1961)
3. Combination Models (e.g., Bass 1969)

This investigation focuses on first-purchase product models for application in forecasting initial product sales of a newly introduced product. Exhibit F.4 displays the types of diffusion models, including the highly adopted Bass (1969) model (hereafter referred to as the “Bass model”) that combines the innovation and imitation properties into one increasingly generalized model.

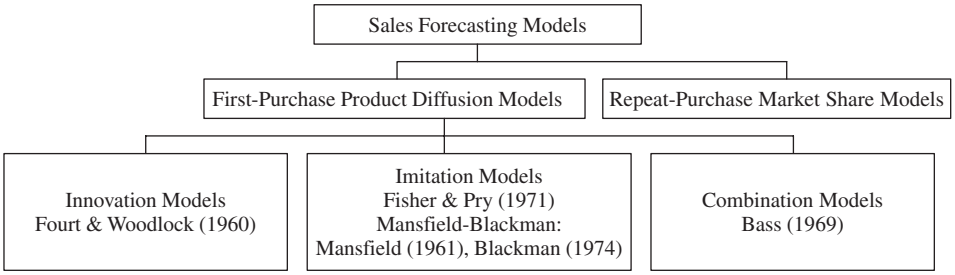

EXHIBIT F.4 PRODUCT SALES FORECASTING DIFFUSION MODEL TYPES

The *innovation* model of Fourt and Woodlock (1960) is a market penetration curve that was developed retrospectively after analyzing the market penetration curves of a number of new products. Pure innovative models assume that cumulative sales exhibit an exponential curve shape and that adoptions are based on individuals' exposure to external information sources such as marketing expenditures in mass media, rather than on word-of-mouth or other imitative effects. The equation that they found to be a reasonable approximation of these product curves is (see Exhibit F.3):

$$f_t = rM(1-r)^{t-1}$$

where:

f_t = (change in cumulative sales at time t) / (potential sales)

r = Rate of penetration of potential sales

M = (total potential sales) / (all buyers), or market saturation percentage

All of the above variables are assumed to remain constant throughout the product sales life cycle, except for time, t and f_t. As an example, assume that the market saturation for a new luxury durable good was 50% of all households and that r = 10%. Therefore the annual rates of new buyer penetration are:

1^{st} Year: $f_t = r\,M\,(1-r)^{1-1} = 0.2\,(0.1) = 0.02$ or 2%

2^{nd} Year: $f_t = r\,M\,(1-r)^{2-1} = 0.2\,(0.1)\,(0.8) = 0.016$ or 1.6%

3^{rd} Year: $f_t = r\,M\,(1-r)^{3-1} = 0.2\,(0.1)\,(0.8)^2 = 0.0128$ or 1.28%

20^{th} Year: $f_t = r\,M\,(1-r)^{20-1} = 0.2\,(0.1)\,(0.8)^{19} \approx 0$

Note that the incremental cumulative sales as a fraction of potential sales exponentially decline in every time period from the initial product introduction year and that the curve flattens out at the time that the market saturation level of 50% is reached.

The *imitative* model of Fisher and Pry (1971) contains the notion that a new product replaces an older type of product, and that the rate of adoption of the new product is dependent on the percentage of the old product still in use. The Fisher and Pry (1971) model is the classic logistic S-shaped curve:

$$f = \frac{1}{1 + e^{-b(t-t_0)}}$$

where:

f = Percentage of market that adopted new product

b = Growth to potential constant

t = Time since introduction

The above equation can be rewritten in log-linear form as:

$$\left(\frac{f}{1-f}\right) = e^{b_0 + bt}$$

The Mansfield-Blackman model (Blackman, Seligman, and Solgliero 1973; Blackman 1974; Mansfield 1961, 1968) adapts the Fisher and Pry (1971) model to include the upper limit in market share or saturation level of the newer product:

$$\left(\frac{f}{L-f}\right) = e^{b_0 + bt}$$

where:

L = Market saturation percentage

This adaptation provides a constraint on the maximum level of market share that the newer product can attain.

The two basic types of models described above, the pure *innovation* model and pure *imitation* model have been combined into one more generalized model, the Bass (1969) model, to capture both the innovative and imitative aspects of product adoption. The Bass model captures the innovative characteristic with its coefficient p, and the imitative characteristic with its coefficient q (described in more detail later). In the Bass model, when $p = 0$, the model defaults to the Mansfield (1961) model, and when $q = 0$, the model defaults to the Fourt-Woodlock (1960).

