Understanding and Profiting from Intellectual Property

Also by Deli Yang

INTELLECTUAL PROPERTY AND DOING BUSINESS IN CHINA

Understanding and Profiting from Intellectual Property

A guide for Practitioners and Analysts

Deli Yang

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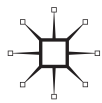

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Tribute to *Star Moon*
For *my Family* and *my Soul Pals*

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List of Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
BBC	British Broadcasting Corporation
BSA	Business Software Alliance
CEO	Chief Executive Officer
CHF	Swiss Franc
CNN	Cable News Network
CN¥	Chinese Currency Renminbi Yuan
DNA	Deoxyribonucleic Acid
DVC	The Da Vinci Code
ECJ	European Court of Justice
EPO	European Patent Office
EU	European Union
FBI	Federal Bureau of Investigation
FDI	Foreign Direct Investment
4Ps	The Personal, the Persuader, the Practical and the Precise
GDP	Gross Domestic Product
GNI	Gross National Income
GNP	Gross National Product
GSM	Global System for Mobile Communications
HBHG	The Holy Blood and The Holy Grail
HIV	Human Immunodeficiency Virus
HQ	Headquarters
IB	International Business
IBM	International Business Machines Corporation
IC	Intellectual Capital
ID	Industrial Design
IIT	Indian Institute of Technology
INTA	International Trademark Association
IP	Intellectual Property
IPI	Intellectual Property Integration
IPP	Intellectual Property Protection
IPS	Intellectual Property System
IPV	Intellectual Property Value
ISP	Internet Service Provider
IT	Information Technology
JEDEC	Joint Electron Device Engineering Council

JPO	Japan Patent Office
JV	Joint Venture
KFC	Kentucky Fried Chicken
KTV	Karaoke Box or Karaoke Music Video
LDCs	Least-Developed Countries
MA	Master of Arts
MBA	Master of Business Administration
MIP	Managing Intellectual Property
MNEs	Multinational Enterprises
MOU	Memorandum of Understanding
MU PLC	Manchester United Public Limited Company
NBC	National Broadcasting Company
NGO	Non-Governmental Organization
NPC	National People's Congress
NT	Net Tangible Assets (Total Tangible Assets – Total Liability)
OECD	Organization for Economic Cooperation and Development
OSI	Open Source Initiative
OSS	Open Source Software
PPP	Purchasing Power Parity
PRC	People's Republic of China
P2P	Peer to Peer or Person to Person
PWL	Priority Watch List
R&D	Research and Development
RCA	Radio Corporation of America
RIM	Research in Motion
SIPO	State Intellectual Property Office, the People's Republic of China
SMEs	Small- and Medium-sized Enterprises
TCAs	Treaties, Conventions and Agreements
TI	Texas Instruments
TRIPS	Agreement on the Trade-Related aspects of Intellectual Property Rights
UD	Utility Model
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPOV	International Union for the Protection of New Varieties of Plants
US	United States of America
USC35	US Code Title 35 – Patent
US$	US dollar

USPTO	US Patents and Trademarks Office
USTR	US Trade Representative
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WOE	Wholly Owned Enterprise
WTO	World Trade Organization
WWII	World War Two

Preface and Acknowledgements

This book addresses a dual audience of practitioners and analysts dealing with IP-related business and analysis in the world business. Business practitioners, including business managers and intellectual property (IP) owners who intend to commercialize their IP can gain a systematic understanding of the links between IP and business and how IP generates profits towards corporate success. This book will also enable IP practitioners to devise a plan based on logically adopted strategic and managerial approaches to commercializing an IP in a particular country. It enables business practitioners to critically scrutinize their IP within world business in a holistic manner from examining the IP environment to assessing IP management and IP strategies. It also enables business practitioners to critically evaluate their IP in an extensive manner bearing in mind IP creation, protection and dissemination.

This book also serves a purpose of equipping IP analysts (corporate analysts and academic researchers) with enhanced IP analytical skills to serve both research and practice. With the guidance of this book, IP analysts will be able to sharpen their ability to analyse IP activities across borders, to understand international innovative and technological activities and evolve appropriate responses and solutions from corporate, industrial and international perspectives. This book also serves as a helpful text to provide postgraduate business and management students with: a critical understanding on IP theory and practice from the perspective of international managers; an appreciation of the strategic importance of IP to corporate success; and a comprehensive understanding of how IP is managed and commercialized. It delineates various IP themes both theoretically and empirically from the international business angle with the help of supporting cases and statistics. It is, therefore, a source of literature for IP to lead to further studies.

In the process of writing this book, I have been endowed with superb support from friends across the world in various ways and my profound thanks are expressed here as a gesture of my sincere gratitude. They are (in alphabetical order) M. R. Abdulhamid, P. Clarke, J. Leontiades, J. Morgan, R. Ni, H. Ntchatcho, M. Pautasso, W. Qu, N. Sabharwal, M. Sonmez and Geoffrey Yu.

My special thankfulness is dedicated to all the managers, national government officials and all the division directors from the World Intellectual Property Organization, United Nations whom I have interviewed. Without their support, the data presented in this book would be scarce and unoriginal.

I would also like to express my appreciation to several IP owners. I wish to thank them for giving me permission to use their copyrighted photos. The use has been acknowledged separately when photos appear within the book.

I would also thank the Palgrave Macmillan Publishing Group for making this book available to business practitioners and analysts. Many people within the group that I do not know have made a contribution in the publishing process of the book, and I sincerely appreciate their effort. I am grateful to Emily Bown, Linda Auld and Mervyn Thomas because I have benefited from their kindest assistance in the production process. My special thanks go to Virginia Thorp, Senior Commissioning Editor at the Business and Management division for her patience, enthusiasm and assistance in the process of the book's publication, particularly for her help to finalize the book publication contract.

Last and not the least, my beyond-word gratitude belongs to my family and my soul friends. Their unconditional love and support have given me the confidence and strength to complete this book.

Deli Yang
Bradford, West Yorkshire, England
October 2007

1
Understanding and Profiting from Intellectual Property: A Beginning

Contents

Focus and structure

This book investigates intellectual property (IP) within the context of international business (IB), and presents IP fundamentals, IP environments, IP management and IP strategies in a way which is relevant to both business practice and research. It aims to provide practitioners and analysts with guidelines and an action framework on how to profit from IP. The author has consulted the widest possible range of resources, including primary and secondary data and grey literature, to serve these research aims and objectives, and has structured the book thematically to guide readers towards a full and clear understanding of IP in the IB world.

This first chapter aims to set a clear picture of the book by addressing four topics. First, it clarifies the focus of the book, by addressing the aims and purposes. Second, the reasons behind the writing of the book and its intended readership are discussed. Third, the methodological approaches that have been followed in different areas of the subject are briefly presented. Finally, the contents of each chapter are outlined to provide the reader with a route map through the book.

1.1 Aims and purposes

The book aims to provide practitioners and analysts with guidelines on how to profit from IP, particularly in world business. Four major aspects of IP are addressed. First, *IP fundamentals* are outlined to establish an overall understanding of the subject, covering conceptual issues and different schools of thought, before narrowing the focus down to IP in the IB context. Second, it discusses the question of *IP environments*, providing readers with critical insights into the factors that affect IP-related business activities in different countries. Third, the section on *IP management* emphasizes the importance of managing IP valuation, people and products. Finally, it examines *IP strategies*, focusing on business dissemination (that is, the process of gaining value from the spread and development of IP), including a systematic introduction to different possible business strategies for IP-related activities, specific explanations about various forms of IP licensing, and diverse corporate strategies against piracy.

This book has a dual purpose in its aim to provide its audience with a critical understanding of the significance and implications of IP issues in world business.

- The first is to provide knowledge and understanding about IP in world business. It offers a critical understanding of IP from the perspective of practitioners, demonstrating the strategic importance of IP to corporate success, and presenting a comprehensive discussion of how the IP environment is analysed and IP assets can be managed and strategized for onward dissemination.
- The second is to enhance readers' ability to conduct cross-border IP analysis by understanding how to acquire and interpret data and evaluate the relevance and validity of the data. This understanding will assist them in planning appropriate responses and solutions to IP-related activities from corporate, industrial and international perspectives, and in negotiating IP-related collaboration.

1.2 Rationale and intended readership

This book was written to address two needs. First, it is to offer practitioners a 'guidebook' on how to profit from IP. Although there has been much interdisciplinary research on IP, a book addressing the subject systematically from an IB angle is still lacking. Practitioners associated with IP businesses – such as creators, IP owners, business managers, research institutions and government organizations – need a comprehensive

understanding of IP and IB to assist them in managing cross-border IP activities. While existing publications primarily emphasize the creation and protection of IP, this book steers in the direction of IP dissemination, i.e. deriving value from IP. Second, there is a need for an educational and analytical guide for corporate researchers, academics and students: indeed, the idea of writing this book was driven initially by classroom demand. Having designed a module to teach MBA and MA business and management students, the author found she had to prepare everything from scratch – writing cases, collecting statistical data for analysis, and synthesizing existing theories and practice – a process which convinced her a book on IP from the business angle would be of value to both practitioners and analysts.

There are also academic voids to fill as far as IP in the context of IB is concerned. As a business subject and practice, IP has gained in importance in recent decades. While it is still mainly perceived as a legal and economic subject, it is becoming more recognized as an interdisciplinary subject due to its importance in history, sociology, politics and the natural sciences. With the signing of the Agreement on the Trade-Related aspects of IP Rights (TRIPS) by the member states of the World Trade Organization (WTO), IP has become an integral part of business practice and an essential element of business transactions. However, there appears to be little research linking IP and IB that supports practice with a synthesis of contemporary theory: this book is written with this intention.

1.3 Methodological delineation

This book combines analyses of primary and secondary data and 'grey literature', and is organized thematically, that is, the data in each chapter has been collected and analysed in various ways to provide evidence to demonstrate particular IP features. For primary data sources, two methods of collecting and analysing data have been used. One involves survey data (e.g. data collected from corporate managers involved in IP-related businesses), which tends to reveal statistical facts about IP businesses. For example, for the discussion on measuring different IP systems (IPS) in the world (in the IP Facts section of Chapter 4), the author has coded data based on government documentations and questionnaire surveys with government bodies and international organizations. The other primary data source is interview data and case analysis, such as is used in Chapter 11, where the discussions are all based on cases collected from interviews with corporate managers.

A rich array of secondary sources is also employed. All data sources, including journal papers, books, periodicals and magazines, and Internet resources have their merits and demerits. Journal papers and books, such as specialist monographs, tend to target a particular specialist field, and lay great emphasis on their thoroughness in covering the relevant literature and the soundness of their methodology and interpretation of results. However, this type of work can take a long time to be published, particularly in the leading journals, and thus the data is often out of date. Such problems can be overcome by using professional resources, such as books, magazines and periodicals published by specialists in a particular field and oriented towards practitioners that place greater emphasis on the freshness of their information. This type of data complements academic publications by addressing particular problems and offering pragmatic solutions, although perhaps lacking methodological detail. Web data from a variety of sources are also used: while this shares similar merits and demerits with professional data, it is even more up to date, and can add the different angles of views from government sites, practitioners, journalists and IP owners, and can thus be even better grounded in practice to provide insights for IP businesses. The author has taken care to use Internet information selectively to avoid unreliable sources and ensure the trustworthiness of information. Many of the book's cases have been written from a synthesis of professional and Internet sources to bring them up to date and to allow a wide range of views to be taken into account.[1]

This book has also benefited from a wide range of 'grey literature', mostly in the form of reports from companies, government bodies, international organizations and so on that are not widely publicized. Such sources provide the author with quasi-primary data on which to conduct original analysis. For example, the World IP Organization (WIPO) compiles IP statistics on a yearly basis, presenting data by country of origin, types of IP applications, and granting of IP rights to domestic and foreign applicants. On their own, such data present a broad-brush picture of the technological and other creative activities in a particular country. However, they may not indicate, for instance, whether different countries treat domestic and foreign IP applicants equally. The availability of such 'grey' data has allowed the author to subject it to further analysis to answer more detailed questions, such as in Chapter 3, where raw WIPO data from the US and China – two countries perceived as being at the extremes of IP protection (IPP) – are compared to show where their processing of applications differs.

This integrated approach to consulting a wide range of information sources benefits the book, allowing its thematic discussions to take into account a wide range of views from professionals to academics, besides allowing the author to make her own contribution to the discussions. The approach is also methodologically beneficial: the breadth of methods used allows the research outcomes to take advantage of the merits of each method, while their individual demerits can be overcome by triangulation to achieve maximum validity and reliability.

1.4 Structure and thematic overview

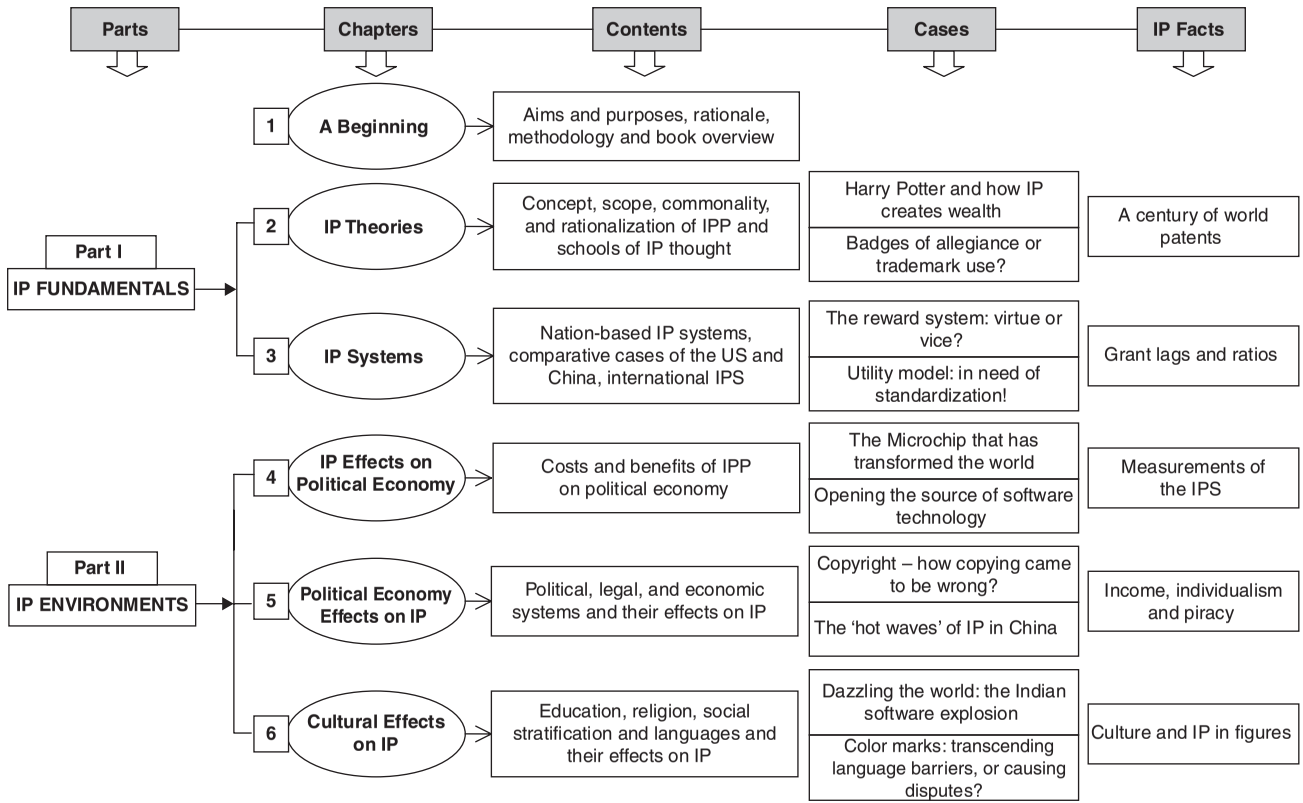
The book is structured thematically to address a range of IP topics within the framework of IB: its 'route map' is shown in Figure 1.1. Each chapter follows a common structure to aid clarity. Besides a 'Focus and structure' section, a chapter 'Summary' and a 'References and further reading' section, the theme of each chapter in introduced by a case discussion (the 'Opener'). The main body of the chapter constitutes discussions of the chapter's specific theme and the relevant IP issues in relation to world business. The 'Closer' cases elaborate further thematically relevant real-life IP cases. Besides the case studies, each chapter contains an 'IP Facts' section, addressing the chapter's theme from a statistical point of view. Thus, besides additional simple cases within each chapter's thematic discussion, 20 opening and closing cases are outlined and 10 'IP Facts' sections presented to supplement chapter discussions.

The book's overall structure is as follows:

Chapter 1: Understanding and Profiting from Intellectual Property: A Beginning sets the route map for the book, and outlines its aims and purposes; the rationale behind the book (for the benefit of both practitioners and analysts), and the methodology used to draw its conclusions.

Part I: Intellectual Property Fundamentals

Chapter 2: Intellectual Property Theories addresses some fundamental issues to aid the reader's overall understanding of the subject. It clarifies different types of IP concepts, discusses the ever-expanding scope of IP, the common characteristics of different types of IP, and the motivations for countries to strengthen their IPP. Finally, this chapter sets the academic context by discussing the increasingly interdisciplinary schools of thought on IP.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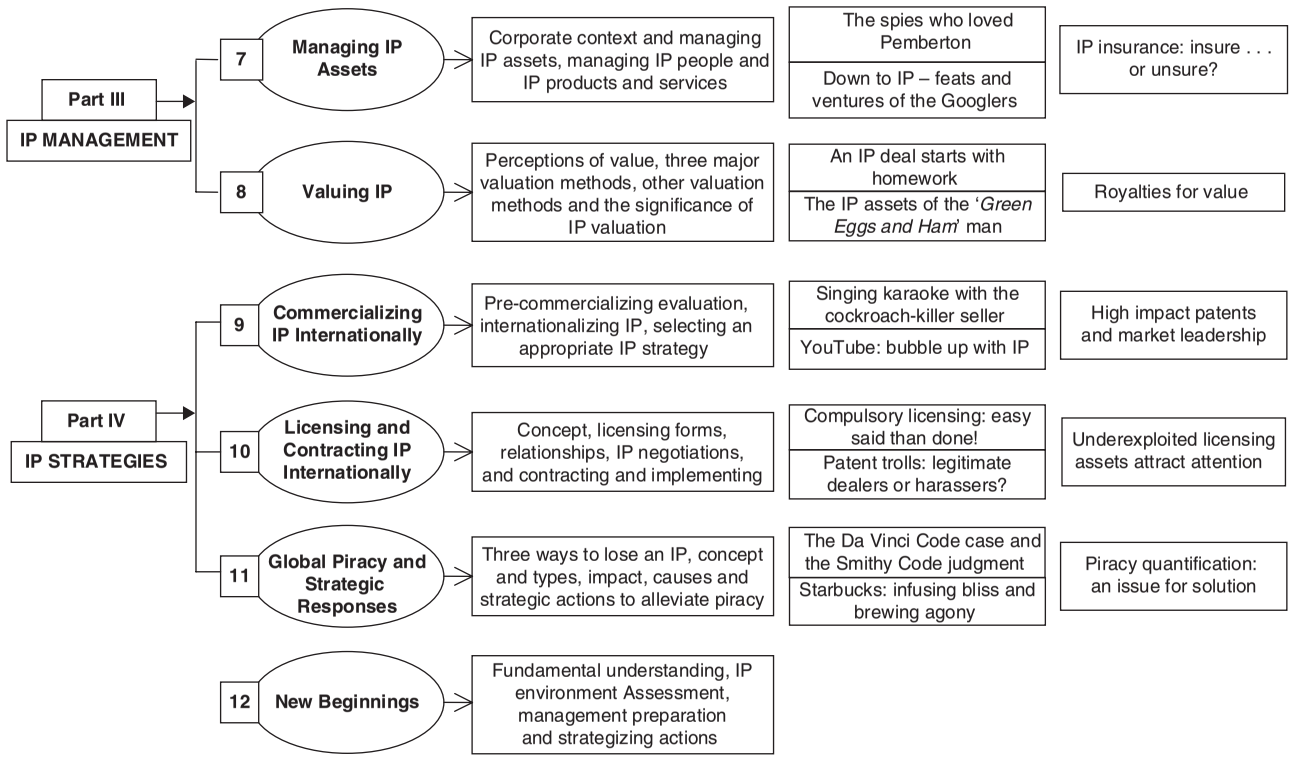

Figure 1.1 A route map for the book

Chapter 3: Intellectual Property Systems shows how IPS across the world are still fundamentally country-based, despite the efforts to internationalize IPP, administration and enforcement. To illustrate such differences, the similarities and differences of the IPS operations in China and the US are considered.

Part II: Intellectual Property Environments

Chapter 4: The Effects of Intellectual Property on Political Economy highlights the costs and benefits to a country of IPP. Why is IPP beneficial for the political economy of a country? What conditions are needed to allow countries to achieve optimal benefits from IP? Is IP suited to all countries? What are the costs to a country of strengthening its IPP?

Chapter 5: The Effects of Political Economy on Intellectual Property turns the previous chapter's discussions around to consider how a country's political economy systems impact on the development of IP. The nature of a country's political economy environment – be it a democratic or a totalitarian political regime, a capitalist or a planned economy, operating within a common or civil law regime – can all have bearings on the establishment and strengths and weaknesses of IP.

Chapter 6: The Effects of Culture on Intellectual Property discusses how national cultural elements can influence a country's attitudes towards IP. Education, religion, social structure and language all have their role to play in influencing ways of thinking about IP.

Part III: Intellectual Property Management

Chapter 7: Managing Intellectual Property Assets focuses on the corporate management of IP related assets. This includes outlining the corporate context as it affects managing IP resources, categorizing IP firms according to their capabilities in dealing with IP and their tactics for managing IP information.

Chapter 8: Valuing Intellectual Property analyses the different methods available for valuing IP assets. As a background context, the chapter first discusses various perceptions about value. Then the three major valuation methods – the cost, market and income approaches – are discussed in terms of their pros and cons, and how they are used. Other methods are also discussed briefly. Finally, the chapter emphasizes the importance of conducting IP valuation for different business purposes.

Part IV: Intellectual Property Strategies

Chapter 9: Commercializing Intellectual Property Internationally stresses the dissemination of IP throughout the international market, and discusses the two stages involved in the commercial decision-making process. Stage one is the pre-commercializing evaluation, where the feasibility of a company expanding its IP products or services to another country is examined, in terms of the analysis of corporate capacity, the motivations for the expansion, the IP environments and IP competition in the targeted country, as well as matters of timing, etc. Stage two is the assessment of strategy fits and the selection of the best strategy in the circumstances.

Chapter 10: Licensing and Contracting Intellectual Property Internationally is the most frequently adopted strategy for IP commercialization. This chapter outlines the concept of licensing, and clarifies the complicated forms of licensing and the relationships between licensor and licensee inherent in different types of licensing activity. The importance of licensing deal negotiations, and the need for the inclusion of specific elements designed to prevent future frictions, are also discussed.

Chapter 11: Global Piracy and Strategic Responses systematically examines the unwelcome companion of IB – globalized piracy. It starts with the clarification of the three ways to lose an IP and different forms of piracy, and then focuses on its impact and its causes in relation to IP environments, supply and demand reciprocity and corporate factors. The suggestion here is that relying entirely on governments to tackle piracy is not an immediate solution for companies, who should instead take their own strategic actions to alleviate specific piracy problems: ten strategies frequently adopted by multinationals are discussed.

Chapter 12: Understanding and Profiting from Intellectual Property: New Beginnings sets the route map for practitioners and analysts for actions and challenges to understand and profit from IP. The map shows a four-stage process of assessing IP, including the route to follow, actions to take and outcomes to anticipate for the profitability of IP.

A beginning: A route map for the book

Practitioners and analysts alike have noted that business is becoming more internationalized than ever, that operating environments are becoming more fast-moving and unpredictable, and that innovation

and creativity are becoming the keys to securing competitive advantage. Thus, concerns about IP will increasingly occupy management thinking and research attention. In social terms, too, there are major problems on the agenda: must piracy at some level be accepted as inevitable, or should originators commit huge resources to defending their turf? And how can the need for maintaining high rewards for creativity to pay for continuous original development be squared against the needs for, for instance, cheap drugs for HIV sufferers in Africa? Such problems challenge the currently dominant (Western) world view of the optimum balance between the private and the public good: fine brains and subtle analysis will be needed to sort out both ethics and practice for the future. IP is important now, and promises to become increasingly so in the future – both practitioners and analysts therefore need to *understand IP* and know how to *profit from IP* in the international arena. This route map (Figure 1.1) sets out a beginning of journey for them to do so.

Note

1. The author tends to compile case and IP facts references into an endnote and most academic references into 'References and further reading' at the end of each chapter.

Part I

Intellectual Property Fundamentals

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2
Intellectual Property Theories

Contents

Focus and structure

This chapter focuses on the theoretical components of IP. First, IP as a collective concept is critically discussed, and some identical or similar terms

are explained to avoid possible confusion in later chapters. Second, this section explains some major concepts covered under the IP 'umbrella', the scope of which has expanded considerably over recent years. Third, different types of IP that have common characteristics will be identified and discussed. Fourth, this chapter also focuses on the theoretical arguments for IPP, emphasizing both the importance and the difficulties of balancing the public interests with those of intellectual owners. Finally, the relevant theoretical schools of thought are summarized to position the book's focus in its academic context.

Relevant topical cases and facts are studied throughout the text. The first such considers the success of the Harry Potter books and the wealth that has been created from the exploitation of their copyrights. The closer is a case discussion of the Arsenal Football Club mark dispute. The IP facts section takes the IP example of invention patents to discuss the history of IP development over the past century and across the world.

Opener: Harry Potter and how intellectual property creates wealth[1]

The quality of narrative, ambiguity, mystery and entertainment in the Harry Potter books, published since 1997, have made them a magical success with enthusiastic audiences of all ages. While precisely accurate statistics of the number of Harry Potter books sold are difficult to come by, a few examples can provide a broad picture. In 2000, the fourth book became the 'fastest-selling book in history', selling three million copies within 48 hours of its release. When the sixth book came off the press in July 2005, millions of children and adults formed excited queues outside book-stores for their copy of the new story: 11 million copies were sold on the first day of publication in the US alone. By April 2007, over 350 million copies of Harry Potter's adventures had been sold in 64 languages in over 200 countries. Each book has become the No 1 bestseller in the UK, USA and elsewhere, and their success has brought the author honour and fame, the profession awarding her the Whitbread prize, and the Queen appointing her an Officer of the Order of the British Empire.

Success makes success! Beyond the author's personal triumphs, further wealth has been created via over 400 products that have been licensed under the Harry Potter copyright, as the few examples below indicate. Warner Bros. hold the world licensing rights to produce films based on all the books: five have so far been released and the remaining two are

in the production or planning stages. Other subsidiary licenses allow Hasbro and Mattel to produce Harry Potter-related toys, Cap Candy to manufacture magical flavour beans, Wizards of the Coast to manufacture card and role-play games, Ten Tiger Electronics for Harry Potter electronic appliances, Electronic Arts for computer and video games, while Coca Cola won the marketing rights for Harry Potter films.

The reason for illustrating Harry Potter's huge success is to demonstrate how relevant and important IP is both to business and to ordinary people. IP, including copyright and rights under licence for the manufacture and sale of related products, is involved throughout, from the early author/publisher negotiations to the point where a licensed product is sold to a consumer. One type of IP – copyright – is elaborated in this chapter, while licensing rights – the authorizations given by an IP owner allowing a licensee to disseminate the IP into related product or service areas – will be discussed at a later stage. The Harry Potter case can lead us to the core of this chapter – the fundamentals of IP: the concepts, scope and characteristics involved, the arguments for IP protection (IPP) and the relevant academic schools of thought.

2.1 Intellectual property as a concept

Intellectual property covers the whole area of legal rights over the creations of the mind. These rights give the IP owner – the original creator, or any person or entity succeeding to their title – exclusive rights over the making, use, selling, importing or other commercial exploitation of the IP into related products or services, but usually only within defined geographical and temporal parameters. The concept encompasses a wide range of rights, including the more conventional notions of patents, trademarks, industrial designs and utility models as well as copyrights, together with more unusual forms, such as integrated circuits, business method patents and geographical indications.[2]

Two authoritative IP agencies under the auspices of the United Nations have offered definitions of IP, both of which, arguably, have some deficiencies. The World Trade Organization (WTO) defines IP as '*the rights given to persons over the creations of their minds*'.[3] While the WTO notes that the creator usually enjoys exclusive rights over the use of their creation only for a certain period of time, there are two other areas where it might be said to be incomplete. First, IP owners may not necessarily be the original creators – inventors may pass on the rights in their patented invention to others, and an IP owner may well be a company. Second, the definition misses the important point of the geographical

limitations of IP rights. IP is fundamentally nation-based, and rights are only protected within particular geographical boundaries, unless some form of regional or international protection is involved. Without such multi-national protection, where owners only have their rights protected in one country (the costs of multiple applications can be highly forbidding), another person (or company) may legally apply for the rights to use their invention in another country.[4] For these reasons, the author has chosen 'creations of *the* mind' rather than 'of *their* minds' in the definition at the start of this section.

The World IP Organization (WIPO) presents a more all-embracing concept of IP. The definition pays particular attention to the forms of IP, but also appears to overlook the significance of ownership and of limitations of time and geography. It defines that:

> Intellectual property shall include the rights relating to literary, artistic and scientific works, performances of performing artists, phonograms and broadcasts, inventions in all fields of human endeavour, scientific discoveries, industrial designs, trademarks, service marks, and commercial names and designations, protection against unfair competition, and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.[5]

As a term, IP became internationally adopted when WIPO was established in Stockholm in 1967. Before that, terms and definitions for the concept varied across countries. The term *Gestiges Egentum* (intellectual property) appears to have been first used in Germany in the mid-eighteenth century, although it only referred to copyrights, and had the same meaning in Spain and in the Philippines (Zheng 1996). Meanwhile, France adopted the term *la Propriété Industrielle* ('industrial property'), and expanded the concept to include other IP rights (Yang 2003; Zheng 1996: 5).

In recent years, some similar expressions have appeared in both academic and business contexts. *Intellectual capital* (IC) has become a popular business term since the 1990s to emphasize the significance of 'brain' assets (Stewart 1991, 1994 and 1997). It refers to any knowledge assets that can bring functionality and benefits to a firm or an organization. Some other terms have similar meanings – *intangible assets, intangible resources*, and *intangible competencies* (Hall 1993: 608). They can be differentiated from and connected with IP in equations, such as those given below. In these, *codified knowledge* refers to human capital recorded on paper, such as learning materials and trade secrets (Sullivan

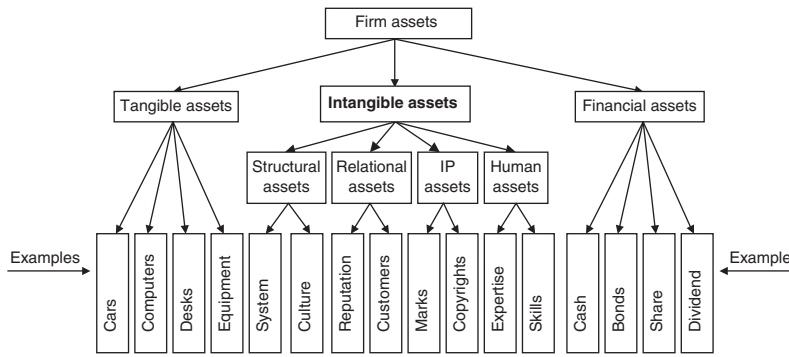

Figure 2.1 Construction of corporate assets
Source: Created by the author.

1999: 133), as opposed to *tacit knowledge*, i.e. knowledge imbedded in employees.

Intellectual assets = IP + codified knowledge
Intellectual capital = intangible assets = intellectual assets + tacit knowledge

In comparison to IC, IP is much narrower a concept. Figure 2.1 positions IP as part of a company's IC and overall assets. It is well worth noting that the gravity of IC can vary significantly across firms. For example, a software firm will put greater emphasis on IP assets than a wholesaler, who will pay more attention to their market assets, such as customer networks, distribution channels, licensing and franchising agreements. Some assets may fall into two asset categories: know-how embedded in an employee may involve both IP and human assets, such as entrepreneurial and managerial skills (Brooking 1998). A production process may be categorized under structural assets, although technologies, methodologies and processes for production might also be protected as IP elements.