The Bass (1969) model is an aggregate demand model that represents an empirical generalization or "a pattern or regularity that repeats over different circumstances and that can be described simply by mathematical, graphic, or symbolic methods" (Bass 1993, 1995). It is designed to be used as a prelaunch forecasting model that is estimated prior to the introduction of a new product, that is, before preliminary sales figures have been obtained. Formulations of the Bass model have been used by corporations such as Kodak, IBM, RCA, Sears, and AT&T (Rogers 2003, p. 208).

The Bass model is similar in some respects to models of infectious diseases or contagion models, in that it attempts to estimate how many customers will buy a new product as the new product gains more acceptance over time. The model represents not the spread of a disease, but the impact of communication efforts about a new product—whether those efforts are external in nature, such as mass advertising, or more informal in nature, such as via word-of-mouth communication or observation and imitation. The model assumes that there are differences among customers in terms of how innovative they are in their tendencies to adopt new products, and which types of information about a new product are most persuasive prior to adoption. When a new product is introduced, there exists uncertainty in the minds of potential adopters regarding how superior the new product is to existing alternatives. Individuals attempt to reduce this uncertainty by acquiring information about the new product. More innovative customers tend to acquire such information via mass media and other external outlets. More imitative customers tend to acquire such information from interpersonal channels such as word-of-mouth

communication and observation. The relative influence of these two basic types of customers is captured in the Bass model.

The Bass model thus assumes that new product adopters are influenced by two types of communication: mass media and interpersonal communication, and that the mass media effects, which have a greater impact on innovative customers, will be greater at the outset of the product launch, whereas the interpersonal communication effects, which have a greater impact on the much larger number of imitative customers, will be greater during the later periods of the diffusion process (Rogers 2003).

There have been over 150 published extensions of this model (see Mahajan et al. 1990 for a review), where one or more variables are altered or added, but the basic S-shaped Bass model continues to prove to be a robust method for forecasting new product sales among real-world applications (Mahajan, Sharma, and Bettes 1988). Jeuland (1994), for example, fit the basic model to 35 different datasets for varying time periods and across different countries, and typically found R-squared values greater than .9, suggesting very good fits. (The R-squared statistic measures the degree of fit of a regression model to the data. An R-squared of 1.0 is a perfect fit.)

Considerable research across many disciplines including marketing, agriculture, sociology, and anthropology, suggests that most successful innovations have an S-shaped rate of adoption, although the slope of the curve varies (Rogers 2003). The Bass model adjusts the slope of the S-shaped curve according to two main parameters: p and q, the coefficient of innovation and the coefficient of imitation. Since most innovation diffusion processes tend to be very social in nature, typically the coefficient of imitation is considerably more important in determining the rate of adoption. Some innovations, such as VCRs and cell phones, have required only a few years to reach their maximum or near-maximum penetration levels, exhibiting a relatively steep S-curve, whereas others can require decades, such as use of the metric system in the United States (Rogers 2003).

The formula for the Bass model requires that a business manager or group of business managers provide a single estimate for first-year sales and total product lifetime sales (i.e., year-one adopters and total adopters). Since few new products enjoy monopoly status or enjoy it for long, manager(s) need to estimate total product category adopters in light of competitive alternatives and responses. Parameter estimates of p and q are then estimated to produce the following equation:

$$Q_{\mathrm{t}} = \left(p(M-A) + q\left(\frac{A}{M}\right)(M-A)\right)$$

The preceding equation can be simplified to:

$$Q_{\mathrm{t}} = \left[p + q\left(\frac{A}{M}\right)\right](M-A)$$

where:

- Q_t = Number of adopters or unit sales at time t
- p = Coefficient of innovation, or "the likelihood that somebody who is not yet using the product will start using it because of mass media coverage or other external factors" (Van den Bulte 2002)
- q = Coefficient of imitation, or "the likelihood that somebody who is not yet using the product will start using it because of word-of-mouth or other influence from those already using the product" (Van den Bulte 2002)
- M = Market size, or ultimate number of adopters or unit sales
- A = Cumulative number of adopters or unit sales to date