Industrial Property, which excluded copyrights, used to be a very distinct concept from IP, but the boundary between them is becoming increasingly blurred with the expansion of IP rights. The term mainly includes patented inventions, marks, industrial designs, geographical indications and utility models, whereas copyright refers to literary and artistic works, and related rights, such as performing, phonograph and broadcasting rights. Since the 1980s, the scope of copyright protection for commercial purposes has significantly expanded. In 1980, the US

extended its copyright protection to cover computer programs (Rapakko 1990: 7), while copyright has been used to protect functional objects (such as car exhaust systems) in the UK since before 1988 (Yang 2003).

It is worth noting the debate about the significance of separating IP rights from IP. One view is that IP and IP rights should not be divided on two grounds: First, the two authoritative organizations – WIPO and WTO – often mix the use of the two terms. Second, the notion of 'property' implies a private possession (as opposed to a public sharing) and therefore includes the concept of (private) rights. The other view is that there should be a clear distinction about the two concepts. IP is a broad concept encompassing IP rights, i.e. IP can be a corporate asset, but without there necessarily being a legal right involved. As Pitkethly defines (1993: 1), '*invention is a piece of IP, but a patent is an IP right protecting it*'. This differentiation is crucial when commercial activities are to be valued, for example, during mergers and acquisitions. The value of a patent relies on the worth of the invention. A firm may decide not to produce one of its inventions in tangible form for various reasons, such as lack of resources, choosing to license or transfer its rights outright to seek rapid financial returns. A patented invention will also bear different values at different stages of its patent life-cycle. Clearly, it can be more valuable at the beginning than at the end of the patent life, when it is about to enter the public domain where everyone will be free to use or improve it.

2.2 Scope of intellectual property

The scope of IP has become increasingly multi-dimensional with the escalating need for protection in businesses and the constant stream of new issues under discussion. For instance, there have been heated debates among scholars on the ethical issue of patent protection and access to drugs in poor countries; on e-commerce and the whole Internet domain; and on '*traditional knowledge*' and '*expressions of folklore*'.[6] Some products raise the question of the need for protection across different IP rights. A typical example is computer programs and databases which may be protected by patents, trade secrets or copyrights depending on the country concerned (Branscomb 1990: 48). It has been said that 'IP today is shorthand for a whole list of disparate rights that have this in common: they protect some products of the human mind, for varying periods of time, from others using those products in various ways' (Vaver 1999). Given the expansion of the scope of IP issues, there is 'no single generic term that satisfactorily covers them all' (Cornish 1999: 3). Hence, the discussion below cannot be exhaustive, but serves to emphasize and

illustrate the most common forms of IP in terms of concepts, duration of protection, conditions for authorization of rights and any relevant sub-categorization.

2.2.1 Patent

A *patent* is an official document issued to an invention owner by a national government (or a regional or international organization of member states) that contains a full description of the invention and confers legal protection on it. A *patented invention* is one that provides technological solutions to a specific problem where exploitation of the creation must be authorized by the owner within defined geographical limits (usually nation based) and time (usually 20 years by TRIPS standards). An illustrative example is the Intelligent Oven, which can be remotely controlled (e.g. from the office) so busy people can have food cooked by the time they get home, and was rated by the *Times* as one of 2003's smartest, coolest and most trendy inventions.[7]

Three criteria must be present for a patent to be granted – inventiveness, novelty, and utility.[8] Inventiveness ('*the inventive step*' or '*non-obviousness*') means the invention should not be obvious to a person with average knowledge or skill in the field in the country concerned. The patent applicant also needs to prove the novelty of the idea: the invention should be clearly original, and not have been disclosed in oral or written form (or in actual use) at the time of the application. Utility (or industrial applicability) must also be proved, meaning the technological solution must be capable of being converted into a product or an industrial process.

Patents can further be categorized into '*product*' and '*process*' *patents*. In a product invention, a technological solution is embedded in a product, and the patent gives the owner(s) the exclusive right to 'make, use, sell and import the products that include the invention' (WIPO 1997: 8). A process patent covers the situation where a technological solution is imbedded in a production process, and bestows on the owner the exclusively right to use the process for the making, use and trading of associated products.

2.2.2 Utility model

A *utility model* (or *petty patent*) is an official certification for a minor invention (Bosworth and Yang 2002: 4; WIPO 2001: endnote 134: 26; Yang 2003: 44–5). There are four major characteristics that distinguish utility models from invention patents. First, although the general criteria are the same, the utility model covers the situation where the 'inventive

step' is a minor one – in effect, the utility model is a 'second-tier' patent. Second, the length of protection for a utility model is shorter (usually 10 years). Third, the application fee for applying for a utility model grant is usually lower and the administrative procedure simpler than for a full patent, due to the simpler technical specification and shorter time period involved. Finally, while all countries with an IPS authorize invention patents, not all of them authorize utility model patents: thus, while Japan, China and most European countries make wide use of utility models, the UK, the Netherlands and Luxembourg do not use them.

2.2.3 Industrial design

An *industrial design* is a legal right given to the creator over an ornamental creation – shapes, patterns, colours, configurations and so on – which has industrial applications (Bosworth and Yang 2002; WIPO 2001: 134). In the eighteenth century, industrial design rights encouraged the growth of the UK textile industry by offering two months' protection to designs for linens, cottons, muslins and calicos. From the nineteenth century, such design rights were extended to a wider range of industries (WIPO 2001: 98). Novelty or originality is fundamental for the grant of a design right, and the normal protection duration is 10 years.[9]

2.2.4 Mark

A *mark* is a sign, symbol, words, or their combinations, which distinguish goods or services in terms of quality or features. The right to a mark gives the owner the exclusive right to use the sign or symbol for their products or services, and prevents others from using it without the mark owner's authorization. The protection usually lasts for 10 years, but can be extended indefinitely where the mark is in continuous use.

The authorization of mark rights is conditional on three counts. First, the mark must be distinctive, i.e. easily distinguishable so that consumers can tell one product from another; manufacturers can differentiate their products from those of their rivals; and the relevant authorities can exert quality control. For example, coffee is a generic term and cannot be used as a mark, whereas 'Nescafé' is a 'mark' for coffee. Second, in many countries, government organizations monopolize certain signs: national emblems and flags are national symbols, and their registration as marks is not allowed. Third, marks must avoid causing deception, undermining public morality, and/or jeopardizing the public interest. And each country will usually stipulate forbidden marks in its trademark law, taking into account national defence, ethical and religious beliefs.

A good example of how countries take care in this last case concerns the name BinLadin. After the 9/11 attack, the Swiss Trademark Office revoked the trademark 'BinLadin' – which had been registered to Yeslam BinLadin, one of Bin Laden's 54 siblings for Arabic style T-shirts and trousers – fearing it would cause public offence.[10] In Pakistan and Afghanistan, in contrast, the name Bin Laden has been used to sell fake Nike T-shirts carrying slogans, such as 'Look out United States, Osama is coming!'.[11] Needless to say, registration of the name as a mark was not part of the enterprise.

There are mainly two types of marks. A *trademark* refers to a legally protected mark that identifies the products of a firm and distinguishes them from those of their counterparts in the same industry. Illustrative examples are Coca-Cola drinks, Valentino suits, Levi's jeans, Aston Martin cars, Microsoft Office software and Kellogg's cereals. In contrast, a *service mark*, such as HSBC, Barclays, Holiday Inns, Shangri-La and McDonald's, identifies a firm and its services. A mark can sometime represent the identity of both a product and a firm – thus both Coca-Cola and McDonald's are the corporate images and also the product identities.

As well as these two main types of marks, *collective marks* and *certification marks* are two other marks, which are similar in their use, but differ as to limitations on the eligibility of their use: A *collective mark* is exclusive to an organization (such as a product or industrial association), whose members use the mark on their products or services. A good example is Green Cross International, an organization devoted to environmental protection. In contrast, *certification marks* are more 'open-plan' giving wider opportunities for use by both organizational members and 'outsiders' that follow the organization's standards. For example, Open Source Initiatives (OSI) allow the dissemination of software and related knowledge to any firm that agrees to follow the relevant standard.

2.2.5 Copyright

A *copyright* is a right that recognizes the creators of literary and other artistic works as the owners of rights over *their expressions of these ideas*, but not, however, of *the ideas themselves*. Traditionally, copyright bestows legal protection on their ownership until 50 to 70 years after the owner's death in the fields of literature, music, arts, maps, technical drawing, and motion pictures (WIPO 2001). Copyright allows authors to assert their authorship, and 'to object to certain modifications and other derogatory actions'[12] to their work, as well as giving owners the right to claim remuneration from those who exploit their intellectual creations, and to preclude such exploitation without their permission. Copyright also

protects the interests of performers, artists, producers, publishers, and broadcasters under so-called 'neighbouring rights'. Following the rapid development of computer technology, computer software and domain names have also become protected by copyright.

In comparison to the rights previously mentioned, copyright has distinctive features and conditions. It is an automatic right, with no registrations or granting needed. In Britain, for instance, the requirement for copyright protection is to lodge a copy in the British library, and 'Copyright © owner Year' must be clearly shown on published works (Yang 2003). The other distinction of copyright from other rights is that two independently created works based on the same idea are both eligible for copyrights, since (as is noted earlier), it is impossible to have monopoly ownership of an idea. In comparison, if two identical inventions are filed for a patent, although the owners may prove the independence of their individual creativity, the patent will be granted to the first to file an application, who then becomes the sole 'true' owner (unless they agree to 'share' the right as joint patentees).

2.2.6 Trade secret

Trade secrets or *Corporate know-how* refers to information of either industrial or commercial value (or both), the public divulgence of which might be damaging, and which the owner therefore endeavours to prevent. Different countries protect trade secrets under anti-unfair competition laws or anti-trust laws, but because of their commercial importance, companies mostly rely on their own efforts to protect their secrets.

Kentucky Fried Chicken (KFC) claims to keep such 'trade secrets'.[13] KFC declares the six billion[14] pieces of chicken it sells annually across the world are coated according to a secret recipe only known to a handful of people, and kept in a Kentucky bank. The recipe is usually mixed in two separate locations and combined in the third location. It may be felt that the exotic nature of these arrangements have more to do with marketing 'hype' than keeping ingredients secret.

2.3 Common characteristics of various intellectual property forms

Despite the obvious distinctions discussed above, all these IP forms share some common characteristics that collectively differentiate them from tangible assets. They are intangibility, exclusivity, legality and territoriality (Liu 1996; Sherwood 1990; Yang 2003; Zheng 1997).

2.3.1 Intangibility

IP is sometimes called 'intangible property', and this intangibility differentiates it from ordinary tangible assets in three respects. First, the transfer of IP assets is more complicated than that of tangible assets, where ownership of the asset itself simply shifts from seller to buyer. While an outright transfer of IP (such as might occur when a university scientist sells a patented invention to a company for commercial development) involves a similar simple reassignment of ownership, most IP asset transfers are not so straightforward. Instead, IP transfers generally entail the transfer not of ownership, but of the authorization of the rights to use, make or sell a product or service that involves the IP. This is a licensing situation – the IP rights owner retains ownership, but authorizes an exclusive (or non-exclusive) licence to the use of the IP in return for payment, usually in the form of royalties.

Second, due to the intangible nature of IP, rights can easily be infringed, either intentionally or inadvertently. With unintentional ('innocent') infringement, a user or manufacturer may not be aware of the protective scope set out by the owner. Due to the complexity of separating ownership of IP assets and IP embedded products, conflicts between owners and users/manufacturers are more likely to arise than in the case of tangible assets.

Third, an IP is often embedded in a product or a production process, and therefore the borderline between tangible and intangible assets is often unclear to outsiders. For example, an author sending a manuscript to a publisher for publication will retain the copyright on their creativity, although not the 'ownership' of the book when it has been printed and distributed. In such a case, the intangible asset – the copyright – remains with the author – but it is 'embedded' in the tangible asset – the printed books. These are owned by the publisher, until shifting to the book-buyer, who then becomes the owner of the tangible asset, which nevertheless still has the author's copyright (the intangible asset) embedded in it.

2.3.2 Exclusivity

Exclusivity in this context covers the original IP owner's rights to exclude others from exploiting their creativity without their express authorization. Many people can own a tangible product with the same design and function, but only one person or entity can own a patented invention.[15] In order to establish this exclusivity, anyone applying for recognition of their IP rights must satisfy whichever authority grants the rights that

their invention or expression is theirs, is original, and is distinct from anything similar in the country involved. This will involve both creators and granting authorities in searches as part of their application or examination procedures, the degree of which will differ according to which specific IP rights are involved.

2.3.3 Legality

Legality refers to the mechanisms each country uses to protect and limit IP, which in turn reflect the public interest and the governmental policy and enforcement strategies. Different forms of IP are protected under distinct mechanisms, which can be simple and cheap (such as copyright), or much more complex and expensive, as in the case of patents. Legality also establishes the basis in a country's law for the supervision of its dispute resolution procedures in the matter of IP rights.

Aside from protecting them, legal mechanisms are also used to safeguard an IPS. They may limit owners' IP rights, including preventing owners from abusing their rights, or public morality and interests. They can serve the wider public interests by establishing limits on the duration of IP rights, after which they become available in the public domain. Legality must also take into account the interests of public morality and national security. Governments tend to be sensitive about inventions which may have national security implications. It would be impossible for a government to grant a patent application where the invention could result in a hostile nation being able to decipher sensitive information, and such an invention may be completely segregated from public access and reserved purely for government use.

2.3.4 Territoriality

Intellectual property protection is territorially limited, with nations as the basic boundary, but subject to different degrees of regional and international linkages. Nations establish their own IP systems, which will include an IP mechanism, administrative organs and judicial enforcement to balance the interests of IP owners, the public and the country. However, such nation-based IP design can clearly result in discrepancies or even conflicts between different countries. Under these circumstances, regional integration and international harmonization has become necessary to resolve incongruity or conflicts by standardizing IP treatment. A typical example of such regional integration is the European Patent Office (EPO) which promotes EU-wide IP collaboration. Internationally,

great efforts have been made by WIPO and the WTO to harmonize worldwide IP activities over the past two decades. These efforts have yielded model IP laws for member states in the form of treaties, conventions and agreements (TCAs). These two organizations have also become the international judges to resolve conflicts between countries. Nonetheless, these efforts at harmonization do not change the basic nature of the territoriality of IP provision. International TCAs only serve as a general standard, and individual countries stipulate specific rules and regulations beyond these standards, while implementation of IP legislation, administration and enforcement remain at the nation level.

2.4 Dialectic rationalization of intellectual property protection

Nations seek to balance the interests of IP owners and the general public in their attitude to IPP. The interests of IP owners lie in the defence of their ownership of their intellectual creativity, and the grounds for argument are those of natural rights, economic incentive, the promotion of access to creativity via IP and reward structures. The *natural right* argument is based on the recovery of costs, arguing that when an IP is created, protection of the natural right of ownership allows the owners to recoup their costs from the exploitation of the creation. A case in point is the pharmaceutical industry, where the introduction of an efficacious drug can take up to 20 years, involve 200 researchers and administrators and cost maybe US$500 million (Yang 2003). This investment cannot be recovered without patent protection, as drug compounds can easily be revealed with basic pharmaceutical knowledge. The price differences between generic and patented drugs bear witness to the cost differences involved. The *economic incentive* argument is strongly linked to the motivation of creative continuance. Creators need constant rewards in order to want to continue their contribution to society with their intellectual work, which subsequently boosts general economic development. Needham (1954) has argued that the protection of IP rights was the main reason behind the success of industrialization in the UK. In contrast, ancient China, where IP was not protected, remained an agricultural state for years (Liu 1996; Needham 1954).

The *promotion* argument takes a much broader approach than these arguments, and deems the dissemination of creativity as the main rationale for IPP. In other words, intellectual creations can only gain wider application as a result of public awareness, and the mechanisms of IP application and registration serve to publish inventions and other

creations into the public domain, stimulating the possibility of commercial exploitation under authorization/licence. The *reward* argument is on a similar basis (Penin 2005; Yang and Clarke 2004). Both theories emphasize the maximum dissemination of creations, but while the former stresses the creative rights, the latter emphasizes freedom of access, allowing for even wider applications without financial constraints. The reward system was widely used by Communist regimes where production and distribution were state assets, as for example in China from the 1950s to the 1970s. Originators were rewarded much more simply than under the Western system, with a lump sum payment, or by honorary awards which recompensed inventors with honour and fame, rather than materialistic rewards.

On the other side of the balance are four counter arguments, which include public access, limited rights, non-detrimental and the public interest. First, the *public access* argument focuses on the dissemination of IP. This reasoning includes the idea of a public right to access IP creations when they are published, implying that anyone interested in the commercialization of a particular IP item should be able to seek possible cooperation under licence with the IP owner, who may lack the financial support or complementary assets to undertake successful commercialization of their creation. Second, the *limited right* argument concerns the duration of IP rights, suggesting that the public interest is reflected by the fact that the monopoly IP rights are time-limited so that free exploration of the creations can take place once the protection expires.

Third, the *non-detrimental* argument emphasizes that the creations should have no detrimental effect on the public. Countries tend to be particularly concerned about creations that are relevant to defence, public morals, and safety, and intervene when they believe that public interests are jeopardized. Finally, the *public interest* argument concerns the prevention of creative abuse. Where an IP owner refuses to license their IP rights, a government may enforce compulsory licensing (non-voluntary licensing, discussed in detail in Chapters 9 and 10) where it believes that the public can benefit from its commercialization. However, countries are divided about practicing such compulsory licensing. For example, the US only grants compulsory licensing under special circumstances via the federal patent system,[16] while the Chinese government actively encourages compulsory licensing subject to approval by the State IP Office, with royalties being apportioned between the relevant parties.[17]

The effective functioning of IPP lies in a good balance between the creators' and the public's interests. A balanced protection regime taking into account the interests of both sides would allow the maximum application of intellectual creations to society. Nonetheless, the key current arguments are divided for or against IPP. One side asserts that over-protection has produced serious ethical issues for society, with the salient example of patented drugs and their affordability to patients. Drug companies want to set the price of IP protected drugs at a level that allows them to recoup the costs incurred, including research and development (R&D), risks, and the expenses of other failed drug tests – and, of course, to ensure themselves significant profit levels. But people with fatal illnesses – such as AIDS – are desperate for treatment, and the argument is that companies should lower their price in the areas where such drugs are desperately needed.[18] This argument was represented by the Nobel laureate economist, Joseph Stiglitz, who emphasized that pro-innovation IPP was currently hurting countries' economies by encouraging monopoly situations and working against the general public interest.[19] He suggests that the Japanese way of balancing IP – protecting IP but expanding licensing activities by setting lower prices for licensing arrangements – should be adopted in the world. He commended the OSI as a good strategy to soften the Microsoft monopoly and to enhance knowledge dissemination in the software area.

However, most firms protest against such views, believing that IP has not been protected enough, and this view has probably formed the main dividing line between developed and developing countries in terms of IPP. The staunch hard-line supporters of IP are the triad powers – the US, EU and Japan – where 95 per cent of the world's leading technologies have originated (Bosworth and Yang 2002). Firms from the triad looking for investments in developing countries want to ensure their corporate assets are protected. Meanwhile, developing countries, which need technologies and other IP knowledge as a shortcut to economic development, tend to lack established IPS, which take time to evolve to function effectively. Thus triad firms tend to want protection of their IP right to be fortified in developing countries. This divide is further exacerbated by the nation-based nature of IPP, with each country stipulating its own IP protective scope on the basis of the general framework of the TRIPS agreement and other TCAs. Many arguments indicate that the maximum benefit to society from IPP can be achieved by a balance that takes the

interests of both creators and public into account. But finding the best balance will be problematic, given that some strong vested positions rest on arguments that challenge the notion of such a balance even being desirable.

2.5 Academic schools of thought on intellectual property

The IP field has become much more interdisciplinary over the past two decades, moving from being an esoteric subject reserved only for lawyers, to an exoteric issue straddling various disciplines. The mainstream of IP Law studies focuses on IP legal codes and their enforcement in national, global and international contexts. Economics, where IP is deemed as a modern driver for economic growth, has concentrated on the analysis of IP quantification and IP activities (Granstrand 1999; Maskus 2000; Pitkethly 1993; Sherwood 1990; Smith and Parr 2000). Sociology has studied the linkages between IP, history and ethics across different countries (Bently and Maniatis 1998; Coombe 1997; Firth 1997; WIPO 1997). Consideration of IP is also involved in finance (Arthur Anderson & Co. 1997), taxation (Adams 1987; Eastaway 1998; Gallafent and Nigel 1981), politics (Doern 1999), philosophy (Brush and Stanbinsky 1996; Pels 1998) and trade (Hoekman 1995; Sterling 1997), and in direct association with industries, such as electronic data processing (Hoffman 1999), information technology (Conradi 1999), biotechnology (Standford 1995) and genetics (OECD 1996). In recent years, IP has gained great attention from IB, but a systematic examination of linking these two fields is lacking; thereby prompting the author's intention to write this book.

Closer: Badges of allegiance or trademark use?[20]

This case stresses how ambiguous rights and wrongs can be in the IP field. The trademark case between Arsenal Football Club and Mr Matthew Reed, which has lasted since 2000, concerns trademarks and badges of loyalty. Mr Reed, a life-long stall owner and an Arsenal fan since the 1960s, had been selling Arsenal memorabilia bearing the club badge and logos outside the club's Highbury Stadium since 1970 (Photo 2.1). In 2000, the club challenged him in the UK High Courts, seeking judgment against him for trademark infringement and 'passing off' (i.e., misrepresenting Arsenal and its products, and thereby misleading consumers and damaging the club's reputation and goodwill). The club believed such use of the logo and badge by Mr Reed infringed the club's

Photo 2.1 Matthew Reed (Courtesy of BBC News)

proprietary right to the Arsenal trademark under the UK Trade Marks Act 1994. Mr Reed, however, contended that he had always made clear that what he sold were not official products, but only represented badges of loyalty and allegiance for fans, and that did not constitute trademark use and therefore there was no infringement. The case spanned three years from 2000 to 2003, and there has been no sign of an appeal in the House of Lords so far.

As a preliminary result in May 2001, the High Court concluded that the sale of unofficial goods by Mr Reed had caused no confusion to consumers, and therefore no passing off had occurred. Furthermore, the logos and marks being used as badges of allegiance in unofficial sales did not constitute trademark use. Judge Laddie also concluded that, as the stipulations of the Trade Marks Act 1994 as to non-trademark use are so broad they lead to differing interpretations, the European Court of Justice (ECJ) should be referred to, to clarify whether use in a non-trademark sense undermines a trademark's originality or not.

In November 2002, the ECJ made a judgment in Arsenal's favour that the sales of the 'unofficial' merchandise jeopardized the originality of the trademark. However, when the case returned to the UK High Court, Justice Laddie argued that the ECJ had 'exceeded its jurisdiction' in delivering a judgment contrary to his verdict, and overturned its decision in favour of Mr Reed. Nonetheless, on 21 May 2003, the Court of Appeal judges unanimously supported the ECJ judgment, and decided that non-trademark use of a registered trademark as a sign of allegiance constituted

an infringement, and that Arsenal had satisfactorily substantiated its case that Mr Reed's use of its trademark had jeopardized the identification of its origin as belonging to Arsenal Football Club.

Reflections on this debate are likely to be various and divided, and judgment will depend on the interpretation of law by individual judges in individual cases. First, it is the strength of the law itself and the clarity of interpretations that guarantee the exclusivity of the proprietors. In this case, the clarification that such use of logos or symbols in a non-trademark sense does constitute an infringement has significant repercussions for a number of industries, such as the memorabilia, film, music and textile industries. However, the real difficulty is in knowing exactly how far the breadth of an owner's monopoly over a trademark extends. Should trademark owners be granted such a wide monopoly? What about the interests of less-affluent consumers, who cannot afford the exorbitant price on the official branded products? Should not they have the right to find an alternative product to show their allegiance to their favourite football club?

Second, while the final verdict was highly applauded by trademark owners, as it confirmed their proprietary rights against trademark infringement, the outcome was not universally supported. Among Reed's supporters, Willoughby & Partners judged the verdict a 'retrograde step' and likely to lead to a 'grave injustice', making the point that Mr Reed had been selling Arsenal memorabilia long before Arsenal registered its ownership of the trademark.

It is not yet clear that this is the end of the Arsenal–Reed tussle. The case so far indicates a clear victory for brand owners, who have been enabled to assert their ownership with authority. But Mr Reed, who faces costs of over £175,000, may seek House of Lords' permission for a further appeal.

Intellectual property facts: A century of world patents

In line with this chapter's theme, IP facts outlines the development of invention patents from 1883 to 2005. The record of over a century shows that numbers of patent grants have grown rapidly around the world since IP statistics started to be systematically recorded in 1883. The exposition of the statistics is divided into two parts: first, to identify the trend of the development, and second, by separating the analysis into two different periods – the first 100 years up until 1982 and post-1983 eras – to detect the differences of invention patent activities by countries.

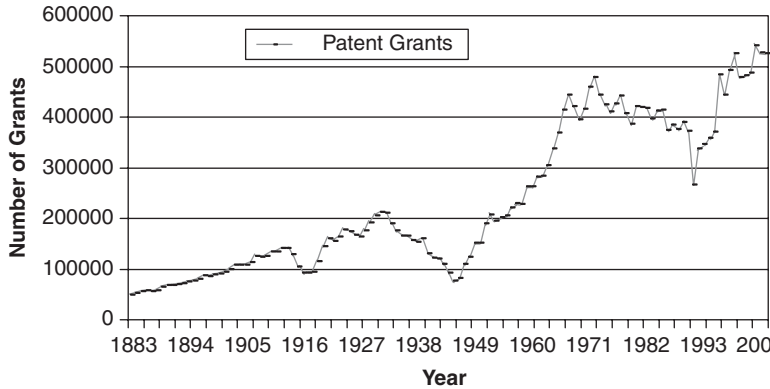

Figure 2.2 The number of invention patent grants in the world (1883–2005)
Source: Created by the author based on the WIPO raw data from 1883 to 2005.

Figure 2.2 shows that, from the first recorded years until the end of World War II (WWII), patent grant numbers increased very slowly. The maximum of just over 200,000 occurs in the early 1930s, and there were two sharp decreases during the two world wars, when industries diverted to war production had little time for non-military product innovation. However, with individuals and firms able to concentrate on science and technological development again, there was an upsurge in patent grants between WWII and 1973. From the 1970s until 2005, world patent grants show a general growth trend, but growth has not been stable, with patent grant numbers decreasing in the late 1970s and early 1990s. Overall, however, the past 100 years show an increasing trend in individuals seeking administrative protection and governments awarding patents to inventions. The grants from 1983 to 2005 (23 years) account for 34 per cent of the total grants from 1883 to 2005, showing how patent grants in recent years have grown more rapidly than over the last century as a whole.

The country studies in patent grants show two differences between 1883–1982 and 1983–2005, despite the unaltered dominant position of the developed countries (Table 2.1). First, the top 20 countries accounted for a slightly higher percentage of patent grants before 1982 than after 1983 (92 per cent against 90 per cent), indicating that patent grants have spread a little more to countries below the top 20. A much clearer picture of development can be seen in the percentage change of grant numbers of each country against the total number of grants in the world. The USA still stands out as the leader in patent grants awarded, and its share

Table 2.1 Top 20 countries in terms of the number of invention patent grants (1883–2005)

Ranking	Country	1883–1982	Percentage of total world grant	Country	1983–2005	Percentage of total world grants
1	United States of America	4,092,070	21	United States of America	2,595,582	27
2	France	1,946,454	10	Japan	2,265,768	23
3	United Kingdom	1,918,847	10	Soviet Union	630,165	6
4	Germany	1,361,182	7	Republic of Korea	522,503	5
5	Canada	1,105,163	6	Germany	382,737	4
6	Soviet Union	1,065,708	6	France	322,788	3
7	Japan	1,037,033	5	Canada	319,910	3
8	Italy	1,015,347	5	Russian Federation	282,846	3
9	Belgium	813,026	4	United Kingdom	261,565	3
10	Switzerland	641,080	3	Australia	256,173	3
11	Austria	430,676	2	China	246,517	3
12	Spain	417,666	2	Italy	90,004	1
13	Sweden	352,203	2	Mexico	89,866	1
14	Australia	328,787	2	German Democratic Republic	89,594	1
15	Czechoslovakia	212,005	1	Spain	83,260	1
16	Argentina	176,849	1	Sweden	79,834	1
17	Hungary	175,470	1	New Zealand	78,652	1
18	Netherlands	167,660	1	Switzerland	71,602	1
19	German Democratic Republic	162,136	1	Poland	68,812	1
20	South Africa	153,764	1	Ukraine	68,574	1
	Total Top 20	*17,573,126*	*92*	*Total Top 20*	*8,806,752*	*90*
	Total world	*19,161,702*	*100*	*Total world*	*9,779,364*	*100*

Source: Synthesized by the author based on the WIPO raw data from 1883 to 2005.

increased slightly from its pre-1982 21 per cent to 27 per cent in the post-1983 period. Japan, which had only 5 per cent of the total before 1982, increased its share to 23 per cent, but figures for both the UK and France dropped from 10 to 3 per cent.

Second, the table shows the changing picture as far as the developing countries are concerned. Apart from the Soviet Union maintaining its position on the top 20 lists, other developing countries from the first period disappear from the list, to be replaced by a newly industrialized country – South Korea – and some emerging economies – China, Mexico, Poland and Ukraine.

These IP facts illustrate two points. First, there has been an increasing trend of patent grants, particularly over the past two decades, which demonstrates the great emphasis that different countries place on protecting their scientific and technological creations, as well as the international efforts in advocating respect for intellectual creations. Second, developing countries seem to be paying increasing attention to IP, guided by international IP organizations and under pressure both from developed countries' investment patterns, and from their own needs to improve their IP environments to secure technology transfer (Bosworth and Yang 2000). However, while some now have shares among the top 20, these changes have only slightly fragmented the overall picture, which continues to show the patent world as dominated by activity in the developed world.

Summary

This chapter focuses on the fundamental understanding of IP. IP as a concept is advanced and distinguished from some similar concepts, such as intellectual capital and industrial property. The chapter explains the scope of IP and how IPP is expanding, as well as discussing common features among types of IP. It discusses the controversial views on IPP and the difficulties of striking a balance between the interests of originators and of the general public. Finally, the chapter has examined the expanding interdisciplinary field, and indicated how this book will pursue IP from the perspective of IB studies.

Two cases demonstrate the importance and complexity of IPP. The Harry Potter case illustrates the importance of copyright for writers, and shows how IP has played a significant role in the creation of wealth from the dissemination of original creativity into related licensed products. The Arsenal trademark dispute between the club and a street

vendor shows how IP can be a controversial subject, with different interpretations as to the rights and wrongs of an issue.

The IP Facts section analyses world trends in patent development since records began in 1883. The trend in patent grants is upward, particularly in the past two decades under the intensity of technological advancement and the moves towards international harmonization as coordinated by WIPO and the WTO. The study of the top 20 countries in terms of number of invention patents in two different periods shows that developed countries continue to be the dominant holders of patent grants, although there has been a slight fragmentation over the past two decades. Developing countries increasingly pay attention to patent development, but they are still the 'followers' of developed countries, and only represent a fraction of patent ownerships.

Notes

1. The author wrote this case based on the following information: (1) Anon. (2007) Harry Potter Edition Topping Charts, *USA Today*, 2 April; (2) Anon. (2001) Coke and Harry Potter Join Forces, BBC, at: http://news.bbc.co.uk/1/hi/entertainment/1181896.stm, on 3 April 2005; (3) Brown, S. (2005) Harry Potter – Brand Wizard, Brandchannel.com, 18 July, at: http://www.brandchannel.com/features_profile.asp?pr_id=241, on 2 March 2007; (4) Fox, K. (2006) J.K. Rowling: the Mistress of All She Surveys, *Guardian*, 31 December; (5) Jordan, D. (2007) Time Comes for Harry to Fly to the Rescue, *The Times*, 4 April; (6) J.K. Rowling official website, http://www.jkrowling.com/; (7) Scholastic (2005) About the Books: Meet J.K. Rowling, at http://www.scholastic.com/harrypotter/author/, on 14 September 2005.
2. These concepts are not covered specifically in this text, but are delineated in the TRIPS agreement overview (1995). An integrated circuit means 'a product, in its final form or an intermediate form, in which the elements, at least one of which is an active element, and some or all of the interconnections are integrally formed in and/or on a piece of material and which is intended to perform an electronic function'. Business method patents can be understood as methods of doing business protected under patent rights. They tend to be patentable in countries like the US, Japan and Australia, but whether such patents should be granted is debatable in many countries. Geographical indications refer to 'indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin' (TRIPS 1995: Article 22.1).
3. See www.wto.org about intellectual property.
4. Empirical evidence suggests that there has been an increasing trend towards cross-border inventions/ownership, including applications across OECD member states (Guellec and Van Pottelsberghe de la Potterie 2001).

5. WIPO Convention 1967: Article 2.
6. WIPO (2001: 25) defines *traditional knowledge* as 'tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields.' Further it defines that the *expression of folklore* is 'productions consisting of characteristic elements of the traditional artistic heritage developed and maintained by a community in the country or by individuals reflecting the traditional artistic expectations of such a community' (op. cit.: 22). These issues are discussed as *Emerging Issues in Intellectual Property* at WIPO, at: http://www.wipo.int/about-ip/en/studies/index.html, on 1 December 2003.
7. The Intelligent Oven, invented by the TMIO company, received the best innovation 2004 awarded by the Consumer Electronics Association, UK and the coolest invention 2003 rated by *The Times*. The function of such an oven is that one leaves a meal in a cool-cook double wall oven before leaving for work (Step 1). Step 2 is to use a mobile phone or Internet connection at work to instruct the oven to get the meal ready at a particular time. Step 3, cook oven is switched on under instruction to prepare one's meal automatically. Source: (1) *Time* (2003) The Coolest Inventions 2003, at www.time.com on 1 February 2004; (2) www.tmio.com.
8. TRIPS 1995: Article 27.1.
9. TRIPS 1995: Article 25.1.
10. Kirby, E.J. (2002) Swiss Move against 'BinLadin' Label, at: http://news.bbc.co.uk/1/hi/world/europe/1769999.stm, on 15 August 2002.
11. Anon. (2000) Bin Laden T-shirt Enrages Nike, at: http://news.bbc.co.uk/1/hi/world/south_asia/1067012.stm, on 16 March 2002.
12. WIPO Convention 1979: Article 6*bis*.
13. Fisher, D. (2001) Is the Secret of KFC Finally Out? *News: Northwest*, 30 January.
14. In this book, 1 billion refers to 1,000 million.
15. While for simplicity's sake, the arguments about ownership of rights are presented as if invention or creativity was a solo experience; the author recognizes that many fields of human endeavour – be they in the sciences or the arts – involve the joint creativity of more than one mind. In such cases, the collaborators, where they apply for IP protection together, are treated as single joint entity.
16. US Code Title 35 – Patent (ISC35 2004): Articles 208 and 209.
17. *The Patent Law of the People's Republic of China* (PRC 2001): Chapter VI; *Implementation Regulations of the Patent Law of the PRC* (2001): Chapter V.
18. In reality, however, the argument is not straightforward, as speculation may create grey markets in these drugs from these countries to the rest of the world.
19. Mamudi, S. (2004) Interview: How to Fix the Imbalance, *Managing IP*, 1 October.
20. This case was written by the author based on the following information: (1) Anon. (2002) Arsenal Win Court Battle over Logo, at: http://news.bbc.co.uk/1/hi/business/2446105.stm, on 11 November 2003; This is also the source of Photo 2.1; (2) Anon. (2003) Arsenal Win Logo Battle, at: http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/1/hi/england/london/3045739.stm, on 11 November 2003; (3) Attridge, D.J.M. (2001) Case

Notes 'Lucky, Lucky Arsenal': Infringing Uses of Trade Marks, *Intellectual Property Quarterly*, 4: 389–97; (4) Dombey, D. and Tait, N. (2002) Arsenal Score Legal Victory in Trademark Fight, *Financial Times*, 13 November: 4; (5) Fresco, A. (2002) Europe Overruled in Arsenal Dispute, *The Times*, 13 December 2002; (6) Hering, I. (2002) Arsenal Scores Trade Mark Win, *Managing IP*, November; (7) Mamudi, S. (2002) European Court of Justice set for Arsenal Decision, *Managing IP*, November; (8) Tait, N. (2003) Arsenal Triumphs in Battle over Merchandise Trademarks, *Financial Times*, 22 May: 4.

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3
Intellectual Property Systems

Contents

Focus and structure

An IP system (IPS) – the system a country uses to protect IP – covers, in a narrow sense the administration of IP: the examinations and granting of IP applications, the dissemination of IP information, and the promotion of IPP in the domestic and international arenas (Thompson 1993). As I have previously argued (2003), an IPS should also be taken to include the relevant legislative guidance (the legislature and institutional mechanisms) and judicial force (the court and enforcement systems).

A successful administrative system of IP needs institutional instructions and judicial execution, and these three are inseparable elements that must be integrated to contribute to a strong IPS.

This chapter adopts this broader sense of IPS, using patent systems as a focus, to aid the critical understanding of IPS across the world. First, the different ways in which IP functions in each nation are discussed, together with the strengths and weaknesses of various types of national IP mechanism, administration and enforcement. Following this theoretical discussion, the second section focuses on a comparative study of IPS in the US and China. The third section focuses on international IP organizations, and examines their role in harmonizing nation-based IPS, the weaknesses of this international coordination and the feasibility of an international IPS.

Apart from some short cases in the text, the opening case examines the political economy to consider the reward system of IP. The closing case analyses the utility model system and addresses the need for standardization. The IP facts section uses invention patent data of the US and China to examine country differences in IP administration.

Opener: The reward system: Virtue or vice?

This opening case discusses the reward system – an alternative to the conventional (i.e., Western) IPS. The author defines a reward system for intellectual creations as one in which direct government rewards to inventors or other creators, either in material terms or in terms of 'honour', are awarded in return for their creations being placed into the public domain.[1] It emphasizes the motivation of creativity and the acceleration of dissemination by bypassing the monopoly situation that forms a major element of 'conventional' IPS. The reward system puts less emphasis on IPP, whereas conventional IPS involves both incentives and protection. The dissemination of inventions under a reward system is by the free flow of knowledge, while under the conventional IPS, knowledge is transferred under monopoly and/or licensing rights. The promotion of the exploitation of creative ideas also differs: the reward system is policy driven, in that the government ensures that creativity is stimulated by giving fair awards, while conventional IPS is market driven, with IP owners relying on market demand and promotion to profit from their IP.

Some historic awards illustrate the practice of the reward system in different countries. In 1762, the British government awarded John Harrison £20,000 for his invention of an accurate chronometer, a key element in being able to successfully calculate a ship's longitude.[2] In 1810,

the Napoleonic government awarded 12,000 French francs to Nicolas Appert for his invention of food canning that allowed food to be preserved (Wright 1983). In 1839, the French government purchased the Daguerreotype photography technique and rewarded the inventor with a pension (Penin 2005). The Communist regimes probably have been the most extensive users of this system in more recent times, with the former Soviet Union and pre-1979 China as typical examples (Yang 2003). The Chinese government awarded creators certificates, medals, bonuses and honorary degrees for their contribution to the socialist state, in return for which their creations were shared by the general public. There was no monopoly situation – instead the reward system emphasized that all intellectual creations were national assets, open to free public use.

The reward system has received some research attention, with researchers examining the system from both positive and negative stances (Abramowicz 2003; Calandrillo 1998; Guell and Fischbaum 1995; Kremer 1998; Lichtman 1997; Penin 2005; Polanyi 1944; Scotchmer 1999; Shavell and Ypersele 2001; Taylor 1995; Thurow 1997; Tirole 1988, 2003; Van Hippel 1988; Wright 1983; Yang 2003). The main benefits of this system are two-fold. First, the reward system accelerates and widens the dissemination of the knowledge inherent in creations. With the creator rewarded, the creation is immediately available in the public domain for everyone to explore freely, thus considerably shortening the publication time. Free dissemination allows relevant and interested parties to consider how they might improve the original creation, without having to worry about the costs either of licensing deals or the litigation expenses that would follow infringement. The creation can thus be more efficiently and effectively explored by interests with wider expertise.

Second, the reward system restricts monopoly pricing and other monopoly abuse, thereby eliminating 'dead weight' costs. The intellectual creation belongs to the government, and can be freely exploited by anyone in the country. As there is no 'owner', protection of the creator's rights is irrelevant, and the drawbacks of monopoly and limits on dissemination become non-existent.

The reward system has several drawbacks that impede its wider application. First, information asymmetry forms the main argument against the reward system. The government must strike a good balance between the level of rewards and the social value of creations. But in reality, it can be difficult, especially at the time, to grasp a complete understanding of the potential value of a particular invention, and thus discover the true reward/social value balance, which can result in rewards being

either too little or too great. Second, costs are also a major concern for the function of this system, as all the burden falls on the public purse. They include human resource costs, the prize itself, administration of the prize, and any litigation caused by the government awarding it to a wrong person. Third, there is a danger of unfair award. The award may be arbitrary due to, for example, inadequate information, inability to value the award accurately, administrative errors and inequities. This can be particularly the case when it comes to award other IP rights rather than patents, as their value can be more subjective. Finally, the commitment to creativity may be restrained. This may happen when creators fear their creativity may be unfairly expropriated or inadequately rewarded, with the result that knowledge disclosure may be reserved. This may also occur when creators believe the patronage reward scheme deprives their financial income through market means and their intellectual independence.

The case discusses the theoretical virtues and drawbacks of the reward system. The broadened and accelerated dissemination and elimination of monopoly problems attract proponents of this system as an alternative to the conventional IPS, while the information asymmetry, the administrative burden, the potential for unfair award and possible effect on creative commitment are grounds for anxiety. Although the reward system appears to have worked in some previously communist regimes (e.g., in the former Soviet Union and China), it has now become history, in effect coming to a halt with the demise of these regimes. This is unsurprising due to the fact that the reward system is linked to government-driven political systems and the concept of public sharing. The concept of private rights in intellectual creations reflected, by the conventional Western IPS, has proved a nurturing environment for originators in recent years with the push of international organizations and developed countries.

3.1 Three-part nation-based intellectual property systems

A country's IPP is usually implemented through an IPS involving a three-part system of legislative guidance, administrative control and judicial enforcement governed and administered by interdependent national organizations. In this context, legislative guidance has a two-fold meaning: legislature and legal mechanism. Countries will have different forms of legislature which decide on what legal mechanisms should be established: most Western countries have a parliament of some sort which considers bills and enacts them into laws. The other arm of legislation

is the IP mechanism itself, i.e. the IP laws and regulations that safeguard owners' rights and public interests. Countries should have an IP mechanism to stipulate the protection of rights on both sides.

As far as administrative control is concerned, again nations differ in their provision, although they usually have separate administrative bodies for copyright and industrial property administration. While Pakistan, Egypt, Ethiopia, Greece and Saudi Arabia, for example, separate trademarks and patents administration, most WIPO member states administer marks and patents under one organization, although the names differ. Thus the UK, the US, Canada, India, Denmark and Germany have a Patent and Trademark Office, while Brazil, Argentina, Angola and Algeria have National Institutes of Industrial Property. These administrative bodies are usually under the auspices of a state council or ministry of commerce and industries, while copyright administration is usually under ministries of culture or justice. Wherever they are situated, these organizations perform similar functions of examining and granting or registering IP rights, interpreting IP laws, supervising IP activities, and resolving any administrative IP disputes.

The third important element of nation-based IPS is judicial enforcement, which is represented by a court system for dispute settlement and enforcement, before which individuals and organizations have the freedom to pursue their case. Countries differ in their court hierarchies and how their IP laws are interpreted and applied (Cooter and Ulen 1997). In common law (also called case law) countries, such as England, the US and India, decisions about the rights or wrongs of a case are based on precedent, social norms and rational public policy and understanding of the relevant laws. Lawyers represent disputing parties exclusively, evidence is taken, and the judge acts as a 'neutral' referee, guiding the hearing's proceeding while a jury decides the questions of facts and truth with judicial guidance (op cit.). This contrasts with the civil law system in Japan, China, Mexico, France, Scotland and Germany, where the law is defined in a detailed legal code. Judges decide cases by referring to the meaning of laws and are actively and directly involved with the debate about the truthfulness of the case. An illustrative example concerns ten famous Chinese writers, who jointly sued World on Line in the late 1990s for publishing their novels without permission. The court refused to handle the case because there was no legal code existing on which a judicial verdict could be based. The decision caused an outcry in China about the limitation of judicial power; under this pressure, a law related to Internet publishing was enacted which protected the writers' publishing rights.[3]

3.2 Intellectual property systems in the US and China compared

The nation-based nature of IPS is responsible for the divergence of IP practices around the world, and there have been some studies on the similarities and differences between developed country systems, in particular those of the triad countries (Aoki and Prusa 1996; Helfgott 1990; Kotabe 1992; Thompson 1993). Some country studies have also been conducted, including into patent systems in the US (Barton 2000; Gallini 2002; Jaffe 2000; Khan and Sokoloff 2001; Sherwood 1984), China (Bosworth and Yang 2002; Sun 2003; Yang 2003) and Singapore (Chng 2002). However, there have been no comparative studies of the Chinese and US patent systems. This section focuses on the specifics of these two IPSs to study their strengths and weaknesses.

3.2.1 Objectives

Both the US and China stipulate their objectives in establishing a patent system. The US patent system is designed to 'promote the progress of science . . . by securing for limited times to . . . inventors the exclusive right to their respective . . . discoveries'.[4] The Chinese patent system is intended to:

> protect patent rights for inventions-creations, to encourage invention-creation, to foster the spreading and application of inventions-creations, and to promote the development and innovation of science and technology, for meeting the needs of the construction of socialist modernisation.[5]

These objectives are based on similar principles, but also demonstrate different emphases. The objective of the US patent system emphasizes the government's role in protecting inventive activities to promote scientific progress, recognizing the importance of such activities to technological development (Finnegan, Toyosaki and Conlin 1977; Helfgott 1990; Kotabe 1992). More specific stipulations cover detailed elements, such as the promotion of R&D, the participation of SMEs, collaboration between firms and universities, fair competition, prevention of non-use and abuse and minimization of administrative costs.[6] The objectives of the Chinese patent system focus more explicitly on the need for development, which involves the implementation of such duties as the protection, encouragement, diffusion and promotion of technologies. The stress on dissemination is more explicit in the Chinese objective,

which can be expected given China's desire for advanced technologies from developed countries.

3.2.2 Legislative guidance

Cooter and Ulen (1997) have pointed out that the interpretations and applications of the law distinguish legal regimes. The US's common law regime which relies on precedent, social norms and rational public policy contrasts with the civil law regime in China, where judges decide cases according to the written legal code. Such systemic differences extend to decisions about patent law, which can differ, even though the actual patent laws may be similar (Kotabe 1992). In common law countries, verdicts may lack uniformity if precedents from past cases offer conflicting guidance, while in civil law regimes, the heavy reliance on the meaning of the written code may create barriers to the best judgment, especially where courts have little experience (consider the comparative infancy of China's IP laws). Given that technological development usually moves faster than the development of law, as its speed increases both systems run the risk of producing unpredictable outcomes, with neither written code nor precedent giving sufficient guidance to deciding disputes about IP situations involving novel technologies.

Both the US and Chinese patent laws are governed by legislatures which have two-tier hierarchies. Both central governments and regional governments (individual US states and Chinese provinces) have legislative power to enact laws. However, the Chinese system has further complications, in that between these two hierarchies, the State Council (the highest administrative layer) and its ministries also have legislative powers to stipulate rules and regulations, while below them city governments can stipulate 'rules of locality' to suit their local needs.

The two-tier legislature of both countries can generate some concerns for the patent system, leading to confusion for creators, and impeding unanimity of decisions across the states/provinces. Kotabe (1992: 156) has criticized the US system as confusing, conflicting and suggests that multiple decisions from 'diverse tribunals' can lead to 'lack of uniformity', and a similar criticism probably applies to the situation in China. Tight coordination from the national level can bring solutions to this problem, and avoid the dangers of local protectionism.

Both countries' legislatures have developed mechanisms to provide legal guidance about IP. For example, the current patent law in the US is the US Code Title 35 – Patent (USC35, last revised in 2004) which stipulates the duties of the US Patents and Trademarks Office (USPTO), and defines patentability, patent protection and international relations.

In China, the current patent law was enacted by People's Congress (the Chinese Parliament) in 1984, and was revised in 1992 and 2001. In contrast to the US patent code, this is a broad patent law, as specificity is from associated rules and regulations as stipulated by the State Council, ministries, provincial- and city-level governments.

The development of an IPS can partly be measured by increases in the number of words in IP laws, and the frequency of new IP laws and amendments (Landes and Posner 2004). Although these were a historical comparison, a useful horizontal comparison between the two countries may be made using the same measurements. Current US patent law is more specific than current Chinese patent law, using (including its Implementation Regulation) more than twice as many words. This suggests the Chinese patent law is more dependent than the US code on interpretation by government officials. While both countries have undertaken revisions, the US has been the more active, revising its Title 35 on average every year since 1984, in comparison to the two major revisions of the Chinese patent law since the same date. However, China has been more active than the US in stipulating new laws and regulations, as most IP related laws have only been established over the past two decades.

3.2.3 Administrative control

The main task for patent administration is the applications and grants, but administrative control of patent matters is associated with different parts of the overall government structure in the two countries. The USPTO is part of the Department of Commerce and 'subject to the policy direction of the Secretary of Commerce'.[7] The powers and duties of the USPTO are explicit, including the handling of the patent itself, national and international relations, and duties and restrictions for staff. In comparison, the State Intellectual Property Office (SIPO) in China is directly under the State Council,[8] demonstrating the government direct supervision of this important agency. The difference between the two offices in terms of duties is that SIPO is only responsible for patents, as trademark and copyrights are under separate offices.

In addition to this hierarchical difference, there are two striking differences in patent administration between the two countries. First, the office's powers and duties are more transparently stipulated under the USC35 than under the Chinese Patent Law. For example, in the USC35, the staff salary scheme was stipulated in Chapter 1, while Article 154 guarantees that patent applications will be processed within three years

in the US, an assurance not offered by most other countries (including China). Second, in comparison to the USPTO, the SIPO has two extra duties. As part of their administrative duties, SIPO officers have the responsibility of interpreting the law, partly because of its non-specificity. This then extends to include the duty of handling disputes,[9] which relates to the general tendency in China of seeking court rulings as a last resort. Arbitration is considered to be more advantageous than litigation, and SIPO offers consultation and mediation through informal or formal procedures as a first channel for solving disputes in the patent arena.[10]

Table 3.1 summarizes the comparison of the US and Chinese systems of patent administration, highlighting ownership, procedure, grants and administrative remedies for invention patents. The US and Chinese systems encompass several patent-related rights. Both countries cover invention, utility models and design patents, but the US system also includes plant patents.[11] As for the substantive requirements, both countries stipulate the importance of novelty and non-obviousness (inventiveness), but the Chinese system also emphasizes practicality, which is in line with the TRIPS basic requirements for granting an invention patent, whereas the US legal code leaves matters of practicality to the discretion of the USPTO.[12]

One obvious difference is that (although there have been many debates in the US about changing its lonely situation) the US 'is almost alone in granting monopolies on the basis of first-to-invent'[13] (Lehman 1996). Thus, when two or more applicants file applications for patenting the identical invention, the USPTO establishes its priority for granting on whoever can demonstrate to have been the first inventor, while the Chinese SIPO (along with most of the rest of the world) adopts the simpler system of issuing the patent certificate to the applicant who files the application first. This unique filing principle will prolong the granting process when two independent inventors file for identical inventions, since proving who was the first to invent it can take a considerable amount of time.

As Table 3.1 shows, the two countries adopt similar application processes, but there are differences associated with, for example, priority rights, examination and re-examination, procedural treatment, and administrative measures, etc. to resolve disputes. First, in spite of both countries adopting a 12-month right of priority (or 'priority right' – that is, the right to file a subsequent application for the same IP in another country within a limited period of time from the date of filing the first application), China requires applicants to 'make a written declaration'

Table 3.1 A comparison of the patent system between the US and China

	US	China
Subject matter		
(1) Patent subject	Invention, plants, design and utility model	Invention, utility model (UD) and industrial design (ID)
(2) Patentability	Novelty and non-obviousness	Novelty, inventiveness and practicality
(3) Filing principle	First to invent	First to file
Procedural matters		
(1) Filing date	Date of deposit with the postal service	Date of receipt or by postmark
(2) Priority right	12 months	12 months, but six months for ID
(3) Publication	18 month upon filing	18 month upon filing
(4) Examination	Provisional examination only	Preliminary and substance examination for invention, but only preliminary examination for UD and ID
(5) Examination request	No.	Within 3 years upon filing
(6) Re-examination request on rejection	(1) Upon request within six months (2) If twice rejected, an appeal may be made to the Board of Patent Appeals and Interferences (3) Appeal to the US Court of Appeals for the Federal Circuit or take civil action within 60 days	(1) Within three months, request can be filed to the Patent Re-examination Board (2) Legal proceedings within three months
(7) Foreign applicants	No need to have an agency	Need an agency
Grants		
(1) Duration	20 years	20 years
(2) Fee	Specific in law	Not specific in law, but on official web
(3) Licensing abroad	Licensing abroad not allowed within six month of filing in the US	Need approval by SIPO
Administrative measures of dispute resolution		
	(1) Injunction (2) > royalty plus interests and costs (3) Up to 3 times the amounts found or assessed.	(1) Public apologies (2) Injunction (3) Confiscation (4) Fine up to 3 times of illegal earning or (5) Fine < CN¥ 54,000 (6) Calculated based on licensing fee, losses and profit

Source: Synthesized by the author based on the USC35, the Patent Law of the PRC (2001) and its Implementation Regulations (2001).

within three months of originally filing the invention patent, otherwise the priority right claim 'shall be deemed not to have been made'.[14] In contrast, the US only insists applicants must 'file a timely claim for priority'.[15] The US also grants equal priority rights for all patent applications, while in China, although invention and utility model applications get similar treatment, industrial design applications are only allowed six-month priority rights.

Second, the US examination process for invention patents is simpler than the Chinese. Patent applications need one examination in the US (for which the USPTO director 'shall cause an examination to be made of the application'.[16] In China, inventions require both a preliminary and a 'substance' (substantial) examination to be, on the applicant's request, within three years of filing. If no request is made for examination as to substance, 'the application shall be deemed to have been withdrawn'.[17] However, Chinese utility model and industrial design applications only need a preliminary examination.

Third, although both countries allow for requests for the re-examination of rejected patent applications, applicants in the US appear to enjoy better opportunities to request re-examination. They are allowed longer to make requests for further examination in the US (six months) than in China (three months), which may also cover administrative matters, i.e. pursuing the matter at the IP office first within three months and then legal proceedings within another three months. Moreover, they can make two administrative appeals in comparison to one in China. The US also offers opportunities for inventors to take civil actions in parallel with legal appeals. These re-examinations opportunities would also seem to provide applicants with better prospects of re-examined inventions being granted in the US. However, because of the tighter timescales for re-examining applications and fewer opportunities for appealing, decisions on appeals in China are likely to be forthcoming more quickly than in the US.

Finally, the US and China differ in how they treat foreign applicants, that is, individuals or firms who do not live or have offices in their countries. The US allows foreign creators to apply for patent protection in the same way as local creators. Foreign applicants in China must hire a SIPO-designated agency to handle the whole application process, but local applicants (including foreigners resident or with offices in China) can file their applications directly at the patent office. While the intention of using the agency method may be to overcome any language barriers for foreign applications, this difference in treatment may create an impression of discrimination.

Post-grant procedures are also handled differently in the two countries, although similarities do exist. Both countries have very specific rules for charging fees. The US designated seven pages to discuss the fee structure in detail,[18] while China designates one of the ten chapters in the Implementation Regulations of the Patent Law to discussing fees in detail, which are also specified on the official website. The filing and examination fee for a US invention patent is $500 while for China it is CN¥ 3,400 (slightly over US$ 450, as on 27 September 2007). Finally, both the USPTO and SIPO have strict control over licensing abroad, tending to protect their technological development for home use in the first instance, but again procedures differ. In the US, licensing to foreigners is not allowed within six months of filing.[19] In China, licensing abroad is subject to approval by SIPO,[20] while licensing at home only needs to be filed for record at SIPO.

The final comparison relates to administrative remedies. Both countries' rules are designed to uphold injunctions where IP infringements are alleged until a court decision can be made. Some measures are similar, such as the punishment of offenders and compensation based on the amount found (i.e., illegally earned) or assessed (on a profit- or loss-based measurements). However, Chinese administrative measures tend to be more specific, and are reflected in its actions to secure confiscations and public apologies from the offenders and fines when other measures are exhausted. For example, SIPO handled 1,517 cases in 2002 with the successful resolution rate of 82 per cent,[21] although it is worth remembering that the Chinese practice is to solve disputes by administrative negotiation that might end up in front of the courts in the US.

3.2.4 Judicial enforcement

Judicial enforcement refers to the strength of the judicial system in resolving disputes and executing court rulings. Both the US and China have court hierarchies to handle litigation and enforce patent protection, although China's court system only resumed operations in 1979 (Liu 1996). The US has Trial (district) courts, Appellate (appeal) courts and the Supreme court, while China has a four-tier system of People's Courts from basic, intermediate (provincial cities), high (provincial and municipality levels) to supreme courts. Patents cases may be tried in the first instance in a district court in the US and an intermediate court in China. Both countries have special courts to handle patent litigations, namely the Court of Appeals for the Federal Circuits in the US (Jaffe 2000) and the Special People's Courts in China (Bosworth and Yang 2002), which allow for the efficient and standardized settling of patent disputes (Jaffe

2000; Lanjouw and Lerner 1998) and increase the validity of appeals, given the limited duration of patents (Allison and Lemley 1998; Jaffe 2000). The US Special Court has existed independently since 1982,[22] while the Chinese Special Courts, established to handle economic disputes have been part of the middle two court tiers since 1992, and of the single Supreme People's Court since 1996.[23]

The major difference between the two judicial systems is the strength of enforcement in patents cases (Wegner 1996), which is closely related to differing levels of knowledge and experience within the legal system (itself related to the length of time patent laws and courts have been in existence). The gap can be seen in the comparative number of lawyers, which increased in China from only 19 in 1979 to 70,000 by the turn of the century,[24] an indication of both the increasing need for and popularity of the profession. Inexperienced lawyers need time to build up their skills and understanding (O'Connor and Lowe 1996), and increasing numbers of lawyers suggest that access to legal services will improve. By comparison, the US has one million lawyers working in different fields (Hickman 2002).

3.3 An international intellectual property system

3.3.1 How does an international intellectual property system function?

An international IPS is a 'philosophical or cultural institution', a perhaps unattainable ideal, since while 'probably no two "systems" are exactly alike', but commonly 'they operate within the confines of a single nation' (Massel 1973: 647). We have seen how every nation manages its IP activities independently and in its own way. However, since the WTO integrated IP into trade in 1995, IP has increasingly become an important topic in IB for practitioners and researchers, and the major area of concern in practice is the inconsistency of IPS across the world. Nations, therefore, need to make efforts towards creating a harmonious world IP environment.

The concept of an international IPS is part of this section's discussion, which examines the objectives and functioning of the three-part IPS in the international context. WIPO and the WTO exist as two organizational examples, sharing the same IP promotion objective, but with different emphasis. WIPO emphasizes the promotion of IP with a particular focus on developing countries, while, given its importance in IB activities, the WTO seeks to promote IP by intensifying its links with international trade. The legislative function of these two

international organizations in the IP context is that they administer treaties, conventions and agreements (TCAs) which serve as 'models' to assist nations in drafting their own IP laws. Of the 28 TCAs, 25 are under the auspices of WIPO, while the WTO administers the most recent agreement (TRIPS, effective from 1995) aiming to fill the gaps in the WIPO TCAs, particularly in the respect of judicial enforcement. The United Nations Educational, Scientific and Cultural Organization (UNESCO) administers the Universal Copyright Convention; the International Union for the Protection of New Varieties of Plants (UPOV) promotes an effective system of protecting and developing plant varieties. A brief summary of these TCAs is shown in Table 3.2 to display the main themes, memberships, and year of institution and latest amendment.

International administration allows international filing, i.e. one single application for IPP within all or the selected member states, which can be made directly to the designated WIPO Bureau in the applicant's country. A multinational seeking to have its mark protected in all WIPO states would have to pay over CHF 13,000 for trademarks and service marks, and more for colour, certification and collective marks.[25] In practice, mark owners tend to select those countries where they have intensive business activities to protect. Unlike WIPO, the WTO has no established administrative system to deal with international filing.

Enforcement is probably the major factor to gauge the differences between the two organizations in IPP. WIPO has limited enforcement power, and thus, if two countries have an IP dispute, a WIPO tribunal may attempt to settle the dispute on their behalf; if one party is dissatisfied and refuses to execute its verdict, WIPO has no power to enforce implementation of its decision. This weakness has formed one of the main reasons behind the ratification of the TRIPS agreement. WTO Tribunal dispute settlements are enforceable, and where a member nation refuses to execute the verdict, the WTO can instruct or permit the other party to take actions, such as embargos or trade sanctions against the offender.

3.3.2 Issues for an international intellectual property system

Global IPS harmonization of IPP has a long way to go. The differences mainly exist in the different demand for IPP among three groups of countries: developed economies, emerging economies and non-open economies. Developed countries, such as the UK, US, Japan, Australia and France, are most often the owners of IP, and are therefore keen on protecting their intellectual creations and have a positive environment to

Table 3.2 A brief summary of the international intellectual property treaties, conventions and agreements

Treaty, convention and agreement	Signing and latest amendment	Purpose	No. of contracting members
Berne Convention	1886, 1979	Copyright protection of literary and artistic works	163
Brussels Convention	1974	Prevention of unauthorized distribution on or from its territory of any programme-carrying signal transmitted by satellite	30
Film Register Treaty	1989	Protection of audiovisual works to enhance their creation, international flows, and contribute to actions against piracy	13
Madrid Agreement (Indications of Source)	1891,1967	Repression of false or deceptive indications of source on goods	35
Nairobi Treaty	1981	Protection of Olympic symbol against use for commercial purposes without permission	46
Paris Convention	1883, 1967	Protection of industrial property in the widest sense, including patents, marks, industrial designs, utility models, geographical indications and repression of unfair competition	172
Patent Law Treaty	2000	Harmonize and streamline formal procedures for national and regional patent applications	16
Phonograms Convention	1971	Protection of producers of phonograms against illegal making, importation and distribution	76
Rome Convention	1961	Protection of performances of performers, producers of phonograms, and broadcasting organizations	86
Singapore Treaty	2006	Modernize and harmonize international framework for trademark registration procedures and has broadened its scope of application to include communication technology	0 (not yet in force)
Trademark Law Treaty	1994	Harmonize and streamline formal procedures for national and regional mark registrations	39
Washington Treaty	1989	Protection of integrated circuits	0 (not yet in force)
WIPO Copyright Treaty	1996	Protection of computer programs and compilations of data or other material	64

(*Continued*)

Table 3.2 (Continued)

	Treaty, convention and agreement	Signing and latest amendment	Purpose	No. of contracting members
	WIPO Performances and Phonograms Treaty	1996	Protect performers' economic, moral rights and rights against alteration	62
	Universal Convention	1971	Copyright protection of literary, scientific and artistic works	100
	UPOV Convention	1961, 1991	Promotion of an effective system of protecting and developing plant variety for the benefit of society	64
Classification	Locarno Agreement	1968, 1979	International classification for industrial designs	49
	Nice Agreement	1957, 1979	Classification of marks for registration	81
	Strasbourg Agreement	1971, 1979	Classification of patents for applications	58
	Vienna Agreement	1973, 1985	International classification for marks that contain figurative elements	24
Global Protection System	Budapest Treaty	1977	International recognition of the deposit of microorganism with any international depositary authority	68
	Hague Agreement	1925, 1999	International deposit of industrial design	47
	Lisbon Agreement	1958, 1979	Protection of geographical indications and their international registrations	26
	Madrid Agreement (Marks)	1891, 1979	Protection of marks by international registration	57
	Madrid Protocol	1989	Protection of marks by international registration	74
	Patent Cooperation Treaty	1970, 1984	Patent protection by international patent grant	138
	TRIPS	1995	Comprehensive protection on copyright and related rights, marks, geographical indications, industrial designs, patents, integrated circuits and trade secrets	151
	WIPO Convention	1967, 1979	Promote IP cooperation across the world; Ensure administrative cooperation among the IP Unions established by the treaties that WIPO administers	184

Source: Synthesized by the author based on the TCAs under the Auspices of WIPO, WTO, UNESCO and UPOV.

allow such intellectual creations to thrive. They also tend to have long established IPS to handle different IP situations.