The coefficient of innovation (i.e., p) captures the relative importance of innovative customers in generating sales for the new product. The coefficient of imitation (i.e., q) captures the relative importance of imitative customers in generating sales for the new product. The model operates such that, regardless of the values of p and q, as more and more customers adopt or buy the new product, the relative impact of imitative customer purchases takes on greater importance in determining the sales curve. The S-curve that is then produced represents cumulative sales to date. A meta-analytic–based algorithm can be used to provide both a point or exact numerical estimate for sales in each time period, and an error band,[1] within which sales are expected to fall. Thus, a "feasibility space" can be provided (Mahajan, Muller, and Bass 1995) for managers to forecast new product sales. For more rigorous risk analysis of market projections, Monte Carlo analysis can be used by including differing estimates of p, q, A, and M combined with their probabilities of occurrence to provide scenario analysis of sales and different states of the market environment. Historical analogies are often a more accurate method for estimating the necessary parameters, because prior efforts to fit curves based on just a few periods of early sales (e.g., three to four periods) have enjoyed limited success and accuracy (Pae and Lehmann 2003), and usually there are not enough data points for statistical significance of the p and q estimates. Studies also suggest that the coefficients p and q are relatively constant over time, within a given industry (Norton and Bass 1987; Pae and Lehmann 2003). The p and q coefficients from academic publications are typically estimated post hoc, that is, after a particular product innovation has been fully or nearly fully adopted throughout a market.

Other key estimates that can be made with estimated parameters include the two following. These expressions have been obtained by taking the first derivatives of the Bass model and solving for the optimal time to peak sales and size of peak sales:

$$\text{Time to Peak Sales: } t^* = \frac{1}{(p+q)}\left[In\left(\frac{q}{p}\right)\right]$$

$$\text{Size of Peak Sales: } s^* = M\left[\frac{(p+q)^2}{4q}\right]$$

The Bass model with the mean values of $p = 0.0063$ and $q = 0.4282$ from Pae and Lehmann (2003) result in the Bass curve that is shown on Exhibit F.3. Note that when $q = 0$, i.e., there is no imitation, the diffusion curve defaults to the pure innovation curve of Fourt and Woodlock (1960), which is the declining growth exponential model. The Bass curves in Exhibit F.3 are shown with differing values of p and q. Note that relatively higher values of q will result in an accelerated Bass curve where market saturation is reached faster. As the sales process continues over time, imitators increase over time relative to innovators, whose numbers decrease over time.

Also, the model defaults to a pure imitative one when $p = 0$. Exhibit F.3 demonstrates that in this case, the Bass curve has a similar shape as the Fisher-Pry imitative model. Note that the Bass curve with innovative and imitative properties embodied in the curve, that is, when neither p nor q equals 0, reflects both forces affecting market sales projections.

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1. The error band can be obtained in alternative manners. For example, they may be developed from the use of differing assumptions of the size of the market and first-year sales in the Bass model, Monte Carlo simulation, or inference from regression estimations of the Bass model. The availability of a specific method depends upon data availability.

This investigation finds that the Bass Model is the model of choice based on its theoretical characteristics, its widespread use by business sales forecasters, and the exhaustive academic literature that addresses many tests, applications, the validity of its theoretical foundations, and its forecast performance. Finally, the main caveats are discussed, then the conclusions follow.

F.4 CAVEATS OF THE BASS MODEL

There are a number of assumptions underlying use of the Bass model, which should be considered prior to and during its application. These include (Mahajan and Wind 1986):

- The size of the potential market of total number of adopters remains constant over time. This may not be true if the new product gains in popularity, by spawning more competitors than anticipated, for example.
- There is only one product bought per new adopter. This is clearly not true for frequently repeated purchase products, or those that may break down or need replacement before the end of the product's life cycle.
- The coefficients of innovation and imitation remain constant over time. This may not be true if, for example, need or desire for the product suddenly increases midway through the product life cycle.
- The new product innovation itself does not change over its life cycle. This would not be the case if the firm introducing the new product updated or improved the product during early stages of its life.
- The innovation's sales are confined to a single geographic area. This would not be true if, for example, due to the product's success, the firm decided to launch the same product overseas.
- The impact of marketing strategies by the innovator are adequately captured by the model's parameters. Historical analogies, on which the model's forecasts are based, may not be applicable if, for example, the firm launching the new product supported it with atypically large promotional support, or if an aggressive pricing strategy is being deployed.
- There is no seasonality in sales of the new product.
- The application of the model presumes that the statistically estimated parameters of the model used to develop p and q (which involves the estimation of three regression coefficients) are statistically significant. Otherwise the p and q may not be representative of the true model and may lead to larger sales forecast errors. The Phase II of the project will discuss the statistical estimation of the Bass curve when historic sales data are available.