In comparison, emerging economies, with IPS that have only comparatively recently been established, are 'learners' from the more developed economies. Levels of enforcement constitute a major difference between developed and emerging economies, and may be somewhat intangible in the latter, given their lack of experience and knowledge accumulation, although this can be expected to improve in quality and quantity given time and effort. Both groups can benefit from the formation of an IPS. The emerging economies need to absorb new information and technologies to boost their economic development, but their ability to generate such advanced technologies themselves is generally limited. International technology transfer represents a short cut by which they can accelerate their development (Bosworth and Yang 2000). Vivid examples of countries that have achieved such development are Singapore, South Korea and some other South-East Asian countries. However, without a sufficiently effective IPP in place, technology owners will be reluctant to license their IP, and this leads to a situation where emerging countries are pressurized to improve their IP environment. Thus countries who have become members of the WTO are required to introduce an IPS with minimum standards as set out in the TRIPS agreement.

Non-open economies are not similarly motivated to establish an IPS, believing the excessive costs over benefits for them. They tend to have rudimentary foundations in terms of IP enforcement, infrastructure and legal history; therefore they need resources to establish an IPS. More specifically, as WTO members, conforming to the TRIPS agreement requires resources to: (1) modify the existing or devise a new legal framework in line with the TRIPS; (2) strengthen or establish the IP offices; (3) enforce the IP mechanisms; (4) train human resources, such as IP examiners, officials and administers; and (5) establish a monitoring mechanism to ensure IP dissemination between enterprises under fair competition (UNCTAD 1997). These countries argue that, even if they establish an IPS, multinationals will be reluctant to invest in their countries due to infrastructure limitations and other local economic conditions (Maskus 2000), and given these factors, many are in no hurry to introduce a sophisticated IPS.

Closer: The utility model: In need of standardization!

The utility model system has been widely adopted across the world, being in use in 75 countries by 2006 (Suthersanen 2006). The EU countries

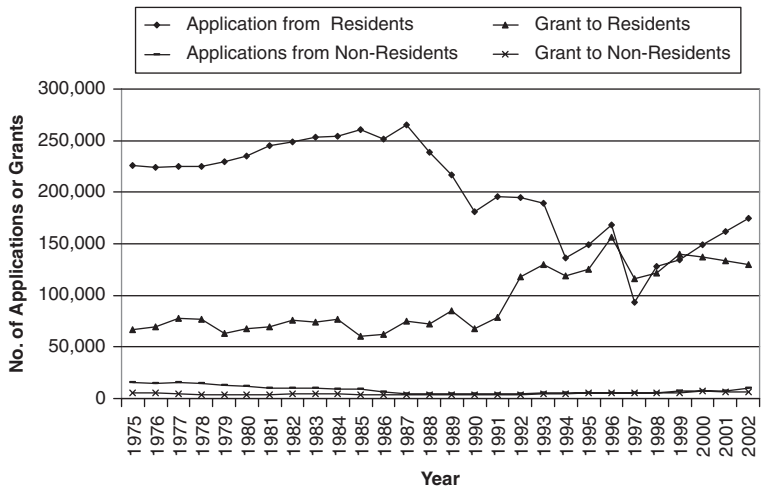

Figure 3.1 Global applications for and grants of utility models (1975–2002).
Source: Created by the author based on WIPO raw data from 1975 to 2002.

(except the UK, Luxembourg and Sweden) have adopted this system, and emerging economies like China, India, Brazil, Malaysia, Thailand, Turkey and Indonesia have categorized the utility model as a 'second-tier' protection for functional creations. Industrialized countries like Japan, Germany and Australia all have a long history of utility model protection, and it has also been widely adopted in Latin America and African countries. Utility model data give a good illustration of the progress of this form of protection: while only eight countries could provide statistical data of utility model applications and grants to WIPO in 1975, over 30 countries had such statistics available by 2002.

We can draw two conclusions from Figures 3.1 and 3.2. Figure 3.1 shows that utility models as a form of IPP are much more widely used by resident inventors than non-resident (i.e., foreign) inventors, indicating the dynamic nature of minor invention activity at national levels. The other is that in recent years, the gaps between applications and grants have substantially narrowed for both domestic and foreign applications. This appears to be a clear indicator of national governments moving in favour of utility model protection to boost domestic innovative activities. Nonetheless, the overall figures for utility model activities are relatively less dynamic than for patent activities over the years (Figure 3.2). Two facts emerge clearly from this figure. One is that

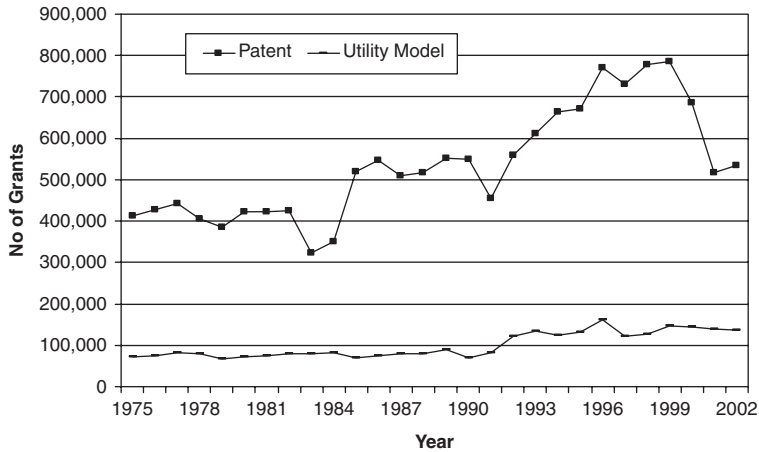

Figure 3.2 Global comparison of patent and utility model grants (1975–2002).
Source: Created by the author based on WIPO raw data from 1975 to 2002.

there is a wide gap between the figures for utility model grants (below 200,000) and patent grants (between 300,000 and 800,000). The other is that, with utility model activities stable and patent activity increasing sharply over recent years, the gap between the two activities is widening.

The lack of standardization of utility model protection in different countries in terms of the definition of the concept, examination procedures and protection conditions and duration may account for this comparatively slower rate of increase. The concept has never been standardized, and while the Paris Convention adopted 'utility model' as a name, Australia uses the term 'innovation patent', Japan 'petty patent', France 'utility certificate' and Belgium and Ireland 'short term patent' (Suthersanen 2006). As for examination, most European countries have adopted registration systems for the utility model that involve no examination, while some (China, Australia etc.) adopt a similar examination system to patents, but only require a preliminary examination. Granting conditions also vary greatly across the world. Thus China, Australia and Indonesia grant utility models that are novel, inventive and industrially applicable, with lower requirements for technological advancement. (This brings into consideration the question of what the boundary between granting a patent and utility model should be.) Finally, the duration of protection is probably the most obvious area

of non-standardization in utility models, varying between six years in Japan, to seven/eight in Australia, Kyrgyz, Greece and Uzbekistan, to ten in China, Turkey, Thailand, Germany and Denmark, to 15 years in Portugal, the Philippines and Vietnam.

Given the wide use of utility model protection as a tool for economic development, it is probably a necessity to standardize its protection levels for the purpose of global integration. Current international TCAs have either not recognized this form of protection (such as TRIPS), or have ambiguous stipulations (such as the Paris Convention). The protection model is important because it encourages minor inventive activities below the level of 'full inventions', motivates the creativity of small- and medium-sized enterprises (SMEs) and encourages innovative activities, particularly in technological learning and absorption. It is also a more economical way to secure protection and statistical indicators for technological activities (Juma 1989; Kumar 2002; Suthersanen 2006). It will surely be necessary for international organizations like WIPO and the WTO to take such standardization of the utility model into account in the future.

Intellectual property facts: Grant lags and grant ratios[26]

This section investigates some patent granting statistics in the US and China for the years 1985 to 2002, specifically 'grant lags' (i.e. the length of time between application and granting, also termed 'pendency') and 'grant ratios' (i.e. the different rates at which patents are granted to domestic and foreign applicants). Table 3.3 gives the lagged regression results about grant lags and ratios between the US and China. The US shows identical grant lags for domestic and foreign applications, with one year as the best-fit model, explaining 96 per cent and 95 per cent of the variations, and the one-year, two-year and three-year lag models showing similar results. This suggests that there is a high level of consistency at the USPTO in handling both local and foreign applications, and that practice is in line with their stated policy that such grant lags should be less than three years. However, while the equality of the correlation coefficient test demonstrates that there was no significant difference between domestic and foreign applications for the zero year lag ($p = 1$), the difference was significant ($p < 0.001$) for the other three lag years.[27] This suggests that, although the R^2 results are similar for the grant lags, the two independent samples demonstrate that the grant lags can be distinct within each of the three-year pending period. Nonetheless, we can

Table 3.3 A comparison of the grant lags and ratios for invention patents between the US and China (1985–2002)

Grant lags	US invention patents		Chinese invention patents	
	Domestic applications	Foreign applications	Domestic applications	Foreign applications
0-year lag	**Y = 14295.35 + 0.39X**	**Y = 11762.69 + 0.38X**	**Y = −229.15 + 0.18X**	**Y = −319.06 + 0.08X**
R^2	0.93	0.93	0.87	0.79
F	222.37	220.26	108.21	59.31
P	0.0000	0.0000	0.000	0.000
1-year lag	**Y = 12790.87 + 0.38X**	**Y = 11111.31 + 0.35X**	**Y = −309.33 + 0.16X**	**Y = 529.19 + 0.05X**
R^2	0.96	0.95	0.86	0.73
F	422.56	287.7	95.71	42.98
P	0.0000	0.0000	0.000	0.000
2-year lag	**Y = 12566.57 + 0.36X**	**Y = 10767.23 + 0.33X**	**Y = −304.61 + 0.14X**	**Y = 659.94 + 0.03X**
R^2	0.95	0.94	0.80	0.65
F	304.68	262.38	64.04	29.12
P	0.0000	.0000	0.000	0.0001
3-year lag	**Y = 13820.85 + 0.32X**	**Y = 10952.20 + 0.30X**	**Y = 163.29 + 0.07X**	**Y = 649.89 + 0.02X**
R^2	0.93	0.91	0.62	0.54
F	211.10	170.57	26.57	18.63
P	0.0000	0.0000	0.000	0.0005
4-year lag	**Y = 18203.13 + 0.26X**	**Y = 14028.69 + 0.25X**	**Y = 264.81 + 0.05X**	**Y = 573.35 + 0.02X**
R^2	0.89	0.80	0.40	0.45
F	123.99	63.62	10.89	12.84
P	0.0000	0.0000	0.005	0.0025
5-year lag	**Y = 22666.06 + 0.20X**	**Y = 16436.17 + 0.20X**	**Y = 166.51 + 0.05X**	**Y = 429.07 + 0.02X**
R^2	0.89	0.75	0.41	0.44
F	127.66	47.20	11.05	12.72
P	0.0000	0.0000	0.004	0.0026

Note: Dark grey shade indicates the best model for grant lags and ratios; Light grey shade indicates the fit-models for grant lags and ratios.
Source: Calculated by the author based on the WIPO raw data from 1985 to 2002.

still conclude that there is generally equal pendency for both local and foreign patent applicants in the US.

As for grant ratios, the lagged regressions for both domestic and foreign applications also demonstrate identical results. The best model slopes show 3 per cent difference between the domestic and foreign applications. The average difference for the fit models across the 0–3-year grant lags demonstrates slightly over 2 per cent difference on average, and the equality test of the slope coefficients shows no significant differences in grants between the two independent samples ($p > 0.2969$ at least). Therefore, we can conclude that the US has equal treatment to domestic and foreign applications in grants.

The lagged regression results on Chinese patent activity figures also demonstrate similar pendency for both domestic and foreign applications. The best fit model is zero lag pendency, which accounts for 87 per cent of the explained variations. The 0–2-year fit models at above 80 per cent suggest that there is a relative certainty of patent grants for domestic applicants. For foreign applications, the best-fit model is also zero-year lag, explaining 79 per cent of variations explaining power. This suggests that the pendency is similar for domestic and foreign applications in China.

However, the fact that domestic applicants all have higher R^2 results show that they enjoy a greater certainty of being granted a patent than foreign applicants over the 0–2 lagged years. The equality test of the correlation coefficients for the two independent samples demonstrates there is a significant difference across the 0–2-year lags between domestic and foreign pendency ($p < 0.001$). This suggests that domestic applicants in China will tend to have their applications dealt with more quickly than foreign applicants. As for grant ratios, the slope coefficients illustrate wide gaps between domestic and foreign applications (10 per cent difference for the best model). The equality test of the slope coefficients asserted such observations that the grants to domestic and foreign applications are significantly different for the 0–2 lag years ($p < 0.001$). The result suggests that Chinese applicants are favoured more than foreign applicants in terms of patent grants.

The lagged regressions show that the two countries have diverse treatment towards domestic and foreign applications in terms of pendency and grants. In terms of pendency, it appears that the US shows the average R^2 at above 90 per cent for up to 3-year pendency for both domestic and foreign applicants. China demonstrates a shorter pendency period at up to 2 years for both groups of applications. However, the uncertainty for China is higher than that for the US because the lagged regressions

explain over 80 per cent of the variations in domestic grants, but only between 65 and 79 per cent of those for foreign grants. Both countries show higher certainty for domestic than for foreign applications. The difference for applications in the US was very trivial, with the R^2 gap at 1 per cent for most models. However, the gap between domestic and foreign applications in China is much higher, with an average 12 per cent gap across all the fit models. Both countries show variations in their treatment of domestic and foreign applications within the pendency periods. The equality test of the correlation of the domestic and foreign applications also demonstrates that pendency times between the two countries differ significantly ($p < 0.001$). The results suggest that Chinese patent applicants have less uncertainty in terms of pending period than foreign applicants. In comparison, the US patent applicants from both groups enjoy equal pendency, and almost equal certainty for grants.

As for grants, the gap between the US and China becomes obvious from the regressions. The slope test shows that, on the whole, the US practices equal treatment of patent grant applications. In comparison, all the best fit models in China demonstrate a wide gap of at least 0.10, although the case becomes narrower as the number of lagged years increases. The equality test of slope coefficients also shows significant differences between the two countries across the 0–3 lagged years ($p < 0.001$). Therefore, we can conclude that China gives preferential treatment to domestic applications in terms of grants.

The results reveal that there is no perfect patent system. The US still needs to adjust deviations in its treatment, which was slightly biased towards domestic applicants (with higher coefficiency) within the pendency period. China needs to provide fairer treatment to foreign applications for grants, and to increase the certainty of the pendency period for both groups, but particularly for foreign applicants. Narrowing down this difference will attract more foreign applications in the longer term.

The results also imply that firms will need to take appropriate actions to adapt their business activities to a particular IPS. They must be familiar with the patent system of a country before they consider any patent-related investment, and it is particularly important to find out how the system compares with that in their home country. Pendency periods can vary across countries: if they have the opportunity, firms should find out as much as they can about the likely outcome in terms of pendency, and especially uncertainty, to decide whether such factors are at acceptable levels, or might be resolved through corporate efforts. Firms must also ensure that their inventions are in an advantageous position for filing

and granting. Such an assurance study and actions are to prevent their applications from being unnecessarily delayed or rejected.

Summary

This chapter focuses on the discussion of IPS. Despite the nation-based nature of IPS across the world, each country's system falls into the framework of a 'three-part' system composed of legislative guidance, administrative control and judicial enforcement. The comparative study of patent systems in the US and China demonstrates both differences and similarities. The US system chiefly aims to protect patentees while the Chinese system is oriented towards the dissemination of new and useful technologies. This is unsurprising, given that the former is mainly an owner and the latter an absorber of technology. Despite the time gap between when their patent systems were established, both countries have been active in the past two decades in updating their patent legislation. Their two-tier legislatures could cause uniformity problem across both US states and Chinese provinces. The patent administrative systems in the US and China share the mainstream of responsibilities in the matters of ownership, procedures, grants and administrative protection, duration of protection and administrative measures to resolve disputes, although there is a significant contrast in the US awarding protection to the first-to-invent against the Chinese first-to-file rule. The Chinese SIPO carries more responsibilities than the USPTO, in that it interprets IP laws, has a more complex examination procedure and handles more disputes administratively, as well as exerting more control over foreign applications. However, both countries restrict the flows of local patents going abroad, although the US provides more equal treatment to foreigners within the US. The major judicial difference between the two patent systems is the strength of enforcement, which is mainly due to the comparatively short time the Chinese have had to accumulate knowledge and experience in this particular field, as well as having fewer expert personnel in the field.

The nation-based nature of IPS has two implications. First, it means establishing an international IPS that would suit all countries would be difficult. But, second, given the increasingly integrated and interdependent relationships between countries, some level of international harmonization is becoming a necessity, with WIPO and the WTO playing vital roles to orient nations towards this goal. WIPO endeavours to promote IP development in developing countries, while the WTO sets minimum standards for legal mechanisms and enforcement to avoid

international IP conflicts. Nonetheless, one inevitable reality is that the gap particularly between the developed world, the emerging economies and LDCs will continue to exist in their IP objectives, mechanisms, enforcement and human resources, and their attitudes to the costs of establishing an effective IPS.

Two cases reflect the implications of IPS in practice. The opener discusses an alternate of the conventional IPS – the reward system – which stresses broader and accelerated dissemination and preventing monopolies. However, it has a number of potential drawbacks, including imperfect information resulting in difficulties of striking the optimum balance between rewards and social value, high public costs for human resources, prizes, administration and dispute resolution. Some commentators have pointed to the alleged potential for unfair awards, thus undermining innovative commitment.

The closer discusses the lack of standardization of the utility model system. Despite its wide adoption by 75 countries, there is no yardstick for its concept, examination procedures, protection conditions, or the duration of protection across countries. Countries may apply either registration or examination systems for granting with no benchmarking conditions, and offer granting periods varying between 6 and 15 years, while some countries (such as the UK) don't even use the model! The author, therefore, strongly suggests this model be on the global IP integration agenda, as the current TCAs either provide no benchmarking or are unclear about their stipulations.

The IP facts section further focuses on the US and China to examine the similarities, but more the differences in their administrative practice to grant patent rights. Both countries try to treat domestic and foreign applicants equally, although both need to address the deviations about how long applicants for the two groups must wait for a judgement on patent applications. In terms of grant ratios, both countries favour domestic over foreign application, but the gap is much narrower in the US, while China needs to enhance the certainty of granting for both groups of applicants.

Notes

1. The reward system has also been called the prize system (Abramowicz 2003), the patent buy-out system (Polanyi 1944) or the *ex post* rewards system (Penin 2005).
2. *Encyclopaedia Britannica* (1929) vol. 11: 220.

3. The information was obtained through interviewing a Chinese delegation in 2001 when they visited Manchester Business School.
4. US Constitution: Article 1.
5. The Patent Law of the People's Republic of China (PRC) 2001: Article 1.
6. USC35 2004: Article 200.
7. USC35: Articles 1&2.
8. The Patent Law of the PRC (2001): Article 3.
9. Ibid.: Article 57
10. Ibid.
11. 'Cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state' (USC35 2004: 161).
12. This leads, for example, to the controversy over the liberal judgment of utility on patenting DNA segments where inventors routinely claim them to be 'useful' in that they (may) help other researchers find other DNA segments.
13. USPTO confirmed this via email to the author.
14. The Patent Law of the PRC 2001: Article 30.
15. USC35 2004: Article 119.
16. Ibid.: Article 131.
17. The Patent Law of the PRC 2001: Article 35.
18. USC35 2004: Article 41.
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21. SIPO (2003) *SIPO Annual Report*, Beijing: State IP Office.
22. US Court (2006) About US Courts, at http://www.uscourts.gov/about.html, on 18 August 2006.
23. SIPO (2004) *SIPO Annual Report*, Beijing: State IP Office.
24. Information was obtained from China National Lawyers' Association 2005 via email.
25. The figure was obtained from WIPO official website on 8 June 2007.
26. The author conducted this analysis using the raw data from WIPO (1985–2002). This research applies the lagged regression model to conduct the analysis adopted by Kotabe (1992) tested based on Cohen and Cohen (2002) and Bryant (1966).

$$\gamma_t = \alpha_{t-L} + \beta_{t-L} \times \chi_{t-L} + \varepsilon_t$$

Here γ_t denotes the number of patent grants in year t. α_{t-L} denotes the intercept for year $t-L$. t is the year of filing a patent application. L is the number of years lagging behind the application for patent grant. β is the patent grant in year t as a percentage of patent applications in year $t-L$. χ_{t-L} is the number of patent applications. ε is uncertainty of the pending applications.

27. The equality of correlation coefficients from two independent samples is tested using Formula 1 below (Bryant 1966: 140–2). The equality of slope coefficients from two independent samples is tested based on Formula 2 (Cohen and Cohen 2002: 111). Here, t denotes the normal curve, r represents the correlation coefficient, n is sample. $\beta_{(t-L)1}$ and $\beta_{(t-L)2}$ represent two slope coefficients, which are domestic and foreign applications within a country or the applications between two countries. *SE* denotes the standard error in

consistency with the slope coefficients under comparison. In addition, 1 & 2 in the formulae represents two sets of samples.

$$\text{Formula 1} : t = \frac{0.5 \log_e \frac{1+r_1}{1-r_1} - 0.5 \log_e \frac{1+r_2}{1-r_2}}{\sqrt{\frac{1}{n_1-3} + \frac{1}{n_2-3}}}$$

$$\text{Formula 2} : t = \frac{\beta_{(t-L)1} - \beta_{(t-L)2}}{\sqrt{SE^2_{\beta(t-L)1} + SE^2_{\beta(t-L)2}}}$$

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Part II
Intellectual Property Environments

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4

The Effects of Intellectual Property on Political Economy

Contents

Focus and structure

This chapter focuses on the role of intellectual property protection (IPP) on global political economy. The first six topics discuss the overall positive effects of IPP on political economy, in terms of boosting economic development, licensing, international trade, foreign direct investment (FDI), welfare and technology transfer and innovation. However, this positive role on political economy is conditional on various environmental factors, and how these interact with IPP to promote the development

of political economy is considered. The last topic examines the negative effects of IPP on political economy, including the direct costs of implementing an IPS, and the impacts on pricing, government expenditure, employment and dissemination, and so on.

In keeping with the chapter themes, the case studies and IP facts illustrate IP's effects on political economy from both positive and negative angles. The opener: 'The microchip that has transformed the world' recounts the invention of integrated circuits and its transforming effect on the inventor, his employer, industries and society. The closer: 'Opening the source of software technology' demonstrates how patent protection acts as an impediment on software development. The IP facts section reveals metric data showing how IPS development and incomes are closely related, with high-income countries tending to have stronger IPP and low-income countries weaker IPP.

Opener: The microchip that has transformed the world[1]

In 1958, Jack Kilby, an electrical engineer in the Texas Instruments (TI) Company, believed there must be an effective way to integrate transistors, resistors and capacitors. One day when everybody else was on holiday, and he was left alone minding the company laboratory, he took his great inventive step, which led on to him developing the electronic miniaturization of large capacity semiconductor memories and thus inventing monolithic integrated circuits – known more simply as the microchip (Photos 4.1 and 4.2). More than 40 years after his initial invention, this small chip has created fame for Jack Kilby and riches for TI, and its revolutionary impact on a wide range of products and industries is still clearly visible around the world.

Together with a great deal of wealth, the microchip brought its inventor great prestige. In 1970, the US government awarded him the

Photo 4.1 Jack Kilby in 1958

Photo 4.2 The First Microchip

(Courtesy of the Texas Instruments)

National Medal of Science. In 1982, he was admitted into the National Inventor's Hall of Fame, along with historic inventors, such as Thomas Edison and the Wright brothers. And in 2000 he gained the world's most prestigious award when he became a Nobel Laureate. By that time, he held patent rights for over 60 inventions, the most familiar being hand-held calculators and thermal printers. Kilby's inventions transformed TI from a medium-sized firm working in semiconductors, defence and geophysics into an influential multinational. By 1980, it had become the world's largest manufacturer of semiconductors, and is now a world leader in the R&D and commercialization of integrated circuits.

Most noticeably, the invention has transformed many industries, including the radio, television, computer, medical equipment, space and electronics industries. First, integrated circuits have brought substantial reduction of production costs. For example, in 1958, it cost $10 to buy a single transistor, but nowadays the same amount of money would buy you over 20 million. This inventive step has led to the substantial expansion of the entire electronics market that has grown from $29 billion in 1961 to almost $1,400 billion. Second, the microchip has become one of the most important components for most electronic products, transforming many industries and people's lives. For example, the computer industry, whether mainframes or PCs, would not have been developed to its present stage without integrated circuits. The creation of the chip has allowed astronauts to explore space, is applied to hearing aids and medical diagnosis, and is used in information sectors, transportation, education and entertainment. Third, the impact of this invention has been all the greater because it has remained as 'active' technology for such a long time: 50 years since Jack Kilby created the first chip, integrated circuits are still widely used in most electronic components.

It appears that its impact will continue, given the dynamic advance of our globalized world. Kilby referred to this continuous process of technological development when he said 'I am grateful to the innovative thinkers who came before me and I admire the innovators who have followed.' In a nurtured IP environment, talented inventors gain respect and rewards which motivate and inspire them to contribute to the world, and act as an example to those who seek to emulate them in the future.

The case study reveals the interconnected impacts of invention patents on society, on firms and on inventors themselves. Inventors rely on patent protection to recoup their costs and reward their efforts, and enjoy the financial gains commercialization allows them to make from their intellectual creations. This commercialization accelerates the process of

knowledge dissemination through publications and licensing, thereby contributing to social progress. Firms are the bridges that build such links between inventors and society, as they hold the complementary assets for commercialization. This case study points towards the core of this chapter: the specific roles that IPP has played in the development of contemporary political economy.

4.1 The effects of intellectual property on economic growth

Previous studies show that the role of IP on economic growth is overall statistically positive (Chen and Puttitanum 2005; Ginarte and Park 1997; Gould and Gruben 1996; Maskus 2000; Thompson and Rushing 1996, 1999). Thompson and Rushing (1996) studied patent protection of 112 countries from 1970 to 1985, and conclude that high-income countries (GDP $\geq$ US$3400 in 1980$) tend to have stronger IPP, and that strong IPP accelerates economic growth. However, they suggest that strengthening IPP may not boost growth in poor countries. In their extended study in 1999, they examined 55 countries with data from 1975 to 1990 and concluded that IPP stimulates innovation, and innovation stimulates factor productivity. More specifically, they find that while patent protection has had positive impacts on factor productivity in high-income countries, strong IP does not necessarily boost economic growth in poor countries, confirming their 1996 findings.

Gould and Gruben (1996) used the IPP index compiled by Rapp and Rozek (1990) to test the relationship between IPP and economic growth across 95 countries, and found wide degrees of variations. The study, which proxied economic growth by average annual real Gross Domestic Products (GDP) per capita, found no direct correlation between economic growth and IPP strength, but that IPP impacted significantly on growth when trade was open. They suggest that IPP impacts on open and competitive economies more strongly than on closed and non-competitive economies, and that trade liberalization accompanied by IPP was a 'strong conduit for economic growth'. But, as Thompson and Rushing (1999) pointed out, this conclusion did not take account of the establishment and enforcement of IP rights as incentives for R&D, innovation and investment, which then enhance productivity and thus directly and positively impact on economic growth.

Ginarte and Park (1997) confirm Thompson and Rushing's conclusion that developed countries provide the strongest protection, and that a

country's level of patent protection tends to be determined by its R&D level, market openness and international IP integration (IPI). They also emphasize that the impact of R&D on patent protection levels only occurs when a country's R&D reaches a 'critical size'. They deduce that countries that promote R&D will be motivated to improve their IPP.

Maskus (2000) takes Thompson and Rushing's (1999) research further, and argues that while IPP certainly promotes growth in countries with open trade, dynamic FDI inflows, and availability of human capital, the impact of IPP on economic growth varies across the world. He emphasizes that IPP cannot be strengthened on its own, but that a country's development must be supported by complementary policies, including opening markets, and improving human capital and anti-unfair competition policy. In the short run, IP may benefit technology providers more, but will also enhance technological progress in receiving countries in the long run. Therefore, establishing an IPS with complementary policy instruments would boost economic development, but there is a long way to go and much to be done.

Finally, Chen and Puttitanun (2005) argue that IPP impacts on developing countries because it can encourage domestic innovative activities (as proxied by patent applications). In other words, domestic innovations have a U-shaped relationship with Gross National Products (GNP) and IPP. Initially, when a country has a low level of economic development, technological abilities will not have reached the level to allow for creativity, and such countries' focus will therefore be primarily on imitating foreign technologies, and a low level IPP policy is appropriate. However, when technological ability increases to a certain level, increased protection is needed to encourage domestic innovation activities. The study theoretically modelled and empirically tested 64 developing countries (1975–2000), and this result is in line with earlier studies about the impact of IP on economic development.

In summary, prior research shows that an overall positive relationship exists between IPP and economic growth, but the conclusion is not definitive, as there are great variations between countries and other variables need to be taken into account. IPP does not impact on economic growth independently or directly, but interacts with variables, such as trade openness, national competitiveness, IPI, human capital, FDI and government policy. Furthermore, great variations are found among countries in terms of IPP impact. Developed countries tend to protect IPP more strongly than developing countries and strong IPP is appropriate when countries reach certain levels of economic development.

4.2 The effects of intellectual property on international trade

Ferrantino (1993) looks at the impact of IP on total exports from the US, US firm exports to their affiliates, affiliate sales to local markets and royalty receipts and payments by US affiliates, and at the role of IPP in deciding international economic policy instruments. The impact of IPP in 77 countries was proxied by their membership of three conventions (the Paris, Bern and UPOV Conventions), and by their domestic patent protection duration. The findings show that ratification of these conventions had no discernible impact on the total exports from the US or US affiliate sales in local markets.[2] However, exports from US parents to their affiliates are high in countries that have not ratified the three conventions, while US affiliates tended to have more royalty payments to and receipts from countries that had ratified the Paris Convention. The findings also show weak associations between convention ratifications and open trade policies: in fact countries showed great variations as to their strategic choices in making international economic policies. As for the impact of IPP on trade, Ferrantino concludes that it is an 'overly simplistic' statement that weak protection benefits LDCs and strong protection benefits developed countries. Ratifications of the three conventions affects US firm exports to their overseas affiliates and licensing payments and receipts (but not US affiliate sales). This indicates that US firms will prefer to locate their foreign affiliates where there is reliable IPP, and thus ratification of conventions by LDCs can attract US firms to relocate production to them.

Ferrantino's study demonstrates some preliminary findings of IPP on trade and licensing, but some limitations are also worth noting. First, the ratification of the three conventions does not necessarily indicate strong IPP, as they only set out minimum IPP standards. This is particularly relevant to the current situation in the world, where the TRIPS agreement requires adherence to the Paris, Berne and Rome conventions and the Washington Treaty as a minimum standard for IPI. Moreover, the length of patent protection does not reflect the strength of protection. TRIPS sets new international IPP standards by providing a comprehensive coverage of legislation, administration and enforcement and by linking IP with trade. Second, the study was based on 1980s' data, since when the international IP environment has changed dramatically. The 77-country sample does not include some countries (such as China and Russia) where dramatic changes in IP have taken place in recent years. Third, a country's ratification of the TCAs reflects its government's efforts

to integrate its country's IPP with the rest of the world, rather than the actual strength of protection. Moreover, methodologically, the use of dummy variables has its own problems in trying to approximate data, as the method will not necessarily show the subtle differences between countries with similar IPP.

Previous research by Maskus and Penubarti (1995) and Braga and Fink (1997) has used the Rapp and Rozek (1990) index to examine the effect of patent protection on trade flows, but find little evidence to be able to generalize about such impact. However, the results do indicate that strengthening patent laws has a positive effect on exports of manufacturing products into (particularly larger) developing countries. These authors admit that their studies are static and econometric in nature, and suggest that a more dynamic study be conducted. Furthermore, they find only inconclusive evidence for a positive link between strong and harmonized patent protection and innovation, as there are many other determinants that must be considered.

Fink and Braga (1999) employ a gravity model to estimate the association between patent protection and bilateral trade flows. This study advances previous works because it specifies the trade activities into non-fuel and high technology using a more refined index by Ginarte and Park (1997). Their findings confirm early studies that patent protection and non-fuel trade are positively associated, but that there is no significant links between patent protection and high technology trade. This research specifies the trade links with patent protection, but the authors point out the existence of collinearity and endogeneity of cross-country analysis.

Smith (1999, 2001) showed that, while US exports are sensitive to patent protection levels in the importing countries, imitation threats can also be a barrier for US exports. Where an importing country has both weak IPP and strong imitation threat, US exports to such countries, which tend to be less-developed emerging countries, can be undermined. Smith (1999) finds that weak patent rights are a barrier to US exports only into countries with strong imitation threats, such as emerging economies. Such countries tend to be substantially pressurized by the US to raise patent protection standards, thus reducing imitation threats and increasing the chance of US exports. In contrast, strengthening patent rights in countries with weak imitation threats would serve to enhance the patent recipients' monopoly in these countries, and decrease the demand for US exports. Smith (2001) further notes that strong patent protection increases US affiliate sales and license payments and receipts in countries with strong imitative abilities. The merit of this research is

that it extends the study of trade and patent matters to link them with imitation threats and market power.

4.3 The effects of intellectual property on foreign direct investment

Studies about the effects of IPP on FDI are sporadic, but have included work by Mansfield (1994, 1995) and Maskus (2000). Mansfield (1994) conducted a study on the relationship between IPP and the volume and composition of US FDI in developing countries. He interviewed patent attorneys, international operations specialists and executive officers in 100 US firms across different industries that were investing in developing countries to discover their perceptions about the level and effectiveness of IPP in 14 developing countries in South America, Asia and Africa. The study included the effects of IPP on three types of activities: technology transfer, joint ventures or wholly owned enterprises, and licensing. The findings show that weak IPP in recipient countries undermined the volume and composition of US FDI. India, Brazil, Thailand, Nigeria and Indonesia were found to have the weakest protection, and Hong Kong, Singapore, Argentina and Chile the strongest. In addition to country variations, he also found disparity across industries, e.g. chemical and pharmaceutical industries were perceived to have the most inadequate IPP across the 14 countries.

In an extended study in 1995, Mansfield expanded his survey to include Germany and Japan. One hundred US firms, 35 German firms, and 45 Japanese firms were interviewed about the impact of patent protection on FDI, technology transfer and licensing activities. The findings confirmed the 1994 results that IPP varied across the 14 countries and the degree of patent protection was industry-dependent, with 80 per cent of the firms regarding IPP as very important for R&D investment and manufacturing, but not necessarily for sales and distribution.

Both studies contribute to understanding about the effects of IPP on FDI, technology transfer and licensing activities, and provide guidance for firm objectives abroad, but the demerits of the studies are also worth noting. First, the interviewees were US, German and Japanese managers, i.e. they are research-bound and might be biased towards their own IP policy, setting their standards for developing countries based on their home country levels. Second, there is bound to be distance between perceived IPP and the actual IPP. As Lee and Mansfield (1996) mentioned, any recent changes in law would have had little effect on their perceptions, given the time needed both for the laws to change behaviour,

and for perceptions to 'catch up' with reality. Third, measurement errors might be made as other political economy factors might also have been impacting on the measured activities. Finally, the data were collected in 1994, but these developing countries must have made progress in terms of IPP after the WTO TRIPS agreement. Further studies using more up-to-date data are clearly needed.

Maskus (2001) reviews the theoretical and empirical evidence of the IPP impact on FDI and international technology transfers. He concludes that strong IPP attracts inward FDI. However, IPP is only one of a set of elements that affect FDI activities, and is complementary with market liberalization, policy deregulation, technology development policies and competition regimes. This suggests that developing country governments need to devise integrated policies to benefit their economies. The demerits of this empirical study are the lack of data on international FDI flows and measurement standards, and the inadequacy of econometric models. There is the need for specific country-to-country testing on this particular topic.

4.4 The effects of intellectual property on welfare

Deardorff (1990) examines the effects of patent protection on the welfare of both innovating and recipient countries. He concludes that it is not ideal to protect patents across the world because of the different costs and benefits involved for different countries. On the one hand, patents protect a temporary monopoly for inventors so as to stimulate dissemination, but on the other hand, patents lead to monopoly pricing, which impacts on consumer choice. In addition to these two effects of patent extension from originating to recipient countries, as patents protect IP in more and more countries, the number of countries needing patent extension will decrease, resulting in diminishing returns to monopoly. Hence, the costs of extending monopoly pricing to existing patents outweigh the benefits of generating new ones. Deardorff (1992) concludes that, with patent extension from originating to recipient countries, originators' welfare increases, but recipients' falls, probably by more than the originators' gains. Thus welfare gains become negative as patent protection spreads out to cover most of the world.

In order for welfare gains from the extension of IP, Deardorff (1992) argues that four factors must be considered. First, IP is 'not crucial to world welfare' as a whole, 'though it may be to the individual countries'. However, when both originating and recipient countries extend their patent protection, welfare gain may accrue to both. Second, both country

groups must have the same or at least similar demands for patents per capita. If this balance is missing, for example, recipient countries have a higher demand for a particular patent, patent protection would be beneficial for them, yielding more welfare gain in these countries than for the originators. Third, while demand linearity appears less important, supply linearity is important for welfare gain. On the demand side, welfare loses because of monopoly pricing, while on the supply side, when there is no linear relationship, little invention stimulation occurs from extended patent protection. Finally, transmission of information usually takes place when patent protection is in place allowing for the access of information, leading to a welfare loss for recipient countries and the world as a whole. On the one hand, information is transmitted with cost for the recipient countries through patent extension, but this simulates international technology transfer. On the other hand, some information has been diffused without protection, which has been a concern for firms from innovating countries.

Despite the fact that his conclusions would seem to raise objections, Deardorff admits that patent protection extension is in the interests of many countries, including some developing countries. However, the author is inclined to believe that it is undesirable to legitimize patent protection worldwide. On the basis of the above discussions, he concludes that poor countries should not be bound by the current TRIPS agreements for the extension of IPP.

4.5 The effects of intellectual property on licensing

A number of authors have studied IP's impact on licensing. Contractor (1984), for example, focuses on data from 1977 to 1980 to examine what determines the US receipts of licensing fees from unaffiliated firms, and finds that the number of patents in force impacts on licensing income. Yang and Maskus (2001a) use a general equilibrium model of product cycles to examine patent protection in developing countries on the motivation of developed country firms to license. They conclude that strong patent protection increases licensing rents and decreases licensing costs. They study the licensing fees paid by unaffiliated foreign firms in 26 countries to US firms in 1985, 1990 and 1995 using Ginarte and Park's index (Yang and Maskus 2001b). They conclude that fees and patent protection are positively and significantly related when controlling for market size, human capital and trade openness. This study suggests that technology flows are influenced by the extent of patent protection. However, the demerits of this study are that licensing rents

do not truly measure licensing contracts and contents, as market power impacts on the rise or fall of licensing fees. Smith (2001) further emphasizes that strong patent protection increases affiliate sales and licensing fees in countries with strong imitative capacities, as proxied by high ratio of engineers and scientists to total population. As patent protection is strengthened, firms tend to opt for licensing instead of exports and FDI. Nicholson (2001) also found that stronger patent protection enhances licensing and FDI more than it benefits trade. In addition, all these findings indicate that strong patent protection shifts licensing activities from affiliates to licensees in high technology sectors.

Bosworth and Yang (2000) conducted a time series study (1986–98) of the licensing activities of Japanese and US MNEs in China. From the mid-1980s, there was a gradual rise of licensing receipts from China, and after a slight decrease in 1990; from 1992, there was a steady increase again in receipts. The decrease may have been caused by the Tiananmen Square Incident discouraging multinationals from signing licensing contracts with their Chinese counterparts. The improvement since 1992 corresponds with the revision and updating of Chinese patent laws. The evidence shows that China, with its market size and market opening, has provided good opportunities for licensing deals. While China is still a non-licensing nation in comparison to most developed countries, the increase in receipts in recent years demonstrates its potential for licensing development.

Anand and Khanna (2000) use licensing contracts data to study the impact of IP rights on the patterns of international licensing activities, and find that licensing activities across different industries depend on IP rights to differing extents. For example, the chemical and pharmaceutical industries are highly dependent on patent protection, but the semi-conductor industry is less so. This is because the former can more easily define the contents and boundaries of knowledge, and thus enjoy well-defined patent rights and control the IP use of their products or process more easily than the semi-conductor, electronic and computing industries.

Park and Lippoldt (2004) take these studies further to examine the effect of IPP on international licensing activities using both aggregated data and firm data. This study concludes that strengthened IPP has an overall positive effect on licensing activities. More specifically, strong patent protection and effective enforcement increase the value of licensing. Licensing receipts and royalties are positively correlated with strong patent rights and effective enforcement. Strong patent protection increases licensing activity in developed countries, but increases FDI in

developing countries. Their explanation was that developing countries might not have sufficient IPP to be attractive to licensors. Among the four types of IP they examined, patent protection tended to have much stronger impact on licensing activities than copyrights and trademarks. By industries, patent protection and enforcement were more significant in the service, electrical, electronic and chemical industries for licensing activities, but had less powerful effects in the machinery and wholesale sectors. Copyright played an important role in licensing books, and trademarks in franchising and broadcasting. Developing nations with strong IPP have enjoyed either increases or small declines in licensing activities. In conclusion, patent protection and effective enforcement enable countries to exploit technology through licensing agreements.

The studies outlined here generally agree that licensing and patent protection are significantly associated. Patent protection does increase the licensing fees for the licensors, and stronger patent protection appears to motivate IP owners to intensify licensing activities. However, given the rather sporadic nature of previous research, these generalizations cannot yet be regarded as definitive, and further studies using licensing data to test theories and assumptions are required.

4.6 The effects of intellectual property on technology transfer and innovation

Prior research indicates that the overall impact of IPP on technology transfer and innovation is also positive, but could be negative depending on the countries concerned. Helpman (1993) models the impact of IP enforcement in the North and South on trade, production composition, and inter-temporal allocation of consumption. The results show that devolving countries do not benefit from strengthened IPP because tighter IPP attracts foreign production of better quality into developing countries, and local companies will struggle to compete, or may go bankrupt. Endogenous innovation does not necessarily guarantee that strengthened IPP will bring benefits to poorer nations. Meanwhile, it is unclear from the modelling whether developed nations benefited when poorer nations strengthened their IPP, but benefits may accrue where dynamic imitation activities exist in developing countries. Therefore, the author concludes that the theoretical argument cannot be generalized as to whether tighter IPP is desirable, as strengthened IPP has different effects in different regions. Lai (2000), and Yang and Maskus (2001a, b) extend the study, and find that strengthened IPP would encourage innovation rates to rise in developing countries. Strengthened patent protection in developing countries could either reduce or expand the accessibility of

foreign technologies. It would reduce if the enhanced market power of technology owners allowed them to increase access fees or to offer no new technologies but simply impose higher imitation fees from recipient countries. It would expand, if strengthened IP led to cost reductions. The increase or decrease in such technology transfer may also depend on recipients' absorbability, which can be influenced by local governance, education and competition policies.

Kanwar and Evenson (2003) examine the empirical relationship between patent protection and technological change. The former has a strong and positive influence on the latter (as proxied by R&D investment) and this continues to hold true when several variables are controlled for, including education and skilled manpower. However, the authors admit that the results are undermined by the distance between law and practice, incentives, international funds and trade orientation.

Eaton and Kortum (1996) studied the OECD countries and conclude that more than 50 per cent of the growth in the OECD derived from innovations from the US, Germany and Japan. Moreover, patent applications from non-residents accounted for 90 per cent of productivity growth in all countries, except the research states like Germany, Japan, France and the US. Peri (2003) conducted a study on North American and European countries using US patents and citations from the US applications filed by local residents from 1975 to 1996. Knowledge diffusion tends to be limited by distance, borders and differences in technology, but most cited patents and high technology knowledge tend to be widely diffused. Moreover, knowledge flows tend to be greater than product flows. Therefore, this study found statistical support for the notion that knowledge flows have strong positive impact on innovation. Maskus (2004) criticizes these two studies as having neglected developing countries, although the significance of knowledge flows in developed countries was demonstrated. He also notes that the implications of strengthening patent rights for the costs of technology transfer are neglected.

McCalman (2001) studied the 1988 patent applications to examine the impact of patent regime harmonization on rent transfers in developed and developing countries, finding that strengthened IP would increase outflows of royalty payments. Developing countries, including Panama, Colombia, South Africa, Korea, Mexico, India and Brazil, would pay $2.4 billion more a year. Although developed countries would also increase their payments, they would still be the net earners of royalty payments.

The above studies suggest that enforced IP attracts patent applications, thereby boosting productivity, encouraging local innovation inspired

by foreign applications, and increasing the costs of technology transfer (Maskus 2004). There are two ways to transfer technology internationally from patent applications: one is the direct way through patent applications in a foreign country; the other is to disclose technology through the patent system, which allows others to improve on it. The transfer of technology also depends on local skills and R&D capacity which most LDCs may not possess; thus international transfer is unlikely to occur in the short run.

Xu and Chiang (2005) divide 48 countries into high-, middle- and low-income countries to examine their technology transfer activity through trade and patenting flows from 1980 to 2000. Their findings show that foreign technology embodied in imported goods has significant impacts on productivity in high- and middle-income countries, but that the extent of technology development depends on the ability of human capital to absorb the technology. The findings of this research imply that strengthening patent protection is a key to attracting foreign patent flows, and that governments play an important role in improving the local IP environment.

Branstetter, Fisman and Foley (2006) use the data of US MNEs from 1982 to 1999 to test the assertion that strong patent protection would induce MNEs to transfer technology internationally to 16 countries. The findings show that royalty payments, R&D expenditure by the US multinational affiliates, and patent filing by non-residents all increased with the strengthening of the local patent system. The conclusion is that US multinationals are sensitive to the state of IPS development when they transfer technology internationally.

In summary, early studies confirm that IPP has an overall positive impact on the development of an economy. This economic impact is examined by linking IPP with economic development, international trade, FDI, welfare, licensing, technology transfer and innovation. While strong IPP tends to boost a country's economy, the overall effect of IPP tends to be conditional in different countries. In order for IPP to contribute towards economic development, a country must also have an open economy, reflected in open trade and dynamic FDI inflow activities, sophisticated anti-unfair competition policy, R&D supported by high levels of human capital, and an IPS which is integrated with that of the rest of the world. Under these conditions, IPP can function to boost innovation and, thereby, overall economic development. This explains why developed and open economies tend to have strong IPP to support their economic growth, but non-open developing countries and LDCs tend to be less motivated to implement IPP in the short run.

4.7 Other effects of intellectual property

Intellectual property protection can also have negative impacts on political economy (Ginarte and Park 1997; Gould and Gruben 1996; Kanwar and Evenson 2003; Maskus 2000; Rapp and Rozek 1990). First, establishing IPP in a country is inevitably a significant and costly undertaking. Administrative offices, laws and regulations and enforcement forces for IPP must be set up, all incurring costs to government organizations. Such costs can be much higher for developing countries, and in particular for the LDCs, because of their lower pre-existent IPS bases. For example, Chile has spent US$718,000 to draft new IP laws, strengthen its IP enforcement and train IP resources, not including recurrent annual costs of US$837,000. Egypt spent nearly US$600,000 to establish its patent office, US$192,000 to enhance its judicial framework, and another US$ one million on training IP personnel. Similarly, it has cost Tanzania over US$1.5 million in total to draft IP laws and set up its IP office. These examples show that it would cost at least US$1.5 million for developing and LDCs to establish an IPS (UNCTAD 1997).

The second type of costs is those that must be borne by the consumer. In exploiting their IP rights, firms are relatively free to increase their prices on products embedded with their IP to cover the costs of those involving IP rights that fail in commercialization. When a market is unregulated and has little competition, firms may also impose monopoly pricing. When this occurs, government may intervene to tighten pricing regulations, but only at the cost of further increasing government spending. Empirical evidence shows that patented medicines are substantially pricier than generic medicine (Lanjouw 1997; Maskus 1998). A more specific study about India concludes that patent protection in India results in raising patentable medicine prices on average by 50 per cent (Watal 2000).

Third, IPP implementation can have negative social implications, especially for employment. Some weak industries and firms, especially those that are vulnerable in the face of fierce competition from IP-rich multinationals, may be squeezed out of the market and forced to lay off workers. While MNEs may directly generate job opportunities, they are unlikely to create as many jobs as they have destroyed. In China, for example, direct employment by foreign firms was 18 million people by the late 1990s. However, most local firms could not compete with these foreign companies and had to make far more than 18 million employees redundant.[3] These weak firms may choose to become part of MNEs' operations through mergers and acquisitions. Its immediate effect may be

that the MNEs improve operating efficiency and reduce employment. For example, Volvo's acquisition of Samsung's construction equipment division in 1998 transformed the ex-Samsung division into a global centre for R&D in excavators. This resulted in unemployment not only at the headquarters because Volvo closed its excavator plant based in Sweden but also 13 per cent job reduction of the acquired firm.[4]

Fourth, scholars also argue that IPP delays the process of dissemination. Without IPP, or with weak protection, IP can be acquired by imitators more quickly and cheaply, thereby accelerating dissemination. But with IPP in force, the time taken for examination and approval postpones IP commercialization, and thus delays dissemination. A study has shown that most licensing deals are struck between a month or so before and 12 to 16 months after the patent grants (Gans, Hsu and Stern 2007), again prolonging the dissemination process. Thus, for example, if it takes up to three years to examine a patent (as indicated by US patent law), and another six months to reach a licensing deal, the whole process can delay dissemination by three and half years. Such grant lags tend to vary across industries (Popp, Juhl and Johnson 2004) due to the variations in the scope of the application's claim,[5] applicant characteristics, such as foreign or local applications, reference citations, and the complexity of technologies. (Patenting in high technology sectors, such as biotechnology, computer, software and drugs, tends to involve longer lags.)

Given the high costs of IPP, some commentators have argued against IPP on the basis of economic scarcity[6] and collective property (Anawalt 1988; Steidlmeier 1993). They argue that IP is information and is not a 'scarce resource' in the requisite sense, and that sharing such information does not reduce the resource for the originators; therefore, IPP is unjustifiable. Historical examples show that some of the greatest artists – like Shakespeare and Tchaikovsky – created their masterpieces through adaptations and improvements of others' work. Almost all the pre-1900 written works were in the public domain, but they still sell. A modern example of such arguments concerns software protection under patent systems as delineated as the closer study of this chapter. Under the collective property argument represented, individuals create IP rights, but they may pass their rights, particularly industrial property over to their employers because they may contractually have to cede their IP ownership. The relinquishment of IP ownership from the creators to their employers makes IP, to certain extent, the rights of multinationals rather than the rights of people.

The ethical justification for IP is often challenged in the context of pharmaceutical patents and global pandemics of AIDS and other health

problems. The centre of controversy is that monopoly pricing has denied developing countries access to drugs which are essential for their major public health efforts. Multinationals in developed countries own 90 per cent of global sales of drugs, while developing nations account for the same percentage of the 14 million deaths caused by infectious diseases.[7] A triple-cocktail treatment (a combination of three different drugs to treat HIV infection) can drastically reduce the virus concentration in the bloodstream and thereby prolong life expectancy (Sherman and Oakley 2004). But such treatment may cost over US$14,000 a year – clearly beyond reach of low per capita income countries in Africa (Gewertz and Amado 2004). It is estimated that generic competition could decrease monopoly prices by at least 75 per cent[8] and allow the 42 million HIV/AIDs sufferers much improved access to therapy (Gewertz and Amado 2004). The ethical argument accuses innovating nations of holding the rest of the world to ransom with their high product prices, most of which end up as profit, dividends and fat salaries, supported by the legal niceties of IPP, which, in effect contradict the moral tenets of social and economic equality. It argues that the benefits of human ingenuity should be available to the least disadvantaged in society. Although the WTO and World Health Organization (WHO) have been endeavouring to balance the interests of general public and creative originators, this significant imperfection of the protective IPS remains, and must be acknowledged.

Closer: Opening the source of software technology[9]

This closer looks at the arguments of those campaigners whose mission has been that software development should be protected by copyright rather than by patent. This case first discusses the protection of software under patent and copyright and the arguments of the supporters of patent protection of software. Major attention in this case then focuses on the arguments against patenting software. Finally, this case discusses Open Source Software (OSS), and the efforts to make software a less strictly protected technology.

As noted in earlier discussions about patents and copyrights (Chapter 2), the grant of a patent gives an IP owner the legal monopoly to exploit an invention for 20 years. This treats software as an invention, and allows its publication for authorized exploitation so that society can reap the benefit through practical utilization. Meanwhile, copyright protection protects artistic and literary expressions. When it comes to protecting software, there is significant controversy as to which structure

is most suitable for the case of the programme code at the core of software development.

In contrast to patent protection of software, proponents of copyright protection argue that it would facilitate the speedier dissemination of software due to three factors. First, applications for copyright protection do not need to go through a granting process: copyright automatically authorizes ownership to creators. Second, there is less fear for infringements. Each new software programme represents a new copyright, and creators (in this case software writers) do not need to worry about whether there is an intrusion of prior arts, thus each new programme may contain knowledge originally created by previous designers. Third, licensing deals to commercialize the software are both simpler and cheaper. A potential licensee of a software programme does not need to approach many owners (or previously copyrighted elements) to arrange for commercialization. This would attract wider interests for disseminating new software knowledge at much lower costs, thus stimulating both competition and industry development. Proponents of copyrighting as the indicated protection model for software argue that 'the main use of software patents is to block out competition.'[10]

Software development is protected under copyright in most countries, but under both copyright and patent arrangements in some countries. The TRIPS agreement stipulates that member states should protect their software development (i.e. the software programme code) under copyright law. But software is also patent-protected in the US and some European countries. The European Patent Office defines software as:

> computer-implemented invention . . . an expression intended to cover claims which involve computers, computer networks or other conventional programmable apparatus whereby prima facie the novel features of the claimed invention are realised by means of a program or programmes.

Whether software should be protected under patent has been a case for heated arguments. Like advocates for conventional patents, supporters of software patenting believe that patent protection provides programmers with incentives for further development by giving them a limited period of monopoly, and that software patents also stimulate competition, encouraging the rapid development of software technology and commercialization. Companies advancing this view tend to be those large multinationals whose profits stem from the IP royalties from their large stocks of patent portfolios.

However, software patenting is also widely opposed, and its opponents cite many drawbacks. First, they argue that it would be absurd to patent software because it is of a different nature to other patentable technologies. 'Software' does not wear out, and compared to a conventional invention, which may only involve a few patents, it may contain 100,000 or even 10 million lines of code, involving perhaps 1,000 patents. Thus, examining patentability, particularly originality and non-obviousness, could be extremely complex issues in such cases. Moreover, the timescales involved make patenting unsuitable. While 20-year protection might suit conventional industries, such levels would be pointless for software, where product life-cycles may be five years at a maximum, and (given the time involved in application and examining procedures), it is easily conceivable that the software could be outdated even before the patent is granted.

Second, the argument against software patenting is the dangers of monopoly. Patenting is designed to protect fair competition and encourage cross-licensing activities among firms. But, in reality, software patents are highly concentrated in a few large companies (such as IBM, AT&T, Hitachi, Toshiba, Xerox and Microsoft), who are able to recruit high calibre software engineers to develop programs and have the market power to commercialize software widely. In contrast, SMEs, with limited resources in these areas, are faced with destructive levels of delay and costs when they advance a software programme for patenting, due to the density of the codes involved. Their only other option is to license software from one of the big players, again subjecting themselves to crippling royalty payments. Either way, the patent system is not ensuring fair competition for the ultimate benefit of the consumer.

Third, software is easy to infringe and this problem impacts on both large and small firms. Modern software is a highly sophisticated product, which can involve so many patents that it is very difficult to be sure to what extent independently written new software is truly original. The abstract and broad nature of computer software adds to the search complexity, and, consequently, unintended infringements occur frequently. A typical case is the dispute between Microsoft and Stac Electronics. In 1993, Stac, a small software house, filed a case against Microsoft for infringing Stac's data compression system in its MS-DOS 6 operating system. Stac claimed that the infringement had meant it had had to lay off 20 per cent of its work force. In the end, the court ruled that Microsoft should pay $120 million, but it was allowed to make a counterclaim of $12.6 million against Stac because it had used Microsoft technology to develop its MS-DOC stacker.[11]

Fourth, software is slow to disseminate under patent. Given the sophistication of the product, the length of time involved in navigating existing software patents and the cost of analysing the programs, together with the fear of litigation, patented software attracts only a limited circle of software development engineers. It is unsurprising that the complaints in the software industry are that ideas are plentiful, but that development is slow and inadequate.

Finally, the continued uncertainty about how best to protect software developers' interests causes problems of inconsistency between countries in terms of policy making. A salient example involved the European Parliament's dilemma about whether or not to pass the Software Patent Bill in July 2005. Faced with the decision as to whether to support hi-tech firms' R&D but jeopardize SMEs and open source developers by agreeing to adopt patenting, the parliament rejected the bill by 648 voted against 14, resolving that software should only be copyrighted within the EU. However, this outcome continues the inconsistency between countries, including even between EU members, about the rules for software protection. Thus uncertainty will continue to exist, producing further confusion about protection levels and anxieties about litigation.

The case against software patenting has gained a large circle of supporters from SMEs, academics, scholars, government officials, and is backed by increasing numbers of corporate and organizational advocates. The list includes Association for Computing Machinery, WordPerfect, Borland International, Oracle, AutoDesk, Open Source Initiative (OSI), Free Software Foundation, League for Programming Freedom, Foundation for Free Information Infrastructure and InfoWorld. Software originators, such as Bricklin (spreadsheets) and Kapor (Lotus) are also seriously concerned about the future of software development under the restrictions of patenting. Academics, such as Samuelson and Kahin believe government should provide policy support for software development instead of imposing software patenting. In fact, as Oracle reports, many companies who are not supporters of the argument nevertheless feel forced to patent their software in order to avoid litigation.

One of the leading voices against software patenting is OSI. The organization became the first to use the term 'Open Source' after Netscape released the source code for Navigator in 1998. The source code of OSS is freely available for using, copying and distribution with or without modifications, which should either be openly distributed (freely or with a fee payable) or kept private depending on the Open Source licensing models.[12] OSI is a non-profit research and educational organization which certifies open source licensing using its certified

trademark – OSI – and promotes the development of OSS. Unlike patent-protected software, OSS can draw the attention of a large circle of expertise for exploration and development without concerns about the infringement of patent.

Intellectual property facts: Measurements of intellectual property systems

There are concerns in previous research about measurement models from theoretical, empirical and methodological perspectives. Early studies have included the three theoretical constructs noted here – IP laws, administration and enforcement – but no individual researcher has examined them all. Conceptual boundaries are often blurred, and conceptualized variables cannot be independently examined. In empirical terms, many studies are now rather dated, covering the period from 1960 to 1994 – IPP has changed dramatically since 1995 – and data for some developing countries (such as Vietnam, China, Russia and Ukraine) are missing. Methodologically too, perhaps because of the difficulties of quantifying IPS, prior research tends to be subjective and non-decomposable, undermining its reliability, validity and replicability for global studies.

A country's level of IP development is closely associated with its per capita income. Although measurements of IPS on a global scale are very few (and mostly somewhat dated), overall they generate consistent results. The author has reorganized the data to illustrate how different IPS are between high-, middle- and low-income countries, based on the World Bank's per capita GNI country classification system. Table 4.1 shows the relationship between income and IPP with high scores representing stronger IPP. The horizontal comparison shows that high-income countries have overall higher scores than middle- and low-income countries. These scores show the variations in the degree of IPP across the world. Moreover, the table reveals specifically how countries have differing scores for different elements of their IPS, with patent law development scoring highest, followed by patent administration and with IP enforcement gaining the lowest scores, across all three groups of countries. The table also shows that income and the extent of IPP appear to be positively related, i.e. the higher a country's income, the greater the extent of its IPP. This is unsurprising because countries with high income are able to give more financial support to education and R&D, and are likely to have a history of scientific achievements. This will tend to produce a strong will to protect their IP ownership, and

Table 4.1 Relations between income and intellectual property protection

Author	High income countries			Middle income countries			Low income countries		
Rapp and Rozek (1990)		4.07575			2.7388			2.2411	
Ginarte and Park (1997)		3.436			2.1910			2.25	
Ostergard (2000)		3.391			2.2357			2.458	
Author's index	M	A	E	M	A	E	M	A	E
	5.9430	5.3139	4.3844	5.7057	4.7540	4.2793	4.8544	3.4964	2.9388
		5.2138			4.9130			3.7632	

Notes: M: Patent mechanism; A: Patent administration; E: Patent enforcement. Detail of how the figures are rendered into numerical scores is delineated differently by the various authors.
Source: Synthesized by the author based on prior research and author's own work.

consequently, over time, they are more likely to have developed a strong IPS.

Having taken into account the problems of measurement noted above, the author has constructed new composite indices (see Table 4.1) on a scale of 0 to 7 with 0 indicating a low level and 7 indicating a high level of development.[13] This set of indices reasserts previous conclusions associating with income and IPP, i.e. the higher the income, the higher level of IPP. Moreover, the results provide a dataset that is more updated with a comprehensive measurement of patent laws, administration and judicial enforcement of 101 countries. By examining the three constructs, we can deduce that countries generally are most advanced in their development of patent mechanism, followed by their patent administration and with patent law enforcement the least developed aspect of their IPP system. This is unsurprising, as unlike instituting mechanisms and administration, developing the necessary human expertise to manage an enforcement system effectively takes time.

The only exceptions to the positive correlations between income and IPP are between middle- and low-income countries under Ginarte and Park (1997) and Ostergard (2000), where the latter scores higher than the former. The author is inclined to agree with Ginarte and Park's suggestion that many low income countries, for example in Africa, are former colonies of the UK or France and will tend to have inherited patent frameworks from them, thus increasing the overall average IPP rating of low income countries.

Summary

This chapter discusses the impact of IP on political economy and concludes that there are both costs and benefits to the exercise of IPP. While overall it has a positive impact on the development of political economy, the extent of IP impact depends on certain conditions. For IP to function for positive economic gain, a country must have a certain level of trade openness, dynamic FDI, fair competition policies, 'critical' levels of R&D and human expertise, and the system must be integrated with global IP norms. In establishing IPP, countries have a price to pay. IPP implies increased costs, and thus higher prices, while monopoly pricing in certain sectors will require regulation by government. Establishing an IPS incurs societal expenses in drafting laws, enforcing IP and training IP personnel. IPP can also drive weaker companies out of competition, particularly vulnerable SMEs, a process which will generate more unemployment than job opportunities, which can be a major concern

for developing countries. Lengthy IP examination procedures can delay the speed of dissemination, as most licensing deals are reached just before or after patents are granted.