F.5 CONCLUSIONS

This investigation has involved the analysis and research of the major S-curve models, sometimes known as diffusion curves, to make a recommendation on which model(s) to use for product sales forecasting. Each and every “S” or logistical model type has not been reviewed, as there are many models that have been proliferated in the sales forecasting literature, all addressing (or claiming to address) some unique property of a product sales forecast. This investigation searched for the model that has received the most attention in terms of research, testing, application, and ability to be understood and applied. The choice of the “best” model depends on many characteristics, many of which have not been

discussed in this report. Although the focus is narrowed to the Bass curve, there are many dimensions for choosing the most appropriate values of p and q. One example of a factor that can impact p and q is the type of countries where the firm is targeting its product. The values of p and q will certainly be different for emerging economies versus mature economies. The market size and first-year sales must also be estimated as model inputs in the absence of sales data. The purpose of the focus on S-curves is to obtain a systematic sales forecasting methodology based on marketing, economics, and statistical theory, analysis, research, and practice. There are many simple and complex forecasting methods that are ad hoc and are not based on any systematic approach to understanding and modeling the structure of a market. Although the diffusion curve literature is no panacea for sales forecasting issues, it is based on sound marketing, mathematics, economics, and statistical principles. It is always better to have more information and well-developed, systematic methods for obtaining the most accurate forecast possible.

F.6 REFERENCES

Bass, Frank M. (1969), "A New Product Growth Model for Consumer Durables," *Management Science*, 15(January), 215–227.

Bass, Frank M. (1993), "The Future of Research in Marketing: Marketing Science," *Journal of Marketing Research*, 30(February), 1–6.

Bass, Frank M. (1995), "Empirical Generalizations and Marketing Science: A Personal View," *Marketing Science*, 14(3), G6–G19.

Blackman, A. Wade, Jr. (1974), "The Market Dynamics of Technological Substitutions," *Technological Forecasting and Social Change*, 6(1), 41–63.

Blackman, A. Wade, Jr., E. J. Seligman, and G. C. Solgliero (1973), "An Innovation Index Based upon Factor Analysis," *Technological Forecasting and Social Change*, 4, 301–316.

Booz, Allen & Hamilton, Inc. (1982), *New Products Management for the 1980s*. New York: Booz, Allen & Hamilton, Inc.

Fisher, J. C. and R. H. Pry (1971), "A Simple Substitution Model for Technological Change," *Technological Forecasting and Social Change*, 2, 75–88.

Fourt, Louis A. and Joseph W. Woodlock (1960), "Early Prediction of Market Success for New Grocery Products," *Journal of Marketing*, 25(October), 31–38.

Mahajan, Vijay, Eitan Muller, and Frank M. Bass (1990), "New Product Diffusion Models in Marketing: A Review and Directions for Research," *Journal of Marketing*, 54(January), 1–26.

Mahajan, Vijay, Eitan Muller, and Frank M. Bass (1995), "Diffusion of New Products: Empirical Generalizations and Managerial Uses," *Marketing Science*, 14(3), G79–G88.

Mahajan, Vijay and Yoram Wind (1986), *Innovation Diffusion Models of New Product Acceptance*, Cambridge, MA: Ballinger Publishing Company.

Mansfield, E. (1961), "Technical Change and the Rate of Imitation," *Econometrica*, 29(October), 741–766.

Mansfield, E. (1968), *The Economics of Technological Change*, New York, NY: W.W. Norton & Company.

Norton, John A. and Frank Bass (1987), "A Diffusion Theory Model of Adoption and Substitution for Successive Generations of High-Technology Products," *Management Science*, 33(September), 1069–1086.

Pae, Jae H. and Donald R. Lehmann (2003), "Multigeneration Innovation Diffusion: The Impact of Intergeneration Time," *Journal of the Academy of Marketing Science*, 31(1), 36–45.

Rogers, Everett M. (1983, 2003) *Diffusion of Innovations*, third ed., fifth ed., New York: Free Press.

Silk, A. J. and G. L. Urban (1978), "Pre-Test Market Evaluation of New Packaged Goods: A Model and Measurement Methodology," *Journal of Marketing Research*, 15, 171–191.

Sultan, Fareena, J. U. Farley, and D. Lehmann (1990), "A Meta-Analysis of Applications of Diffusion Models," *Journal of Marketing Research*, 27(February), 70–77.

Van den Bulte, Christophe (2002), "Want to Know How Diffusion Speed Varies Across Countries and Products? Try Using a Bass Model," *PDMA Visions*, 26(4), 12–15.

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