In line with the main text, both cases and the IP facts sections describe the positive and negative effects of IP on political economy. The opener demonstrates the positive effect of patent protection for the inventor – Jack Kilby; the company – TI; the industries – computer, airlines, semiconductor and electronics, as well as for society as a whole. The closing case about patent protection in the software industry focuses on the negative effects of over-protecting software, which results in inadvertent infringement, expensive litigation, slow dissemination, unfair competition, and contradictory protection systems among countries. IP facts reveals the positive relations between income and IPP, notes the difficulty of measuring IPS in metric format on a global scale, and presents the author's new dataset.

Notes

1. The case was written by the author based on the following information: (1) Kilby, J. (2000) Nobel Lecture: Turning Potential into Reality: The Invention of the Integrated Circuit, at http://nobelprize.org/nobel_prizes/physics/laureates/2000/kilby-lecture.html, 11 November 2005; (2) Markoff, J. (2005) Jack S. Kilby, an Inventor of the Microchip, Is Dead at 81, *The New York Times*, 22 June; (3) Nobel Prize Organization (2005) Jack St. Clair Biography, at http://nobelprize.org/nobel_prizes/physics/laureates/2000/kilby-autobio.html, on 11 November; (4) Reid, T.R. (2005) Jack Kilby: Touching Lives on Micro and Macro Scales, *The Washington Post*, page C01, 22 June; (5) Reid, T.R. (1985) The *Chip: How Two Americans Invented the Microchip and Launched a Revolution*, New York: Random House; (6) Texas Instruments (2005) Jack St. Clair Kilby Biography, at www.ti.com, on 11 November; this is also the source of Photos 4.1 and 4.2; (7) www.jackkilby.com.
2. US affiliate here refers to a US business enterprise with FDI activities, according to the Bureau of Economic Analysis, the US Department of Commerce, at www.bea.gov/glossary, on 3 July 2005.
3. Ministry of Commerce (1999) *Statistics on FDI in China – 1999*, Beijing: Ministry of Commerce, the PRC.
4. IIbo, H. (2001) Volvo Helps Korea Secure Global Strength, *Korea Times*, 24 November.
5. An IP claim refers to a description in an IP grant to define the scope and extent of the protection conferred by a particular IP. It decides what is exactly protected under the ownership of an IP. It is essential information to decide whether an infringer has violated the owner's IP rights.
6. Long, R.T. (1995) The Libertarian Case against Intellectual Property Rights, at http://libertariannation.org/a/f31l1.html, on 2 April 2006.

7. Williams, F. (2003) WHO to Gain Advisory Role on Pharmaceutical Patents, Heath section: *Financial Times*, 28 May.
8. Anon. (2003) Patents, Profits, Power and Poverty, *Multinational Monitor*, 24(7/8): 5.
9. The closer was written by the author based on the following information: (1) Bulkeley, W. (1989) Will Software Patents Cramp Creativity? *Wall Street Journal* 14 March; (2) European Patent Office (2007) *Guidelines for Examination in the European Patent Office*, Munich: European Patent Office; (3) Garfinkel, Stallman, and Kapor (1991); (4) Grand et al. (2004); (5) Heckel (1992) (6) http://lpf.ai.mit.edu/patents; (7) Irlam, G. and Williams, R. (1999) Software Patents: An Industry at Risk. The League for Programming Freedom, at http://lpf.ai.mit.edu/Patents/industry-at-risk.html on 6 July 2006; (8) Kahin (1990); (9) Morgan (1999); (10) The Open Source Initiative (1999) The Business Case for Open Source, at http://www.opensource.org/for-suits.html on 6 July 2006; (11) www.opensource.org; (12) Samuelson (1984, 1990a, b).
10. Morgan (1999).
11. (1) Fisher, L.M. (1994) Microsoft in Accord on Patent, *The New York Times*, 22 June; (2) Riordan, T. (1994) Patents; A Software-technology Infringement Case against Microsoft Goes to Trial in Federal Court, *The New York Times*, 24 January.
12. Kenwood, C.A. (2001) *A Business Case Study of Open Source Software*, Washington: The MITRE Corporation.
13. '0' indicates that a nation has made no effort to conform to international patent standards; '7' indicates that a nation has fulfilled and may have superseded the standards. The three constructs have seven points each and a patent system score is the mean of the total score of the three constructs. 'Patent mechanism' and 'Patent enforcement' are scored based on comparing each country's laws against the TRIPS agreement. 'Patent administration' refers to government efforts to stipulate and revise laws, and to make administrative efforts towards implementing an IP system.

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5
The Effects of Political Economy on Intellectual Property

Contents

Focus and structure

This chapter focuses on the effect of political economy systems on the formation of IP Systems (IPS), and thereby on the strength of IPP. First, it discusses the political systems from democratic to totalitarian regimes and their impact on a country's IPS. Second, attention is drawn to four legal systems – civil, common, theocratic legal regimes and pluralistic – and their influence on the formation of IPS. Finally, the chapter elaborates the effects of three economic systems – market-driven, command and mixed economy – on the formation of IPS.

The opener, closer and the IP facts sections provide further evidence to support the chapter's main theme. The opener studies the first copyright law in the world in order to examine the role of legal systems in protecting authors' rights. The closer demonstrates the international political pressure on the Chinese government that is one of the reasons behind

the speedy establishment of its IPS. The IP facts reveal statistical evidence as to why and how a country's economic conditions impact on its IPP regime.

Opener: Copyright – How copying came to be wrong?[1]

Photo 5.1 shows the original print of *The Statute of Anne*, which is widely recognized as the world's first copyright law. It became effective in Britain in 1710, and the purpose of promulgating the act was made very explicit in its preamble: 'An act for the Encouragement of Learning, by Vesting the Copies of Printed Books in the Authors or Purchasers of such Copies, during the Times therein mentioned.' Although the word 'copyright' is not mentioned, the act clearly reveals its two main purposes: protecting authors and restricting publishers. Authors, as learned individuals, were to be motivated to create by having the fruits of their intellectual creations recognized as their proprietary assets. The act was designed to prevent publishers from having the liberty to publish author's works without their express consent. Before the law was enacted, a period of turmoil in the publishing sector had seen publishers and booksellers producing and selling books without the authors' consent, seriously discouraging intellectual creations. The act stipulated that they would only

Photo 5.1 The Statute of Anne (Courtesy of K.-E. Tallmo)

have the 'liberty of printing and reprinting', as an assignee of the author, and for 14 years for new publications, but 21 years for works already in print.[2] Offenders would be punished with a forfeiture and fine (at the rate of one penny per sheet).

The act had an immediate effect on British publishers, and led to a number of court cases. One influential series of cases concerned a book of poetry – *The Seasons* – and actually produced two entirely opposite court verdicts. In the first action, the bookseller Millar had purchased the copyright in the book from the poet James Thomson in 1729. When the copyright expired, a competitor – Robert Taylor – started printing and selling a volume that included Thompson's poem. In 1769, Millar sued Taylor on the basis of the perpetuity of a common law right. Lord Justice Mansfield supported Millar, finding that common law gave him a perpetual copyright for the book, and that the provisions of the *Statute of Anne* limiting the duration of copyright protection did not extinguish these perpetual common law rights. Taylor was unable to appeal as Millar died soon after his victory.

Thomson's book was subsequently sold to a group of printers, including the London based Thomas Beckett. But the Scottish bookseller Alexander Donaldson had reprinted the book in Edinburgh and was undercutting Beckett's price. He relied on a 1773 Scottish court ruling (Hinton v. Donaldson) that common law rights did not overcome the provisions of the *Statute of Anne* in Scotland. When Donaldson set up business in London in 1774, Beckett promptly sued him for his unauthorized printing of the poem, and was granted an injunction. But Donaldson's appeal to the House of Lords the following year was upheld by 22 votes to 11, the House rejecting the notion of perpetual rights under common law, and confirming the 1710 *Statute of Anne* as the effective legislation in the matter of copyrights. This landmark ruling ushered in the notion of the *public domain*, as a consequence of which the greatest works in English literary history, by writers, such as Shakespeare, Milton and Bacon, have become freely publishable.

The entirely opposite verdicts of these two cases were due to the different grounds in laws for the arguments presented. Millar won the case based on the perpetual rights of owners under the common law, but Donaldson appealed to the *Statute of Anne*, claiming that, after the period of protection granted by the Statute, *The Seasons* was in the public domain.

Looking at these two cases from the perspectives of the economic and social benefits of copyrights, a perpetual monopoly only considers the interests of the intellectual owners, and entirely ignores the interests of society. As discussed in the first chapter, a balanced IPP should consider

the interests of both right owners and the progress of society. The eternal monopoly would not allow the general public to use such rights freely after a limited period, and would, therefore, prevent accelerated knowledge dissemination. The Donaldson victory reflected this economic and social balance by allowing for a limited period of monopoly copyright. This case also marks the start of the substantial impact of the *Statute of Anne* in the world history of copyright. It demonstrates that the rights of copyright lie in the foundation of the base law. This is closely relevant to the core of this chapter, which studies how political economy systems can impact on the formation of IPS and protection.

5.1 The effects of political systems on intellectual property

Any country's political system (i.e. the system under which a country is governed) can be said to fall somewhere on a spectrum between democracy and totalitarianism. This spectrum can be further divided to delineate some well-recognized governmental systems, including, at the democratic end, radical ('pure' – Lummis 1996), liberal (representative) and conservative democracies, and at the totalitarian end, authoritarian, communist, fascist or theocratic governments. By and large, they differ as to the extent to which democracy is reflected in their legal rulings, elections, and freedom they allow to their media and their citizens' expression of ideas. Extreme democratic and totalitarian governments are rare cases and most governments adopt a system somewhere in between. Within established nations, a number of political parties may co-exist who play a supervisory role over one another. In the UK (at the time of writing) the Labour party is the ruling party with the Conservative and Liberal Democrat parties as the principal 'shadow' governments, monitoring policy making and implementation. (There are also some 40 smaller parties co-existing in the political landscape of the country.)

In certain circumstances, a change of government may lead to an existing system being replaced by an entirely opposite one, and world history gives many examples of both transitional changes and dramatic shifts of fundamental governing styles in different countries. The 1989 revolution in Eastern and Central Europe marked the end of the Soviet influence over Poland, Czechoslovakia, Hungary, Bulgaria and Romania, and symbolized the diminishing role of Communism in the power balance between the democratic and totalitarian worlds. Thus the unification of East and West Germany in 1990 saw an 'overnight' change to a government system, leaving peoples' political beliefs to catch up with the new reality. In the reverse direction, 1997 and 1999 saw Hong Kong and

Macau undergo peaceful transitions from capitalist governance to Communist Chinese rule. The Hong Kong Basic Law stipulates that Hong Kong maintains its autonomy as a capitalist regime, although its defence and foreign affairs are centrally controlled by the Chinese government.[3]

Some countries experience shifts in their national political lives that are transitional rather than dramatic. Before 1979, China was a representative example of communism, i.e. people's individual freedom in politics and economy was ruled and in many senses curtailed by government policy. Following the announcement of the Open Door Policy, while it still emphasizes that it is a Communist regime, China allows economic freedom, and the style of government system has shifted from hard-line totalitarianism to what could be described as authoritarian. That is to say: China is waving a Communist flag and marching on the capitalist road.

While they are arguably not at the very extremes, some of the fundamental differences in world political systems can be delineated by examining the US and China as comparative cases. The US is a multi-emigrant country with a democratic regime where the freedom of elections, speech and organizations are upheld. In contrast, China is a deep-rooted, centralized, multi-ethnic regime in transition from a Communist regime where people's political and economic freedom was closely governed to an authoritarian regime where people enjoy increasing economic freedoms, but where political liberty is still restricted.

Comparing the US and China allows us to see how different systems impact on the formation of IPS in two ways. One fundamental impact is people's desire for involvement in policy-making about IP (Liu 1996). A democratic regime that emphasizes people's individual freedom and rights results in individual participation in policy making. Theoretically speaking, policy making for IP is both 'compelled' (in that it derives from the democratic decision-making process, with power from the grass roots – the electorate – driving decisions at the top, i.e. in government) and 'induced' (i.e. the result of policy imposed from the top). The US policy-making process is both compelled and induced, while the non-democratic Chinese structure means internal policy making there is largely induced. This sits well with the country's political roots: as mentioned earlier, China has always been a centralized kingdom, that is, a system of central political control, and consequently the general public is primed to accept policy as made from the top. The (relatively) swift emplacement of a (relatively) complete IPS in recent years is to great extent due to this factor.

However, given the globalization of politics, policy making is not only based on such vertical influences (from top to bottom or vice versa),

but the impact of international politics is likely to introduce the horizontal effects as well (i.e., influence from outside). So, to the two forms of vertical influence (compelled and induced), we should add a third – horizontal – style of influence, which we might term 'pressured', to cover situations where a country's policy decisions can be seen to be the result of pressure from other countries.

An excellent example of this mechanism at work is the activities of the US Trade Representatives (USTRs), assigned by the US government to its major trading partner countries to act as 'conduits' for information and influence. Among other duties, they collect information from US MNEs as to perceptions about partner countries' levels of IPP, and to make representations to the US government (usually at the prompting of the US companies, and to serve their interests) which then influence US trading policies, leading to pressure being exerted on partner countries for local policy changes. The establishment of China's IPS stems, to a great extent, from this 'pressured' policy making, with multinationals' strategic suggestions pushing the US government to press China to formulate an IPS more acceptable to its US trading partners. (This imposed formation is discussed in detail in the closer to this chapter.)

5.2 The effects of legal systems on intellectual property

The world legal systems can be categorized into three types, although mixed systems also exist. As previously noted (Chapter 3) for the purposes of examining its IP provision, a country's legal system can be said to involve three elements: a legislature to make laws, the accumulated legislation and administration designed to regulate its citizens' behaviour, and an enforcement structure to implement its laws.

- A legal system can be based on a *common law regime* – judges decide the rights or wrongs of a case basing their rulings on precedent, customs, social norms and past court decisions, as well as rational public policy. This regime (also called case law) has its origins in England 900 years ago (Cooter and Ulen 1997) and is the basis of law in the UK, US, Australia and former British colonies.
- A legal system can also be based on a *civil law regime* – legal practice is entirely based on a detailed legal code. This regime derived its origin from the Roman Empire (Howe 1980; Merryman 1987), and (following French or German versions) in effect covers most continental Europe and extends to previous European colonies in Africa and Latin America. Arguably, it has influenced the former Communist regimes

to establish their characteristic civil law regimes with the blend of Marxism and Leninism (Ma 1994; Rudzinski 1956).

- A legal system can be *theocratic* – based on legislation that derives from and conforms to religious precepts. Many Islamic countries are in this category: for example, both Afghanistan and Iran stipulate that laws and government principles accord with Islamic teachings.
- For historical and cultural reasons, some countries have *pluralistic* legal systems blending the features of different regimes. Thus, in the United Arab Emirates secular and Islamic courts co-exist, relying on a mix of Islamic law, English common law, Turkish law and local tribal customary law.[4] Secular courts handle civil, commercial and criminal disputes while the Islamic courts adjudicate family and religious conflicts. And Quebec province's mixed colonial history has led to a system where its criminal law reflects English case law practice, but property and civil rights matters are covered by statutes based on the old *Code Napoléon*.[5]

Different legal systems across the world impact on the formation of IPS. First, the differing legal systems in different parts of the world (as noted in Chapter 3) may serve to make global integration of IPS and protection a problem. The situation where two countries with conflicting legal systems try to achieve satisfactory IPI could reflect that noted in the opener, where the same case produced opposing verdicts when looked at from different legal points of view. Second, another potential difficulty is caused by the likelihood that the speed of technology development will be faster than the development of IP laws. This phenomenon may well become more pronounced, and may lead to the situation where some (maybe difficult) cases will have to be handled without any framework of law, either codified or case law, to guide the process. An experienced judge may be able to handle such a situation on the basis of jury verdict and customs, but the problem will be exacerbated where a country is inexperienced in IP enforcement.

Third, the history of the legal systems can influence IPP in different countries. A country with long-established legal IP traditions is likely also to have an established practice of guiding IP and other business activities via contractual obligations, with dispute being referred for court resolution. But countries with shorter legal traditions may have less experience of contractual obligations, and see court resolution as a last resort. Once again, this can be illustrated with practice difference between China and the US. The US, as part of a common law regime, has a long legal tradition which supports the binding nature of contractual

agreements in business, which naturally extends to IP matters. Breaching contractual conditions requires court resolution. This is entirely opposite to the practice in China, which has a civil legal regime, but where the country has always been a centralized state ruled by government rather than by law. Here, the accepted convention that government made policy and civilians followed has been developed under the Maoist government with public distribution and ownership prevailing over peoples' individuality. With no concept of private rights, there could be no idea of contractual obligations or of going to court to defend individual interests: effectively, they did not exist, and public interest and public rights were paramount. Only in the past two decades have Chinese people begun to take on the concept of IP and use contracts and courts to defend IP rights.

5.3 The effects of economic systems on intellectual property

As with the legal system, economic systems – countries' systems for governing the production and distribution of goods and services – can be said to exist in three main forms around the world. These forms can be differentiated by examining what and how production and distribution take place, how these decisions are made, how product or service prices are decided and how they are consumed. One form is the market-driven, or capitalist, economy, and countries using this system tend to rely on open market competition to adjust the amount of production and distribution of goods and services (which are mostly privately owned) and the prices they can command. Exemplary countries in this category are those in Northern America, Europe and Japan. The other extreme to the market-driven economic system is often termed the command system, also called the 'planned' economy, and most often associated with socialism. This system allows for public ownership and governance of production and distribution and setting of prices. Countries like Cuba, the former Soviet Union, the Eastern Block countries before the collapse of communism and China before the Open Door Policy are examples of such regimes.

Finally, the third form of economic system – called mixed, state directed or centrist economy – is the most widely adopted system for two reasons. One is that governments are generally unwilling to leave their country's economy to be adjusted entirely by the market alone, and may wish to intervene in the economy for the benefit of the country or a particular interest group. For example, governments may want to subsidize certain industries in order to enable them to compete against foreign MNEs, or prevent certain industrial sectors from being controlled by foreign investors. Governments may need to direct the development

of certain industries, such as defence for security reasons, or their high technology sector to protecting its ability to advance towards becoming world class. The second reason for governments (such as those of former Communist countries) needing such control is that their economy may be in transition from a command economy to mixed economy (and eventually to a full market economy), and this process requires an element of government control. Absolute market and command economies are becoming rare cases – indeed it could be said that, while the influence of globalization is moving the world in the general direction of the market economy, all nations will still tend to indulge in some level of protectionism to steer this process, or to protect particular interests groups, such as vital or traditional industries.

The nature of a country's economic system reflects its society's perception of the need to achieve a balance between collectivism and individualism, which in turn will define its attitudes towards IP. Under the command economy, the public ownership of every product and service nurtures an environment where intellectual creations are seen as a communal good, and where public sharing is a natural attitude. This is because command economies advocate public ownership, that is, individual interests are subservient to the public welfare of the socialist state, and therefore the private ownership of IP is denied. Despite this history, scholars from these – mainly developing – societies are now calling for more careful protection of IP, aware of the potential that technologies from developed countries have for assisting their economic development. Under the market economy, on the contrary, the economic climate places the highest value on individualism, and governments have created economic incentives to fortify the private rights of individuals to the rewards of their creativity. Individual achievements are encouraged under the conventions of the private ownership of production and distribution. For people in such societies, it is natural not to infringe other's intellectual creations. An evidential discussion about the relationship between IP and individualism-collectivism appears in the IP facts section.

Closer: The 'hot waves' of intellectual property in China[6]

The rapid establishment and speedy development of the Chinese IPS has been driven by national and international political economic factors, and can be described as going through four stages of IP 'hot waves'. The first 'wave' started immediately after China opened its economy in 1979 when China and the US held bilateral negotiations for the *Sino–US High Energy Physics* and the *Sino–US Trade* agreements. IP became a contentious

issue during the negotiations, which eventually reached stalemate. The US negotiators believed that IPP should be an integral part of bilateral agreements on science, technology and trade, and, in fact were required by the US president to ensure adequate IPP arrangements were in place before they signed any agreements. But their Chinese counterparts had little knowledge or experience of IP matters, and were therefore very disinclined to sign the agreements. This period, known in China as 'the IP Formation Wave', marked the beginning of China's highly intensive research in the area of IP.

During the 1980s, China transformed itself from a country with little knowledge and experience of IP to one with a broad IP framework in place. By 1990, China had ratified a series of international TCAs, including the Paris Convention (1985), and the Madrid Agreement (1989), and was a signatory to the Washington Treaty (1989). At home, China established the SIPO, the Trademark Office and the State Copyright Administration as its IP administrative organs. Judicial arrangements were established to handle IP disputes, although enforcement of IP was not considered adequate. A raft of IP laws was promulgated during this period, covering patents, trademarks, industrial designs and utility models. It is clear that the first IP wave in China was the consequence of Chinese desire to be involved in advanced technologies. But while China needed to acquire sophisticated technologies from advanced countries to rapidly boost its economic development, without proper and adequate protection, advanced countries were reluctant to transfer their technologies into China for fear of piracy and the free exploitation of their achievements.

Before the TRIPS agreement was signed in 1995, a country could take unilateral actions against any other countries for malpractice in trade and investment. And this was a weapon used by the US under Section 301 and Special 301 of its Omnibus Trade and Competitiveness Act that authorized its Trade representatives to bring forward complaints from their citizens about any 'unjustifiable, unreasonable or discriminatory' practices in trade and investment. Moreover, its 'Special Mention' provisions were used to highlight countries with existing or emerging IP problems, and Section 337 authorized US Customs to detain any imported products that infringed US IP rights. Under this unilateral US policy, its USTRs in different countries established an annual Priority Watch List (PWL) to monitor IP practice and to take unilateral actions against IP infringements.

A confrontation between the US and China occurred in the early 1990s and reflected the actions by the US based on Sections 301 and 337.

This was the 'Second Hot Wave' – the 'Implementation Wave'. China was listed on the PWL in 1991 and 1994 because the USA did not believe that the Chinese patent law and copyright law were adequate to protect US IP rights. As a result of many rounds of negotiations, the two countries signed the Sino–US Memorandum of Understanding on IPP (MOU) in 1992 and China extended its IPP.

During the second hot wave, China further demonstrated its determination to implement its IPS. Internationally, it ratified the Berne Convention (1992), the Universal Copyright Convention (1992), the Phonograms Convention (1993), the Patent Cooperation Treaty (1994) and the Budapest Treaty (1994). Domestically, implementation took three forms. First, China promulgated new IP laws, such as the Copyright Law (1990), the Provisional Statute on the Protection of Computer Software (1991), the Regulations on the Enforcement of Universal Copyrights Convention (1992), the Anti-Unfair Competition Law (1993) and the Decision on Copyright Infringement Punishment (1994). Second, China revised and supplemented other laws during this period, including the Implementation Regulations on Copyright Law (1991), on Patent Law (1992), and on Trademark Law (1993). Third, and perhaps the most significant progress during this period, was the establishment of the Special People's Court System in 1992, formed especially to handle IP and other economic cases. This initiative added to China's ability to gather experience about IP dispute resolutions, as well as increasing its efficiency and effectiveness in these fields.

The third 'IP hot wave' ('The Improvement Wave') began in 1995 when China became one of the signatories to the TRIPS agreement. This gave a very different picture of IP in China. In the first two waves, China was substantially influenced by unilateral threats from the US and by WIPO's TCAs as the model laws. However, in the third wave, the WTO agreement strictly restricts unilateral threats, and TRIPS has become the most important dimension on international trade and IP. While the first two waves influenced the Chinese government and its intellectuals and academics, the third wave has exerted significant impact on the Chinese public. After 15 years of public education and governmental influence, mainstream society has gained a general appreciation of IP matters. The characteristics of this 'wave' are also unique. First, this period represented a 'fine-tune' stage where specific legal issues were adjusted to conform to TRIPS provisions. Second, after 15 years of studies, China has begun to have its own scholars in this particular area. Third, at this stage, China revised all its IP laws to prepare for its entry into the WTO in 2001. Although some revisions only became effective subsequently, China,

as one of its signatories, was committed to such changes even before the TRIPS agreement became effective in 1995.

The fourth wave – 'the Enforcement Wave', finally appeared in 2001 when, after 15 years of negotiations, China became a member of the WTO. The main feature of this period has been the enhancement of the enforcement of IPP, as the government was keen to change the country's reputation for inadequacy in this area. The Enforcement Wave was designed to develop China's IP structure from being merely systematic to one that could be termed sophisticated. However, given the human implications of enforcement issues, enhancing the quality of resources in this sector will take time.

Intellectual property facts: Income, individualism and piracy

The IP facts in this chapter are discussed based on the study of 76 countries. Income here refers to gross national income (GNI) per capita with purchasing power parity (PPP) from 1994 to 2002. Individualism is a dimension opposite collectivism – the two denote different degrees of emphasis on individual rights and freedom over collective interests. This is based on the individualism score by Hofstede (2001). A high individualism index indicates that people reinforce individual identity and achievement and interpersonal relationships are more fluid. On the contrary, a low individualism score, i.e. high collectivism demonstrates a society with close family ties, social responsibilities and group interests (Yang and Sonmez 2007). Piracy here refers to software piracy and it is the average piracy rate of each of the 76 countries studied from 1994 to 2002.

As discussed earlier, a country's attitudes to individualism–collectivism are associated with its political economy environment. The statistics in this section display the correlation between GNI per capita and these attitudes and levels of software piracy (Figures 5.1 and 5.2). Put simply, income statistics can indicate the level of a country's economy (e.g., as a developed or developing country) and individualism vs. collectivism is associated with people's attitude towards IP, while software piracy can be an indicator of the strength of a country's IPP. Countries with a tradition of IPP tend to have lower software piracy rates than countries with relatively recent or no IPP. This section is designed to investigate such theoretical and empirical considerations.

Economic income and software piracy are correlated, i.e. the higher the income per capita, the lower the levels of piracy. Husted (2000) and Ronkainen and Guerrero-Cusumano (2001) emphasized that income inequality affects piracy rate, while the latter found that GNI per capita

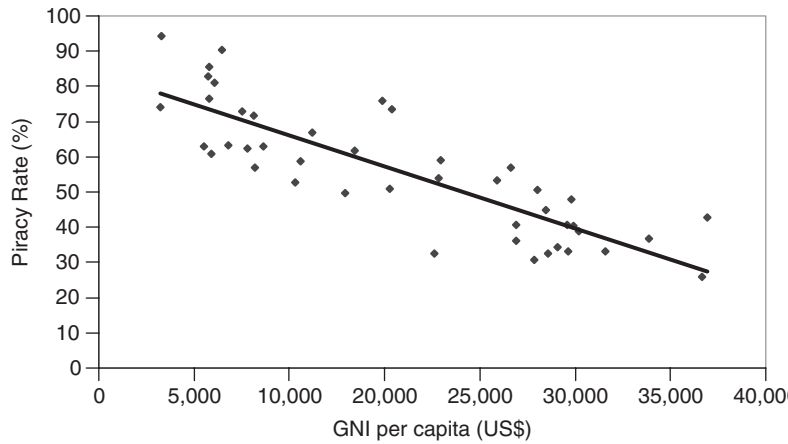

Figure 5.1 Piracy–GNI relation (−0.8405)
Source: Created by the author based on the data from the World Development Indicators, World Bank (1994–2002) and Business Software Alliances (1994–2002).

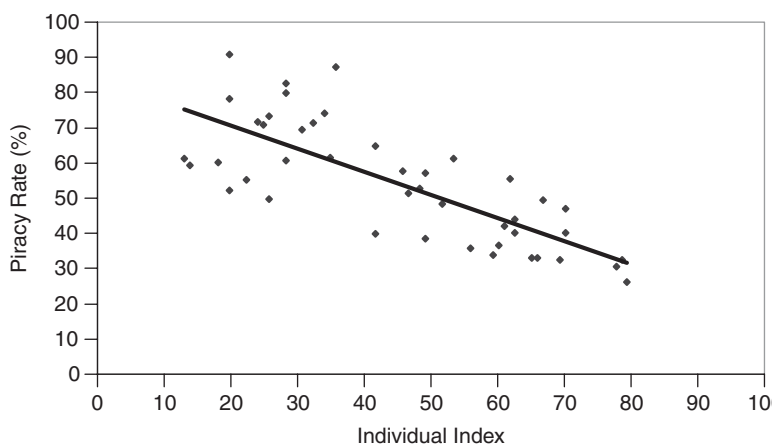

Figure 5.2 Piracy–individualism relation (−0.7673)
Source: Created by the author based on the data from Business Software Alliances (1994–2004) and Hofstede (2001).

explained 73 per cent of the variations in software piracy. Marron and Steel (2000) concluded that high income was correlated with low piracy rate at the 0.01 significance level. Burke (1996) pointed out that GDP per capita is an important determinant of piracy. Richer countries tend to be those where the general public is more knowledgeable about IP

and where governments allocate more administrative and enforcement resources to protecting IP. Yang and Sonmez (2007) recently studied GNI and its impact on software piracy, finding that GNI appears to be strongly associated with low software piracy rates most likely where living standards are high (Figure 5.1).

The negative association between software piracy and economic well-being has some further empirical explanations, and several authors have found that developing countries with low GNI tend to exhibit high rates of software piracy (Alford 1995; Kuanpoth 2002). Block, Bush and Campbell (1993), based on a survey of 200 American shoppers in the US, conclude that purchasers of 'fakes' tend to consider themselves poorer. Shore et al. (2001) surveying a sample of 627 university students from New Zealand, Hong Kong, Pakistan and the US, conclude that people's views as to the affordability of genuine items is a determinant of the likelihood of them purchasing 'fakes'. Such economic links with piracy have theoretical foundations associated with poverty and ethical dilemmas (Hill 2002). All consumers, despite their income levels, have materialistic goals, but those who are poorer achieve their goals by buying low-priced products using a 'compensatory consumption' strategy. Speculators or pirates can respond to this strategy, persuading people to fulfil their materialistic demands by overriding their instinct to buy genuine products (Yang and Sonmez 2007).

Figure 5.2 shows that individualism is also significantly associated with piracy rates. In other words, individualistic societies are likely to pirate less than collective societies. Several authors (Depken and Simmons 2004; Husted 2000; Marron and Steel 2000; Shore et al. 2001) conclude that low software piracy is associated with individualist countries with high income and education levels and high R&D intensity. For example, Husted (2000) deduces that individualism explains 83 per cent of the variations in software piracy when controlling for variables of economic development and income inequality.

Summary

This chapter considers the impact of political, legal and economic systems on the formation of IPS. The position of a political system on the democratic–totalitarian spectrum decides the system's impact on the IPS in two ways. First, nations with democratic systems tend to be influenced by both compelled and induced IP policymaking, in other words, policy is made following suggestions or pressure either from the grass roots or from the top. However, countries under totalitarian regimes make

most decisions (including those about IP) via the induced route. Second, democratic regimes, which are largely advocates of IP, tend to have a long history of IP development. In comparison, totalitarian countries (or those who have been until recently) tend to be 'driven' into the IP environment by horizontal – pressured – influence, where government policy responds to pressure from desired trading partners, IP advocate countries, and integrative guidance from international IP organizations.

Legal systems and legal history can impact on the functioning of IP systems. The legal system will decide how IP matters are adjudicated in court, and whether it stems from the common law tradition of case precedents and jury verdicts, or civil law regime of judgment appealing to detailed legal codification, or from theocratic judicial systems. The law's impact on IP activities is also dependent on its history, with countries with longer legal traditions tending to honour contractual obligations in IP related matters and seeking resolution through litigation, while countries with shorter traditions tending rather to look to mutual trust as the foundation for business agreements, and favouring consultation and mediation as resolution mechanisms.

Economic systems also impact on the formation of an IPS. The environment of a market-driven economy stresses private production and distribution, thereby nurturing individualism and private rights. In contrast, planned economies emphasize public production and distribution, fostering the mentality of collective sharing and wider public rights. Consequently, people in capitalist economies feel that it is natural to have their private rights to their individual creations protected under IP, while those in command economies tend to believe that IP is a communal good to be shared throughout society to maximize its collective interests.

The two cases and IP facts shed further light on the impacts of political economy on IPS. The opener discusses the handling of two similar cases in the early days of copyright in eighteenth-century Britain, which relied on different legal guidance, and thus came to opposite conclusions. The first case granted a perpetual monopoly to the owner under common law, but the second, landmark, hearing before the House of Lords confirmed the *Statute of Anne* in conferring only limited duration rights to the IP owner. The eventual verdict takes into account both the interests of the rightful owner and the general public for a wide dissemination of knowledge, and establishes the concept of the public domain, where out-of-copyright creativity is completely free for commercialization. The closer demonstrates the impact of political economy on a country's formation of IPS, showing how the US government and international organizations drove China into protecting IP and how China

responded to the pressure for its national economic development interests. The statistics in the IP facts section synthesize early studies about the relations between economic income, individualism and software piracy. The findings further demonstrate in a quantitative format the role that political economy plays in the development of IPP.

Notes

1. The case was written by the author based on the following information: (1) Feather (1980); (2) Lessig, L.(2004) *Free Culture: How Big Media Uses Technology and the Law to Lock down Culture and Control Activity*, London: Authorama, Public Domain Books, Ch. 6; (3) Rose (1988); (4) Tallmo (2007); This is also the source of Photo 5.1.
2. It is perhaps worth noting that the current protection offered in the UK has recently (1996) been further extended from 50 to 70 years after the owner's death.
3. Hong Kong Basic Law, i.e., the Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China. It is the constitution of Hong Kong effective from 1 July 1997.
4. CIA (2007) *The World Factbook 2007*, Washington: Central Intelligence Agency.
5. Anon. (2007) *The Napoléon Code* (Civil Code) at http://www.canadianlawsite.ca/NapoleonCode.htm, on 5 October 2007.
6. This case was written by the author based on Liu (1996); Yang and Clarke (2005); and Zheng (1999).

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6
The Effects of Culture on Intellectual Property

Contents

Focus and structure

The aim of this chapter is to provide a critical understanding as to how and why cultural factors affect people's attitudes towards IPP. Four topics are discussed and supported by case examples, using the US and China as comparators. First, the chapter examines how different levels of education can impact on people's understanding of IP and how IP training can change people's attitudes towards IPP. Second, the ways in which religious principles can directly and indirectly affect IP attitudes are examined. Third, the effects of different social classes on positive or negative attitudes towards IP are considered. Finally, the impact of language as a cultural element affecting IP understanding is discussed.

Two relevant cases and the IP facts sections further explore the chapter's central arguments. The opener examines how cultural factors have played an important role in the success of the software industry in India. The closer focuses on color marks, considering their pros and cons as an unconventional form of protection. The IP facts section organizes the topical data in a metric format to examine how the cultural elements discussed in the chapter are related to the degree of software piracy.

Opener: Dazzling the world: The Indian software explosion[1]

India's success in the software industry seems like a miracle, and the world wonders how it can be explained. As a developing country in a sophisticated industry, in competition with the US, Japan, Ireland and Korea, it manages to rank third in the world after the US and Japan, accounting for 1.7 per cent of the world industrial output. Its software industry nurtures over 1,000 companies employing over 200,000 software engineers: demand in the industry registers an annual growth rate of 50 per cent, and by 2002, its software sales had reached over US$ 8 billion. It exports mostly to the US, and multinationals, such as IBM, Microsoft, Intel and Oracle have established operations in India. But how has this miracle been achieved? Examining the phenomenon, we conclude that India's success is not a miracle, but the result of a whole-country endeavour. (Of course, low local wage rates have also contributed to India's rapid development in the industry: a programmer working for a US company in India would have earned $25 an hour in 1992, rising to $35 an hour in 2000, while the same grade of employee based in the US would have cost the company $75 and $100 per hour respectively.)

The Indian software industry derives its success primarily through education, and here four elements are worth noting. First, the Indian software industry workforce is highly educated. For example, in a country where the overall literacy rate is only 60 per cent, 80 per cent of software firm employees have engineering degrees and 13 per cent have been re-trained in software development. The rate of student enrolment in software engineering is growing at 12 per cent a year.

Second, specific education policies favouring software development are a contributing factor to the sophistication of the Indian industry. Since 1984, via its general policy instruments to encourage investment and provide incentives, the government has stressed the development of software engineering, creating world-class institutes, such as the Indian Institute of Technology (IIT), which have become the chief suppliers of software engineers. Ninety per cent of IIT's postgraduate students go

on to work in the information technology sector to meet the growing industrial demand. Government organizations like the All India Council for Technical Education govern technical degree curricula and capacity – in the 1990s, the council approved the establishment of new technical colleges at an annual growth rate of 9 per cent.

Third, in line with government policy, the software educational structure produces trainees simultaneously at three different levels, to be compatible with the industry's overall structure. Thus, recruits are available at the high calibre manager and software designer/system analyser levels, but also at the middle and lower levels of engineer, programmer, customer service personnel and planners. The first layer is represented by 400 higher education institutions, and the second by 700 private training institutions supplying well trained software talents, while the third layer takes the form of on-the-job training provided by the software firms themselves. This balanced structure means the education system delivers a steady supply of personnel at all levels to the industry. For example, the IT training sector has been growing at the speed of 30 per cent over recent years. The higher education institutions are very important for software education because they provide training not only to those already qualified, but also to new learners in this field. As regards the third level, there are now nearly 4,000 such training firms, and firms like Infosys spent up to 6 per cent of their revenues on training.

Finally, competition in education also serves as a driving force to accelerate the industry development. In India, an engineering education denotes quality, intelligence and hard work, a demonstration of the competitive intensity that is the driving force of this industry, according to Arora and Athreye (2002). In response to this competition on the supply side, there is also a demand side race, as Indians tend to regard education in fields, such as engineering and medicine as an assurance of their future individual well-being.

Language is also an important factor in contributing the rise of this industry. While there are many mother tongues on the sub-continent, English is the official language, and this 'language proximity' contributes to the software development in two ways. First, the labour force is readily equipped to provide engineering and service contributions internationally, and English is particularly relevant as far as exports are concerned, as India largely exports to the US and the EU. The widespread use of this 'international language' also facilitates knowledge-exchange communications between India and developed countries, resulting in enhancing development. Second, software written in English from other countries can be directly explored, reproduced and improved without the need

for translation. Yang, Ghauri and Sonmez (2005) argue that English language capability has contributed significantly to the success of the Indian software industry, and is a major reason why it is more sophisticated than the Chinese software industry.

This opener is a vivid example of the significant role a society's culture can play in the development of a highly IP-related industry. Many important factors have contributed to the success of this industry in India. While resources endowment, government support, corporate competition, demand levels, export potential and multinational involvement are all determining factors, cultural elements provide an important focus in this case study. Education has helped develop both the supply and demand sides of the industry, with balanced educational structures and provision responding accurately to industry requirements. Language has also been a significant facilitator in its success, allowing it to connect directly to the rest of the world. The case leads us to the core of this chapter – the impact of cultural factors on IP. In the next four sections, we will focus on theoretical and empirical discussions on the impact of education, religion, social structures and language on IP, again using the US and China to draw comparative examples.

6.1 Education and intellectual property

Early studies have identified education as an influential factor on IP. Maoist ideological education is a good case in point. Between 1949 and the 1970s, under the Chinese socialist banner, Maoist principles emphasized public ownership as being paramount, above all individual interests. Individuals' contributions to society were to be treated as collective achievements, which could be shared and used free of charge. The concept of individual ownership was deemed not to exist, which ran counter to generally held Western notions of the private ownership of IP, and led to some frustration on the part of the West when China opened its economy to the outside world in 1979.

Since then, education has continued to play a vital role in IP, but this time in tune with the government's new policies. Education and official publicity have been aimed at 're-educating' societal attitudes to increase understanding of IP and the need for its protection. Beyond raising the awareness of IP among the general public, this education has included formal training of IP officials and the encouragement of specialized education. In response to World IP Day (April 26) each year, SIPO organizes events to enhance IP awareness to the general public. The 2005 IP Annual Report recounts some 50 different types of training courses for

Chinese officials, managers and researchers. Major newspapers and magazines, such as *People's Daily* and *China Daily* often report IP activities to inform the general public of the significance of protecting IP. After 20 years of training and education, China now has its own university law departments offering IP specialist modules.

A number of researchers have theorized and empirically tested the impact of education on IP. Ginarte and Park (1997) believe that education has a two-way function, both accelerating the process of imitating IP products when education levels are low, and intensifying the relevance of IPP when education levels are high. Marron and Steel (2000), linking levels of protection and piracy rates, conclude that countries with well-educated populations tend to have lower piracy rates, and they therefore conclude that culture as well as economic factors impact IP.

Yang and Sonmez (2007) argue that education impacts IP because of the close links between education and competitiveness in science and technology, the availability of relevant IP people and the promotion of IP products. Education controls the supply of engineers, scientists, inventors, skilled workers, managers and lawyers. The more universities provide engineering and scientific degrees, the more engineers and scientists will be produced, who are the potential inventors of the future, as well as being the driving force of competitiveness in science and technology. Even the general public's knowledge can influence the decision as to whether an IP product should be promoted in a particular market. For example, general education levels are a crucial factor when a publisher is considering promoting a book in a country, and whether to have the book translated or sell it in the original language. Education is also relevant to multinationals' decisions as to whether to invest in a particular industry in a particular country, as an important factor will be the availability of a trained work force, which can indicate the extent to which a particular technology can be absorbed, which in turn can directly affect productivity levels.

6.2 Religion and intellectual property

People's religious beliefs affect their attitudes to and understanding of IP. Their attitude towards litigation is a good illustration, and differs in the Western and Eastern worlds. Thus, in the US, the societal environment nurtures people's concept of work as being the individual's mission to God and a channel to becoming an elite member of society, This is a culture that applauds individual achievements as the development of people's God-given skills, and in this religious environment, success is praised and society recognizes individual achievements. Given these

attitudes derived from their religious environment, people feel it natural that IP rights – which enshrine society's recognition of their individual achievements – should be protected. Thus legality becomes the principle of dealings in society, and business partnership relations are legally binding, rather than being based on mutual trust. When people's individual interests are jeopardized, the possibility of resorting to litigation is always in their minds.

In contrast, the Chinese tend to treat litigation as the last resort for resolving disputes (Yang 2005), an attitude reflected in such old sayings as 'to avoid going to court when alive is to preclude one from going to hell after death.' The obligations to respect social hierarchy, and to guarantee social harmony and integrity by avoiding confrontations are deeply ingrained in China's Buddhist, Confucian and Taoist beliefs. These all emphasize the principles of individual integrity, reciprocal obligations, and social harmony achieved through traditional moral force acting through the individual, rather than external pressure. These principles nurture the desire of sharing in society and the attitude that legal control is unnecessary. As a result, individual success and outstanding performance are not revered, and even regarded with some suspicion: the saying 'fame to human is like fattening to a pig' is a reflection of people's preference to be 'normal', 'plain' and 'not to stand out'. It is easy to see how such feelings contribute to an environment that supports collective sharing and doing business based on reciprocal obligations and trust instead of legal documents. This underlying social ethic was built on and further advocated by Maoism, so that, before the 1979 Open Door Policy, Chinese people were not motivated to be individually creative. For example, the number of rewards given for scientific and technological achievements in the decade before 1979 was 7,700 (Liu 1996) in comparison to patent grants of 53,305 in 2005 alone.[2]

In summary, the divergence of people's attitudes toward IP in the US and China derives from their distinct religious attitudes. A strong belief in private ownership, individual rights and enterprise holds sway in the US, whereas in China, notions of harmony and sharing, and thus of public ownership are deeply rooted, and the transition towards a more Western-style attitude is taking time. These attitudes lead on to differences in business styles, where US relationships are essentially controlled by legality, and involve tight contractual agreements to protect IP ownership, whereas those in China rely on mutual trust and respect business relations, believing that such reciprocal obligations, so strongly endorsed in society and by tradition, represent the most effective form of contractual commitment.

6.3 Social stratification and intellectual property

Different social strata also have different attitudes to IP, and once again, the US and China can offer interesting comparative examples. In the US, high motivation, dynamic creativity, individual identity and change are characteristic, and relate to the hierarchy of employer–employee relations. People are highly motivated to create, driven by social recognition and appreciation, and this desire for individual identity accelerates progress in science and technology. Recognition and appreciation of individual achievements form the most successful basis for employer–employee relationships. When these desires are unsatisfied, social mobility will be high, as people will move elsewhere to seek such rewards, and thus improve their position in the social hierarchy. This tendency is most strongly revealed in creative people because of their talents. In Western countries, social relations are based more on attainment than on race, gender or social origin (Yang 2005). Under such a flexible hierarchical society, individual initiatives are highly valued. Individual freedom to think and participate is what allows people the freedom to be creative.

In contrast, the centralized traditional system and the principles of Confucianism and Taoism in China all emphasize social respect for hierarchy, and this tradition impacts on IP in three respects. First, individual creativity on the part of subordinates can only flourish with the encouragement of their superiors, as orders and approvals are part of the hierarchical process of deciding whether an invention should be created or developed. Second, under such collectivist environments, motivation and creativity tend to be driven not by the individual's sense of achievement or identity, but by the requirements of the collective need as articulated from 'on high'. The traditional collective ideology of society living harmoniously together educates people to think of others' interests, and the Communist dogma further accentuates this stance, on the grounds that individual–society confrontation should disappear in a Communist society. People should follow instructions from the top for everything, and individuality is not emphasized; as all achievements belong to the collective interest in working towards national goals. Third, the appetite for change will not be as strong in such traditionally stable societies. Here, the hierarchical and directed environment leads individuals to be more passive, tending to be directed as to what they create. Under the Open Door Policy, individualism and notions of change have begun to flower in Chinese society, and this impetus is aligned with the need for the establishment of the effective protection of private IP: but

for the general public to stop regarding IP as a collective asset will be a gradual process.

6.4 Language and intellectual property

Language and communication affect understanding of the notions of IP (Yang 2005). Language can be a facilitator to enhance communication, but, as an intercultural communication tool, it can also be a barrier to filter or distort communication (Marschan, Welch and Welch 1997). English is the most internationally understood language, and the US has the advantage of using this tool (as does India, as the opener illustrated), making communication about IP matters with the rest of the world more straightforward: and easier communication means more frequent communication. Language proximity is an important commercial and cultural factor, allowing, for instance, the US and UK to exchange technological information with only limited communication barriers. In contrast, the Chinese have to cope with the added problem of having to grasp this communicating tool to exchange information appropriately. Where two cultures try to communicate, lack of language proximity can clearly be a problem: and when the two cultures differ so widely in context, communication may further be undermined. According to Hall (1976: 113), 'context – one of many ways of looking at things', affects people's communication. Hall defines a 'low context' as where people tend to be expressive and outspoken when confronted with problems, and a 'high context' as people being uncommunicative and not straight-talking in such situations. Accordingly, the US can be categorized as a low context culture, as opposed to the high context culture that exists, for example, in China. Here people tend to categorize those with whom they communicate into two groups, being more open and expressive with friends and family, but more formal and less straightforward with outsiders, including business colleagues. These differing communication contexts would be reflected, of course, in their verbal communication about IP matters.

According to interviews conducted by the author with US and Chinese managers, active communication is crucial to the ability to gain mutual understanding about their relative attitudes to and structure of IP. They all agree that IP communications are difficult for them due to such culturally derived differences in communication styles. Language differences form a further barrier in complicating the communication necessary in conducting external IP activities successfully. Proper command of the appropriate vocabulary in both languages by both sides is the key to

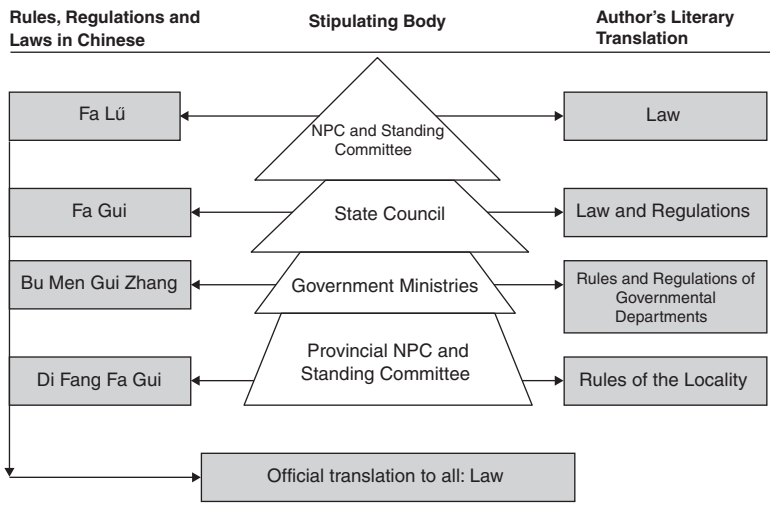

Figure 6.1 Intellectual property rules, regulations and laws across the hierarchy in China

successful communication, and can avoid suspicion and speculation on both sides.

Another language problem concerns translation, which can clearly have major implications for the possibility of confusion in understanding the meaning of IP laws and in IP negotiations. As mentioned in previous chapters, each country has its own nation-based IPS, and systems will therefore differ, despite the efforts towards global consistency made by international agencies. In China, four tiers of government organizations govern IP activities through different rules, regulations and laws (Figure 6.1). At the top tier, the National People's Congress (NPC – the national parliament) is the supreme law-making authority, but as it only meets every five years, its Standing Committee is its effective law-enactment body. The State Council – China's highest administrative organ also enacts written 'laws and regulations', particularly detailed specifications of NPC legislation. At a hierarchical layer, individual government departments (ministries, committees, agencies, bureaus, etc.) are also empowered to specify detailed rules and regulations in their own policy and administrative sectors (such as trade), while at the bottom layer, provincial NPCs and their Standing Committees can also issue 'rules of locality'.

The fact that all these rules, regulations and laws are called 'laws' in the official English translation causes confusion, particularly to

investors. For any one matter, there can be at least two different policy documents from the two top government layers, as well as product- or service-oriented stipulations from ministries and departments, and maybe specific provincial policy documents, all of which are relevant and have to be understood and taken into consideration by an outside investor. Summarizing interviews with foreign investors in China, the author found that foreign managers tend to be confused by so many 'laws', partly because of misleading translations, but also because of their limited background information about how the Chinese system works.

Culture is not a static factor – it changes gradually, and as it does so, understandings regarding IP change, too. First, IP culture is becoming globalized, following the efforts of international organizations in promoting its importance for IB. One hundred and fifty-one countries have now become members of the WTO and comply with the TRIPS stipulations, and this trend will tend to drive nations towards making international IP convergence a reality. Second, the cultural atmosphere of respecting IP is changing as Western–Eastern tension in this area gradually eases. Given that 95 per cent of the technologies are from developed countries, developing country governments have faced tremendous pressure – mostly from Western multinationals – to push forward their IPS development. Third, the determination of developing countries to obtain advanced foreign technologies will continue to be a significant driver motivating them to improve their IP environments, making them more attractive destinations for the transfer of Western technologies. Finally, the need to protect their own indigenous knowledge has become a new motivation for developing countries to improve their IP environments. They can see that protecting their traditional knowledge and technologies both at home and abroad will become advantageous, and a necessity in the future if they do not want entirely to continue to depend on foreign technologies. These different influences are slowly creating a culture of increased international respect for IP which will, with time, change fundamental public opinion about IP.

Closer: Color marks: Transcending language barriers, or causing disputes?[3]

Color marks, which recognize a specific color or combination of colors as representing a product or a service, have been recognized for registration only since 1995. However, they are more complex to register than conventional trade or service marks for three reasons: They can only be awarded to well-known brands; the examination requirements

are more stringent; and they need 'acquired distinctiveness' in addition to possessing the normal qualifications for registering a conventional mark. In other words, the color must have been established in use in association with a registered service or trade mark before the color mark registration application, and must be known to consumers (or in the market-place) as being identified with a particular company for its individual products or services. The ECJ stipulates that color marks must be 'clear, precise, self-contained, easily accessible, intelligible, durable and objective'. Apart from providing a verbal description, applicants must also provide a color code according to an internationally recognized color coding system, such as Pantone®, RAL or Focoltone® (UK policy allows applicants to choose which system to use). For example, the first color mark application for 'BP Green' to be registered in Australia describes the color mark as:

> The trade mark consists of the color GREEN applied as the predominant color to the fascias of buildings, petrol pumps, signage boards – including poster boards, pole signs and price boards – and spreaders, all used in service station complexes for the supply of the services covered by the registration, as exemplified in the representation attached to the application form.

Although color marks are recognized and registered in the EU, Australia and the US, most governments tend to be cautious about granting them because of the complexity of registering such unconventional marks. Illustrative color marks include BP's green (probably the best-known), Orange's orange, Easy Group's orange, and Cadbury's purple. However, color disputes provide a constant stream of court cases and media headlines. BP versus Woolworths, the battle between Libertel and the easyGroup over the color orange, and Cadbury versus Darrel Lea illustrate the complexities of color marks.

In the first of these, the Australian retailer Woolworths Ltd., which also provides petrol services and uses the color green, vigorously opposed BP's attempt to register its shade of green for its petrol stations. BP had to produce evidence that it had used the shade since 1923 on its petrol pumps and advertising campaigns, and, having to go to appeal after first having lost the case, supported its argument with consumer survey evidence showing that 85 per cent of interviewees associated the color with BP before they succeeded in getting their color mark registered.

In another case, the Orange 'revolution' appears to be never ending, and has already involved two separate cases – Libertel Group; Orange

and EasyMobile. The registration of an orange rectangle with the word 'Orange', by Litertel Group was rejected by the ECJ on the grounds that the color must be specified with an international (Pantone) identification code rather than just a sample color that would deteriorate over time, and that 'its distinctiveness should not restrict the available colors for other traders to register for businesses'. But the orange debate continued, and when the easyGroup launched its mobile phone service easyMobile, the Orange mobile phone company challenged its use of the color orange. EasyMobile confronted the challenge by advertising in the London *Evening Standard* as follows:

> Orange want (sic) to stop easyMobile.com from using the color orange! STELIOS THINKS THAT'S RUBBISH! . . . It's hard to believe I know but . . . Orange are (sic) suing easyMobile for using the color Orange! As you know, all the easyGroup companies have always used the color orange and Stelios is determined to continue to do so!

Another debate, about the color purple, saw Cadbury registering their shade of purple as a color mark in 2003, only to have their monopoly on the use of the color to brand confectionery in Australia challenged by the Darrell Lea Confectionery company. The verdict went against Cadbury on the grounds that the chocolate giant had had no exclusive use of the color purple over the years, and had made no consistent efforts to enforce a monopoly on the color. At the time of writing, Cadbury reports it is reviewing the court judgment and considering an appeal.

The problems of registering color marks throws up a debate involving some interesting pros and cons. On a positive note, the notion of registering color marks has been recognized by many countries and even by WIPO through handling international registrations of color marks, although the granting of marks has been limited so far. Moreover, colors provide universal understanding and can transcend language barriers causing less misunderstanding. This is because colors are universal and they can attract consumers' attention more quickly than words. When expanding business abroad, firms will be less concerned about the transmission of wrong meaning in color marks than in marks with words. In addition, well known marks tend to be susceptible to infringements and color mark registration may be an additional defence for the owner to protect their brand reputation.

However, color marks have some inherent difficulties as a protectable 'weapon'. There is a real dilemma about the conflict between consumer

recognition and technical identification. For example, Orange mobile identifies its orange as Pantone shade 151, while easyGroup's is specified as Pantone shade 21. But can the human eye recognize such color variations (if these two shades appear next to each other in the Pantone system!)? And the EJC clearly wishes to avoid color mark registrations so as to stop competitors from using the same color in marketing the same product, as Orange and easyMobile are attempting to do.

While there are many Pantone colors, consumers' inability to distinguish between close colors will severely limit the number, which can be said to be 'recognizable', and therefore available for color mark registration. This 'color exhaustion' would restrict the availability of colors for other firms in the same business, and lead onto fair competition disputes about monopoly use of a color as being an anti-competitive practice. IP specifications for color marks will have to be much more sophisticated, perhaps using the technical identification system to determine levels of distinctiveness of the *shade* of a color, if such registrations are to go ahead and be both distinctive and avoid unfair monopolies over colors. An alternative (but essentially retrogressive) solution would be to backtrack on recent developments and only to award color marks under exceptional circumstances – although this may produce as many problems as it solves!

There are also, as yet, too few precise legal stipulations about color marks, which will make dealing with disputes in this area problematic. (This is an IP-derived problem that also exists in other IP fields, particularly in the field of patent grants, where the pace of technological progress outstrips that of legal development.) For example, what rights are conferred on the owner of color marks? What constitutes an infringement? Some germane court cases have recently forced developed countries, such as the UK, Germany and Australia to increase their precision in the field of color mark registrations and to learn to cope with dispute resolution, but many others have not. Nonetheless, such progress is likely to become increasingly important if unrealistic applications and unnecessary disputes are to be avoided. Otherwise, color marks will constitute a growing legal, public and business headache.

Intellectual property facts: Culture and intellectual property in figures

The author has used the model in Figure 6.2 to test the impact of cultural elements on IP controlled by GNI per capita. The result confirms the views outlined earlier that culture as a whole is a vital factor in explaining

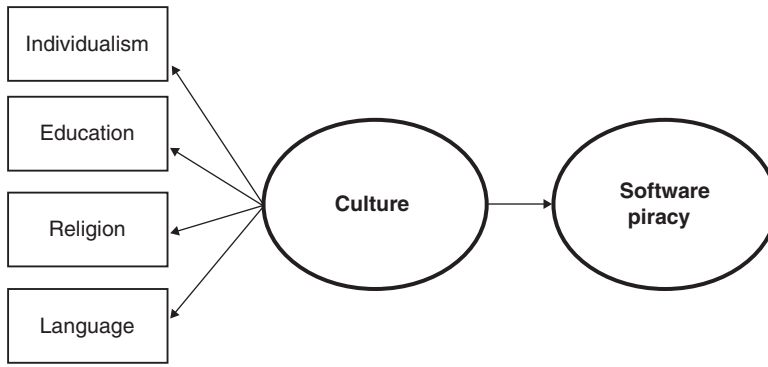

Figure 6.2 A model of cultural impact on intellectual property
Source: Created by the author.

Table 6.1 Culture and intellectual property in figures

	Best model		
	Coefficients	**Standard Error**	***P*-Value**
Intercept	96.768	3.3815	0.0000
GNI	−0.0011	0.0002	0.0000
Individualism	−0.1795	0.0735	0.0171
Education expenditure	−1.7452	0.7272	0.0191
Religion	−5.2241	2.4576	0.0371
Language	−2.7790	2.5631	0.2820
R^2		0.7786	
Adjusted R^2		0.7627	
Standard Error		8.8272	
Degree of Freedom		(5,70)	
R^2Change		0.0038	
Significant F		0.0000	

Source: Calculated by the author based on the raw data from Business Software Alliances (1994–2002), Hofstede (2001) and World Development Indicators, World Bank (1994–2002), and World Factbook, CIA (2007).

the extent of IPP, as proxied by the extent of software piracy. With the exception of language, all factors – GNI, education, individualism and religion – impact on piracy. The findings were drawn from a data analysis of these variables in 75 countries from 1994 to 2002.

Table 6.1 presents the final model of the stepwise regression analysis. The confirmatory model shows that these variables explain 78 per cent

of the variations in piracy with the significance at 0.000. The findings show that *individualism* with the control variable explains 73 per cent of the variations in piracy at the significance level of less than 0.001. Due to its correlation with the *education expenditure* and *religion* variables, the *individualism* coefficient falls slightly from previous models, but remains significant at the 0.01 level, confirming previous research (Depken and Simmons 2004; Husted 2000; Marron and Steel 2000; Shore et al. 2001). *Education expenditure* as a variable further increases the overall impact of culture on piracy. This result further demonstrates the validity of a qualitative study by Yang (2005) that IP training can increase the public awareness of IP and the willingness of consumers to buy authentic products.

The entry of the *religion* variable further strengthens the impact of cultural factors and reduces the standard error. The variable has strong impact on piracy, with the highest regression coefficient among all the variables. This study confirms the proposition from Vitell, Nwachukwu and Barnes (1993) that religion-related cultural environment and personal characteristics are the roots of ethical behaviour. It is also in line with Wagner and Sanders (2001) findings that religion and ethical decision-making are associated when it comes to buying pirated software.

Language is the only variable that is excluded in the regression. Although it is correlated with piracy at the 0.001 significance level, its entry has only increased the R^2 value by 0.004 with a slight fall of the standard error. It has inflated the standard errors of all the independent variables and understated their significance except for *religion*. Due to its high correlations with other independent variables, and the fact that it has the lowest partial correlation compared to other predictors, language shows no significant impact on piracy ($p < 0.2820$).

Summary

This chapter discusses how cultural factors – education, religion, social stratification and language – impact on IP. Education is identified as an influential factor in orienting people's judgement towards IP, increasing their awareness and appreciation of IP, impacting on the extent of imitation and demand for IPP, as well as being a factor behind the human resources and IP product promotion in a particular country. As for religion, the formation of individualism and collectivism is partly influenced by a person's faith, affecting their attitude towards the private rights of IP and reflected in their attitudes towards private versus public ownership, and legality versus non-legality. The extent

of social stratification affects the degree of hierarchical relationship between inventors and creators, and their employers and society at large, and thus the degree of freedom and motivation for individual creativity. Finally, language can either be an enhancer or a barrier to IP communications, and influences the extent, style and frequency of IP communication, with language proximity affecting the extent, speed and quality of technological information exchange.

Two relevant cases are further demonstrations of cultural impact on IP. The opener emphasizes that, among a combination of economic factors, culture makes a significant contribution to the success of the Indian software industry: education policy influences the supply and demand for the industry, social structures motivate people to use the software industry to change their social status, and language proximity with the US accelerates the speed of software knowledge exchange. The closer discusses the complexity of color marks and debate about their registration. While such marks are now registered in several developed countries, and recognized to an extent by WIPO through international registrations, and have the advantages of transcending language barriers and protecting brand reputation, consumer recognition of color differences as distinctive is limited. Moreover, the identifiable range of available colors is so narrow that allowing for monopolies in these unconventional marks would restrict mark-associated activities in businesses, constituting unfair competition. This area represents an example where practice is still being developed world-wide: solutions to the problems that are showing up for color mark registration include increasing the precision of the associated legal stipulations and technical specifications, and of the scope of owners' rights and definitions of infringements. The IP facts section further demonstrates the statistical evidence of cultural factors relationship with IP, showing that cultural variables – religion, education expenditure and individualism as controlled by GNI per capita – explain 78 per cent of the variations in software piracy.

Notes

1. The case was written by the author based on the following information: (1) Anon. (2000) Indian SW Industry to Touch $13 Billion in 2001–2002, *Computers Today*, 15 December: 14–17; (2) Anon. (2003) Business: America's Pain, India's Gain, Outsourcing, *The Economist*, 11 January, 366(8306): 59; (3) Arora and Athreye (2002); (4) National Association of Software and Service Companies (2007) Knowledge Professional, at http://www.nasscom.in/Nasscom/templates/LandingPage.aspx?id=51336, on

26 April 2007; (5) Rai, S. (2002) India is Regaining Contracts with the United States, *New York Times*, 25 December 2002; (6) Yang, Ghauri and Sonmez (2005).
2. WIPO patent statistics 2005.
3. The case was written by the author based on the following information: (1) Anon. (2004) Orange Dispute between easyGroup and Orange, *Out-Law* at http://www.out-law.com/page-4795, on 11 September 2006; (2) Barraclough, E. (2006) Cadbury Wins the Color Purple, *Managing IP*, June; (3) BP (2006) BP Brand and Logo, at www.bp.com, on 11 September 2006; (4) Email interview with the BP Archivist: Bethan Thomas, 4 September 2006; (5) European Court of Justice Case Libertel Groep BV v. Benelux Merkenbureau ECJ Case No. C-104/01; (6) IP Australia (2000) Decision of A Delegate of the Registrar of Trade Marks with Reasons, at http://www.ipaustralia.gov.au/pdfs/trademarks/hearings/559837.pdf, on 11 September 2006; (7) Jones, C. (2006) Color Ownership – Why it Makes Sense, *Managing IP: Brand Management Focus 2006*: 10–13; (8) Sandri and Rizzo (2003); (9) UK Patent Office (2006) Color Trade Marks: Practice Amendment Notice, Issued 12 April, at www.patent.gov.uk/tm/refernce/pan/pan0206.htm, on 11 September 2006.

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Part III

Intellectual Property Management

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7
Managing Intellectual Property Assets

Contents

Focus and structure

This chapter focuses on managing IP assets (MIP), including the managerial efforts involved in generating IP products and services, and protecting and disseminating them through managing IP people and IP information. 'IP products and services' refers to the products and services

with embedded IP rights. A product, such as a BMW car could involve many sorts of embedded IP, with its mechanical or electronic elements protected by patents, industrial designs and utility models, its BMW logo protected as a trademark and its driver's manual protected by copyright. 'IP people' refers to corporate employees who spend the majority of their time on IP activities.

Specifically, this chapter first provides an understanding of the corporate contexts of IP – business description and internal and external contexts – and their linkages with IP management. Second, it discusses the management of IP people, specifically, how to identify resource needs, balance resource distribution and manage people within the company. Third, the chapter focuses on managing IP products and services, centring on IP portfolio management and the corporate tactics needed to achieve success and stay ahead of competitors in IP matters.

The cases and IP facts reinforce the understanding about managing IP assets. The opener – The spies who loved Pemberton – discusses the 2006–7 Coca-Cola formula spy case to emphasize how protecting trade secrets is a managerial issue as well as a legal matter. The closer illustrates how the success of Google depends on its IP assets and their management. The IP facts section discusses the debate about a new IP management phenomenon – IP insurance.

Opener: The spies who loved Pemberton[1]

When the US pharmacist John Pemberton invented the original Coca-Cola syrup in 1886, he could have never imagined how much effort the soft drinks company would put into protecting his invention. Allegedly, the secret formula of this universal drink, with its supposed 18 secret ingredients to be mixed in the proper proportion and appropriate conditions, is kept in a bank in Atlanta, Georgia. Only four company executives know the secret formula, and the company stipulates that no more than two of them should travel together to avoid a quadruple accidental death. In the event of one of them dying, the remaining three appoint a successor. The company has developed a wide range of products based on the original formula, such as flavoured and diet cola drinks, and promoted affiliated brands, such as Sprite and Fanta. The company's trademarks, trade secrets, copyrights and reputation, are embedded in each product.

John Pemberton could not have foreseen, either that his trade secret would become the target of corporate espionage. But in May 2006, Joya

Photo 7.1 Williams, Dimson and Duhaney (left) on trial 2006–7 (Courtesy of Getty Images, www.gettyimages.com)

Williams (secretary to the Coca-Cola Global Brand Director), stole a bottle containing an undisclosed Coca-Cola sample and documents marked 'confidential' (Photo 7.1). With her two co-conspirators – Ibrahim Dimson and Edmund Duhaney – she tried to sell the information to Pepsi for US$1.5 million, including an upfront payment of $10,000. However, the corporate espionage was revealed when Pepsi tipped off Coca-Cola, who invited the FBI to conduct an undercover operation. In early 2007, Williams was sentenced to eight years in prison and Dimson to five years, in addition to having to pay $40,000 restitution each. (At the time of writing, Duhaney is still awaiting sentence.)

Extending the case to a broad picture, companies are likely to fall victim to corporate espionage. When it occurs, they tend not to reveal what has happened to them, worried that the associated publicity may subvert their operations, undermine their reputation and scare away their consumers. Wright and Roy (1999) estimate that corporate espionage costs the US $100 billion in lost sales annually, and such activities are particularly prevalent in high-technology contexts, such as the aerospace, chemical, biotechnology, computer and nuclear energy industries. Famous multinationals with widespread overseas operations seem to be prime targets for corporate espionage, with methods including stealing, break-ins, briefcase tampering, phone interception, rubbish retrieval and the recruitment of employees and consultants.

Accidental exposure due to negligence or ignorance also appears to be a major occasion for the disclosure of confidential information. While Coca-Cola had made great efforts to protect its secret formulae, this case will have alerted the management to the need to tighten access to samples and confidential documents. Protecting IP is a managerial issue for businesses, as well as a legal matter. This leads to the core of this chapter – managing IP assets.

7.1 Corporate contexts and managing intellectual property assets

Like other function management, IP managers should have a clear understanding of the corporate contexts in which they are working. Sullivan (1999) believes that corporate contexts consist of three parts: the business description, the internal context and the external realities. He defines business description as the real business of a firm in terms of products, services and potential markets; internal context as the functional elements within the firm; and external realities as the external business environments affecting the firm's business activities. He argues that context reflects a firm's characteristics, and decides 'what kinds of capability the firm will support'.

IP managers need to appreciate the interconnections between all these elements and IP activities (see Figure 7.1), including IP generation – the focus and direction for R&D and technology creation, IPP and IP dissemination, which would include decisions as to whether to commercialize or to capitalize on an IP, or perhaps even to donate a particular IP area to a university or another like institution as a charitable act. The interconnections of these elements help a firm decide, when an IP has been created, how best to protect it, and whether or not to go ahead with its commercialization into an IP-embedded product. In some cases, firms will select some of their inventions for internal commercialization and assign the rest to others to make quick profits. Thus, T-shirts or

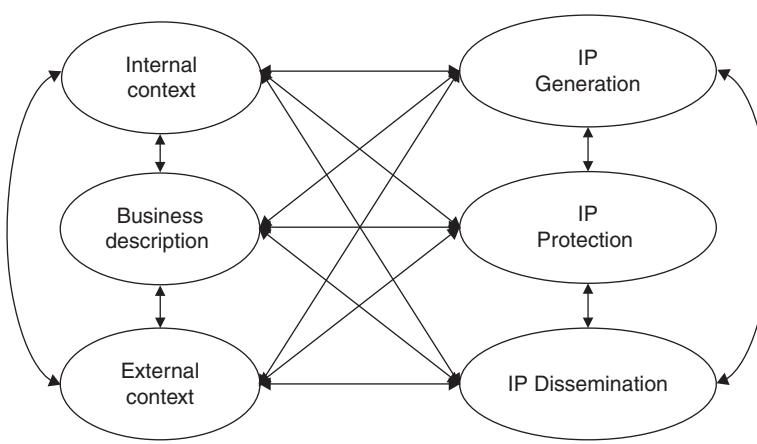

Figure 7.1 Corporate contexts and managing intellectual property assets
Source: Created by the author.

baseball hats carrying the Coca-Cola logo are not manufactured by the company – such products are not part of its business description. Keeping the company focused on its basic corporate contexts involves authorizing relevant outside companies to produce such items, while still allowing the firm to profit from the exploitation of its IP assets. A vital step towards effective MIP is to clarify a firm's corporate context and its relationship with IP.

7.2 Managing intellectual property people

7.2.1 Corporate intellectual property positioning for resources need

Analysing the combination of the talents of a firm's IP people helps management to recognize both what type(s) of IP assets it possesses and what type(s) of IP are important and relevant to its corporate context, thereby identifying what IP people resources are needed for IP dissemination. Taylor and Silberston (1973) categorize patent companies (i.e., those who rely heavily on patented products or services) into four types based on their size, extent of internationalization, and the degree of their formal IP management, although (as Granstrand 1999 notes) this categorization does not include functional responsibilities beyond patents. The author would argue that other IP types (marks, industrial designs, copyrights, etc.) should also be considered so companies can be classified according to their full IP resources. The taxonomy discussed below allows for consideration of all the IP resources within a firm. It considers corporate IP 'staff size' (the number of people dedicated to IP activities), 'in-house specialist operations' (the strength, i.e. number and scope, of IP specialists), 'formal management' (whether IP management is a dedicated task instead of a non-separate subsidiary management element), and 'internationalization' (the extent of a firm's IP associated multinational operations).

Type I firms have the most limited IP resources, reflected in small IP staff and specialist numbers, low levels of IP internationalization, and no systematic management of IP resources. At this scale, firms may only have one or two staff members dealing with all IP matters and no dedicated IP management dealing with IP issues. Outside support (in the form of IP agents or consultants) need to be sought to deal with IP applications. SMEs and entrepreneurial firms tend to be classified under this type because of the limited financial support and in-house resources they can afford to dedicate to IP matters.

Type II firms are comparatively stronger than Type I firms in all areas. They tend to have a small IP team (of, for example 12), including some in-house IP specialists (e.g., patent attorneys and chief engineers) to handle IP activities. But while they have some staff support, it is limited as the IP team is incomplete. For example, there may be no dedicated IP manager to overlook IP management matters, and seeking outside support (from, e.g., IP agents and valuers) will still be essential.

Type III firms have much greater IP resources, and usually their own patent department led by a high-calibre patent manager, with perhaps combined experience of both business and legal matters. The IP team may number up to 40 people with a combination of specialists in engineering, IP law and management. Despite their relative independence in handling IP matters, unlike Type II firms, Type III firms will have IP management as a separated function, which will coordinate and liaise with other departments, such as R&D, production and marketing. The IP department will be supported and encouraged from the top, and also network well with external agencies, such as foreign IP offices when dealing with their IP operations abroad. Although this type of firm tends to be strong in IP in general, their main emphasis is on patents. Granstrand (1999) describes Toshiba as an illustrative example of a Type III firm. The firm's IP division has seven departments: Planning & Coordination, Technology Contracts & Legal Services, Software Protection, Design & Trademarks, Patent Applications & Management, Licensing Team and a Patent Information Centre that provides data services and analyses competitors and related markets. Tight coordination is maintained with other firm departments and with external sources, such as the Washing Patent Office and the Ohgo Patent Office to handle the firm's IP rights in the US and Japan to harmonize the firm's global IP activities.

Type IV firms are 'super IP firms'. They will probably have an IP department of over 50 employees, including specialists dedicating to different IP fields, with a clear management structure across different IP activities, such as trademarks, patents, etc. In addition, they tend to have subdivisions within the department for matters, such as licensing, litigation and anti-piracy. Firms in this category are rare, tending to be large multinationals with strong financial foundations and active global operations. They have a more balanced development of IP resources than Type III firms, which tend to mostly handle patent development. The author would argue that Microsoft can be categorized under Type IV. The firm's main IP assets are its people, e.g. software engineers, software designers, programmers, and products, for example, software patents, trademarks and copyrights. Microsoft controls the protection and development of

software under all the major IP rights. In addition, as software is not only important, but also a fragile type of IP, where the creative achievements imbedded within it can be easily imitated, Microsoft has deployed a strong IP force to supervise IP activities – the company's head of anti-counterfeiting is a former FBI man, which demonstrates the importance Microsoft attaches to preventing IP violations.

7.2.2 Balancing resources distribution to maximize intellectual property creativity

The management of a firm's human resources is the most significant factor for its IP development. The collective contribution of IP people is vital: as Dr Nobuyoshi Tanaka (IP manager of Canon) says: 'Innovation doesn't come from just one person working along in a cabin.'[2] As discussed earlier, each firm has its own corporate context, and therefore each will have a different combination of in-house IP personnel, including scientists, engineers, designers, IP manager, researchers and administrators. In addition to motivating this team, IP managers need to coordinate and balance all their efforts and activities under one central focus – ensuring maximum IP creativity for the firm.

Figure 7.2 illustrates the typical 'normal' resource distribution in the software industry where human assets represent 'the most important component', and compares this with the distribution pattern of a typical Chinese firm structure (Yang, Ghauri and Sonmez 2005: 67). The figure shows the distribution of human resources in the software industry as

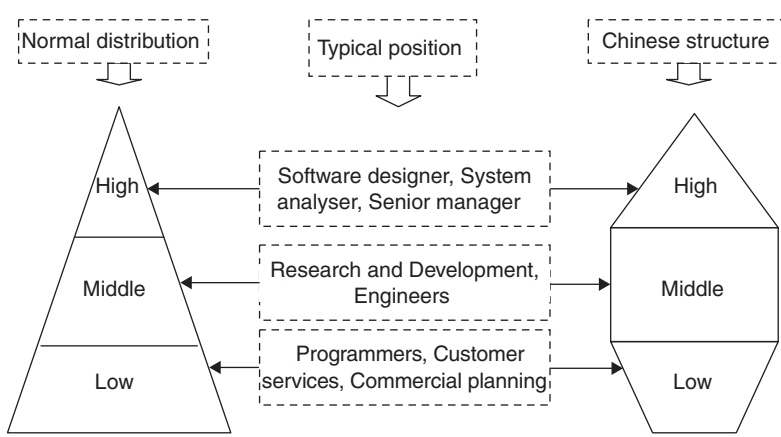

Figure 7.2 Human resources distribution in the software industry
Source: Yang, Ghauri and Sonmez (2005: 67).

a pyramid shape with three layers – high, middle and low – the lower the level, the more personnel are needed. Each layer has representative examples. The normal distribution demonstrates that the higher the level, the fewer the resources. Lower levels are the foundations of the higher-level IP resources, and naturally more people are needed to provide support at this level. The Chinese example in the diagram shows more middle-level than low-level resources. The consequence of such an arrangement could be that middle-level personnel have to compromise their time and energy to handle lower level matters, due to that level's shortage of manpower.

Granstrand (1999) argues that Japanese firms are the most active in using IP resources, with over 13 per cent (on average) more staff involved in IP than firms in the rest of the world. At Canon and Toshiba, for example, the ratios are even more pronounced, involving 23 per cent and 56 per cent respectively of staff numbers.

Japanese scholars, however, tend to argue that American firms are better at incentivizing IP staff. A senior IP advisor for Fijisu, Professor M. Kawahata remarks on the high salaries of IP staff in the US semiconductor industry, in comparison to their Japanese counterparts. He encourages Japanese firms to create a 'heroic environment' to incentivize creativity, and to stop 'playing everything safe', but make 'the revolutionary spirit alive' as American firms do.[3] He also notes that training and education are important to nurture the human power for IP development, a view supported by Canon's IP manager, Dr Tanaka, who emphasizes that for MIP, it is essential to train 'people to have managerial sense . . . and a discerning eye for creativity'.

Due to financial constraints, and the limited capacity of their existing IP people, firms often need to seek external support for their IP activities, most frequently from agents and consultants. An agent may be an IP attorney, and will provide the necessary support to ensure the firm has full legal rights to its IP assets. (In some cases, such as in China, in particular when a company wants to apply for a patent as a foreigner, it will be required to use a local agent to communicate with the patent office, to avoid communication barriers and facilitate the application process.)

7.2.3 Internal people-management: The imperatives

The opener case study of this chapter noted how, in addition to espionage, trade secrets can often be inadvertently leaked from within a firm. Companies are also exposed to this type of threat when employees change jobs and divulge information to a rival company. For example,

Wal-Mart took legal action in 1999 against Amazon.com for targeting employees who held information and expertise on its distribution, data housing and merchandise management systems (Kovach et al. 2004). It is vital that IP managers manage their IP staff in ways that ensure that corporate IP assets are protected and disruptions to the IP dissemination process are minimized.

Company practice varies, but five types of contract are widely used to protect corporate IP, based on a synthesis of prior academic research and corporate practice (Byron 1995; Cleaver and Ormrod 1992; Dorr and Munch 1995; Hannah 2006, 2007; Kovach et al. 2004; Lee and Davidson 1993; Merges et al. 1997; Strebel 1993; Yang 2003). The most commonly used agreement is a *Confidentiality Agreement* (also called a *Non-Disclosure Agreement*), which prohibits existing employees from divulging corporate secrets to outsiders. A *Restriction Agreement* (also called a *Non-Compete Agreement*) is a contract designed to prevent information divulgence by an employee after their period of employment ceases. The agreement may stipulate specific restrictions of time and place restricting where the employee may seek subsequent employment, which may include a list of rival companies, industries or regions within a country and/or countries where they cannot work for a certain period of time. This agreement tends to be employed by high-tech or military companies to protect their technological advancement or defence secrets. (A friend of the author – a high calibre Chinese Army engineer – was not allowed to go abroad, even on holiday, for over three years after retiring from the military service.)

In contrast to these confidentiality and restriction agreements, *Assignment Agreements* tend to apply to inventors, researchers, scientists, and designers – the driving forces of corporate creativity – and oblige them to agree to relinquish their legal ownership of their creations to their employer. A search of the database of any national IP office would show many examples of IP rights that have been assigned to their employers by such staff members.

In addition to these three commonly adopted contractual agreements, some companies may extend the Confidentiality Agreement further into two other types of contracts – *Access Restriction* and *Handling Procedure* agreements – both of which concern restrictions about dealing with trade secrets within the firm. The former specifies restrictions on certain employees' access to areas housing sensitive information and facilities, while the latter takes this one step further to provide employees with a formal list of 'dos' and 'don'ts' for dealing with trade secrets.

However, as an IP manager, signing a contract is only the starting point of successfully managing creative personnel, and effective communications and monitoring play an important role in making

contractual agreements concrete. Companies tend to make eight common mistakes managing trade secrets (Hannah 2006), which are relevant to all confidential information protection, and should be avoided. They have been synthesized into Table 7.1. Mistake 1 is that introducing an important contractual agreement during a rushed new employee orientation is unproductive, as they will be unable to remember anything if bombarded with loaded information at this stage. It is also ineffective to attempt to manage IP people if there is no subsequent communication about the importance of confidentiality following the contractual stage (Mistake 2).

It is similarly counterproductive if the contractual situation leaves the employee feeling untrusted, or that the contract appears to exist to punish them, rather than to help them work effectively and efficiently (Mistakes 3 and 4). It is obviously demoralizing to their juniors if senior employees are seen not to be adhering the company's confidentiality rules (Mistake 5). Moreover, if the fact of the corporate ownership of the firms' IP is not stressed to employees, they may diverge information unintentionally (Mistakes 6 and 7). Finally, an exit meeting is crucial to avoid the harmful consequences to the company if departing employees were to divulge confidential information (Mistake 8). Checking IP inventories can remind outgoing employees of their general confidentiality obligations and of any specific IP information they have the responsibility to continue to protect after they leave. In the unfortunate case where employees leave on bad terms with the company, Hannah suggests pre-emptive measures, such as a warning letter to departing employees and/or their new employers about the potential liability for damages in the case of any protected information being revealed.

7.3 Managing intellectual property products and services

In addition to managing IP people, the major task for an IP department is to manage the assets in the firm's IP portfolio – i.e. its IP products and services – and decide the tactics to commercialize those assets most profitably.

7.3.1 Managing the intellectual property portfolio

IP portfolio management is about making the best decisions for IP generation, protection and dissemination. First, IP managers should ensure the firm's IP products conform to its business description. In an ideal world, companies would only develop IP that were in line with a company's business scope, but in reality its IP creations may not all necessarily

Table 7.1 Eight mistakes to avoid in managing confidential information

No.	Mistake	Exposition	Possible actions
1	Giving short shrift to orientations	Contractual information overload for new employees	Reiterate the importance when they settle in
2	Non-communications	No reiteration of contract after orientation	Enhance familiarity by, e.g. meetings, emails, and memos
3	Employees feeling untrusted	Focus on 'dos' and 'don'ts', and punishments	Explain the reasons and harmful consequences of divulgence
4	Punishing, not helping	Punish offending employees instead of helping them to do their job	Communicate with employees speedily what needs to be protected and what no longer needs to be
5	High level rule benders	Management does not follow the protection policy	Appoint a top executive to ensure consistent practice
6	Unclarified ownership	No clarifications that work-related employee creations belong to firm	Clarify assignment contract, policy on handling information, and reward creations
7	Narrow scope of ownership	Do not define the scope of assignment and ownership	Widen the breath of businesses for assignment
8	No meeting with departing employees	Do not remind departing employees of their obligation of IPP	Ask departing employees to submit IP inventories, exit interviews to highlight the scope and obligation of protection, and pre-emptive measures to warn departing employee and/or new employer

Source: Synthesized by the author based on the discussions of Hannah (2006).

directly serve its main business purposes. What to do with those that don't is an important issue for managers, who should consider whether to assign or license such assets to other more relevant firms.

Second, IP managers need to be aware of the detail of IP product protection. Whether applications for protection are feasible, and how long searching and granting procedures will take need to be assessed realistically to allow the firm to plan when the product can be commercialised. The department will need to decide, for instance, when an innovative product, or innovative developments of an established product, might require a new application of IPP, and be aware of when the firm's trademarks need renewing, etc. In addition, the department must be aware of the age of the IPP on its products or services, as different pricing policies may be indicated according to whether the protection is recent, or is about to run out (see next section).

Third, IP managers must be very vigilant about the competition to each particular product and to the company corporately. Three types of information are required. One is a full awareness of the competitive range of products available in the market, allowing IP managers to assess how advanced their IP is in comparison with their competitors', and identify room for future improvement. Two is to remain up-to-date with regards to university research, which can give insights about possibilities for innovation on existing products, or about research which points towards transformative opportunities for the firm. Three is awareness of any counterfeit substitutes in the market, which IP managers cannot afford to ignore. Cheap replicas from counterfeiters can have direct impact on the outcome of commercializing a particular IP product by damaging the firm's reputation and thus affecting its sales. It is important to be able to identify the firm's chief competitors, to be able to keep up to date with how strong or weak they are, to be familiar with their products, and aware of the status of their IPP, in particular of any competitors' patents that are due to run out soon.

Finally, IP managers should be clear about how much income an IP product can generate at different stages of its IP duration, and why and how this might vary in different parts of the world. Such portfolio management helps firms to plan their future strategically and stay ahead in today's fiercely competitive markets.

7.3.2 Corporate tactics of intellectual property generation, protection and dissemination

Corporate tactics include corporate actions to develop, protect and commercialize IP-related products and services. They are narrower in focus

than managerial factors, and much more specifically about actual actions to deal with IP products and services. In short, MIP involves both corporate decisions about what to do, and tactical decisions about how to do it.

Hufker and Alpert (1994) have conducted the most systematic study of corporate IP tactics. Examining the patent system in the US, they proposed a mix of corporate management tactics for the protection and development of patents and strategies to generate income from these patents. These tactics and strategies include defensive tactics (accumulation and improvements); prospecting tactics (bibliometrics and benchmarking); cooperative strategies (cross-licensing), marketing strategies and tactics (licensing and R&D) and marketing mix. However, their analysis seems to confuse strategic and managerial responses in some areas, while, in fact, much of what they discuss is managerial issues. Hence, licensing is not a tactical response, but a strategy about how to best profit from IP given the external environment. Anti-generic tactics – the corporate actions to sustain a particular market when an IPP period is about to expire, which are widely practiced by IP multinationals – are not discussed. Taking into account these arguments, various possible corporate tactics are defined and discussed below, including their pros and cons, together with some corporate examples.

7.3.2.1 Research and development

Research and development (R&D) is an essential corporate tactic for all high technological companies, but it has both pros and cons. The main advantage of the tactics is that the firm leads its market with its original research and with the research-derived products and services. Larger (and thus richer) firms tend to spend extensively on R&D: for example, pharmaceutical firms' R&D expenditure as a percentage of sales was 15 per cent in the US and 11 per cent in Europe during the 1990s, and expenditure in the triad powers (US, Europe and Japan) tripled from 1990 to 2001 (Pugatch 2004). In addition to the costs of researching and developing original products or services, imitative versions (similar products which imitate the owners' IP, but without infringing its protection scope), which offer cheaper substitutes for the original work, can often be brought to market very quickly. For example, the time gap between the introduction of original and replica software can be as little as a couple of days. Such copying undermines the originality of R&D companies, which explains why only the largest firms can afford to undertake wide-ranging R&D.

7.3.2.2 Accumulation

In contrast to the R&D tactic, accumulation entails buying IP rights directly from other companies, universities or independent creators. It represents a shortcut to acquiring IP rights which serve a firm's overall vision and strategic and managerial plans, but without the cost of R&D efforts. This situation often occurs when small firms, independent inventors or universities lack the complementary assets necessary to commercialize their IP. This ensures that good ideas come to market, and also gives universities or SMEs much needed income to carry on their efforts. (These linkages could be thought of, in effect, as amounting to outsourcing corporate R&D.) However, purchasing others' R&D achievements is inevitably a costly choice, and adopting this tactic requires strong financial foundations. Moreover, if a firm's intention in the purchase is to prevent a competitor from becoming a rival, it may be held liable for unfair competition, and IP managers will need to undertake – perhaps extensive – research into local competition policy and practice to be sure fair competition laws are not breached.

7.3.2.3 Improvement

Improvement, in other words, incremental innovation, is the modification of existing IP products based on in-house further development, or on a competitor's IP work. Such innovation can be classed as *layering*, that is, constantly patenting new improvements based on a foundation IP asset and its product(s), or *extending* (or *line extending*), where the existing range of IP-related products is extending to peripheral areas (Pearce 2006). Most firms employ this tactic because, unlike the previous two, it is relatively cost effective. It allows for direct connection between research, technology development and innovation, to extend the life cycle of existing IP products. However, IP managers must be wary of infringements. The protection of IP tends to have a clearly defined scope, beyond which others can exploit the invention by innovating around it to improve its functionality without infringing the original owner's rights. Thus, unintentional infringement can occur when improvement which exploits an existing IP strays into territory where another firm has patented improvements: IP managers need to guard against such possibilities.

7.3.2.4 Competitive intelligence

IP departments must make every effort to be aware of threats and opportunities by keeping abreast of their competitors' activities (The distinction between acquiring intelligence and corporate espionage lies in

the former's legality.). Thus, a firm can use bibliometrics (the study and analysis of published material) to learn about competitors' new product plans, the number and status of their patents, etc. They can study the products themselves to learn about their embedded IP (see next section). They may discover, through informal channels why a star scientist is leaving a rival firm. Such analyses enable the firm to position itself among the competitors, and reveal vital information about them, allowing appropriate managerial actions to be considered. Thus, IP managers may consider recruiting the dissatisfied scientist to improve their own scientific and technological resources, although, again, they must be wary of relevant competition policy: seducing a high profile employee to leave his original firm could constitute an unfair competition practice.

7.3.2.5 Benchmarking

Benchmarking, more widely known as *reverse engineering*, is the practice of dissembling an object and piecing it together again to examine the design and function and investigate the possibilities of duplication and enhancement. This is an activity often practiced in the mechanical, computer, camera, software and fashion industries. In the car industry, for instance, the introduction of a new model will attract competitors' attention: they will buy it and take it apart to examine what is new, what can be imitated, and what can be improved. Readers may have seen the warning 'Reverse engineering is prohibited!' on the packing of, for instance, a camera: the practice appears to be legitimate as long as the protective scope of the original product is intact. Like the tactic of improvement, benchmarking can extend the life cycle of an IP product by identifying the scope for improving the existing product, and is likely to be much cheaper than undertaking original R&D. However, rather than focusing on a firm's own products, benchmarking competitors' products looks both towards improvement and duplication possibilities. Once again, benchmarkers need to be careful not to intrude on the protection claim territory set out by the IP owner, or court action may follow.

7.3.2.6 Marketing

This tactic involves pricing, locating and promoting IP products. Pricing an IP product is probably one of the most difficult tasks in IP, because IP managers need to take into account the costs associated with both successful and unsuccessful IP products. Likewise, companies tend to set different prices at different stages of the patent protection. For example, companies tend to increase the price of a product before its embedded patent expires, but decrease it after patent expiry. However, this does

not apply to branded products, which tend to have a sustained market demand due to the brand reputation. Brands like Listerine, Colgate, Aspirin and Xerox all started with patent protection, but now they are well-known trademarks for popular generic products with the image of quality.

Pricing is a sensitive issue for consumers, competitors and imitators. If the price is too high, consumers may choose to buy substitutes they can afford, and thus a high price for an IP product will attract the attention of imitators and counterfeiters to supply the market demand with cheap substitutes. A low price, which may attract consumers, may force competitors to adjust their price and lead companies into a costly price war. Too low a price – especially if it involves selling a product at a price lower than the cost of production in order to try to force competitors out of the market – risks rendering the company liable to charges of 'dumping' under fair-competition laws.

Choosing the right location is vital for the sales of a particular IP product. Japanese companies are probably better than any other companies in the world at the location choice. They send a few researchers to a potential market for three months to test the waters, investigating the overall IP environment, the position of competitors and competitive products, and the potential level of consumer demand for a particular IP product. Such location studies allow management to consider where best to seek for IPP and what the local requirements are for protection.

The promotion of an IP product needs to take into account public awareness so that a decision can be made as to how to advertise this product. When an IP product is introduced into a new market, raising awareness should be the key focus for the advertising campaign. For example, Chinese people were unaware what Western fast food looked like when McDonald became the first fast food chain to enter the country, and thus the company's adverts focused on satisfying this curiosity rather than on any other product characteristics. By the time KFC entered the Chinese market, the local public was already aware of Western fast food, and KFC was therefore able to build on the McDonald's promotion effects, and focus instead on the uniqueness of its product.

7.3.2.7 Anti-generic tactics

When an IP product reaches its expiry date of its term of protection (including patents, designs, and utility models) and becomes 'open' to the public domain, it becomes a 'generic' product. While the term is widely used in the pharmaceutical industry, the author believes it can apply equally to all IP-related products and services, as all IP rights have

expiry dates, and even know-how is protected under fair competition rules, and will wear off naturally with time. When a product becomes generic, other companies can manufacture it without fear of infringing any particular protection claim embedded in the product. The original owner will also continue to manufacture the product, carrying the firm's trademark so that they can take advantage of the brand reputation accumulated over the years when the product was under the IPP.

There are *pre anti-generic* and *post anti-generic* tactics. Pre anti-generic (or *pre-expiry* – Pearce 2006) tactics involve the company taking advantage of the fact that the IP is still in corporate ownership to introduce its own generic product (or authorizing a company to manufacture a near-generic product) before the relevant IPP expires. This would allow the company or its authorizee to introduce the product into the market before its competitors, gaining price and sale volume advantages. Post anti-generic tactics include substantially reducing the price of the IP product, and perhaps attracting consumers by packaging it with a time-limited contract. Microsoft tends to offer free copies of software that is nearing the end of its IPP. Once consumers become familiar with it, they will tend to buy the updated version because switching takes time and may involve complicated learning process or system incompatibility issues. These anti-generic tactics are advantageous in allowing companies to sustain their market position over their competitors even after their product IP lapses. However, as with other tactics discussed above, IP managers need to be wary of fair competition legislation when deciding their pricing strategies.

Closer: Down to intellectual property – feats and ventures of the Googlers[4]

In less than a decade Google has become the world's fastest and most popular Internet search engine. Google, a mathematical term meaning 1 followed by 100 zeros,[5] was adopted as the corporate name to signal the firm's corporate mission of providing and managing hefty amounts of information for end users. It was established in 1995 when founders Larry Page and Sergey Brin met at Stanford University and saw the potential in solving the challenge of retrieving information from massive databases. In 1998, they set up an engine called BackRub in Larry Page's dormitory, and his data search algorithm – Google's core technology – is still patent-protected under the ownership of Stanford University. Within ten years, the firm has grown from a cash strapped

student firm into a multinational with over 4,000 employees and offices globally and services worldwide.

Google's success is attributable to both its IP products and services. At the start, Google developed PageRank technology, i.e. using hypertext matching analysis instead of direct word links to link web pages to speed up responses to search queries and to rank search information based on its relevance to the query. This has made Google a search technology leader, and it has also pioneered wireless search technology. Behind these technologies, Google relies on its patented technologies – AdWords and AdSense (both of which are also trade-mark-protected, as is PageRank) – which generate 95 per cent of Google's corporate revenues. Google AdWords provides advertising services on the basis of costs per click, while AdSense serves to direct the right contents to the right targets. Google has become a well-known brand because it has succeeded in satisfying its customers: it was awarded the 'Brand of the Year 2003' by Brand Channel.

Google's success also comes from its 'Googlers', which include both its employees and its users. On first impression, Google people are 'geeks', serious about nothing except search technology. They do not have flashy cars – but they do have new ideas, talents, energy and risk-taking spirits. Of the over 4,000 employees, the majority are 'techies', including technological and management professionals from Silicon Valley. Google also has an enormous customer network, from ordinary information seekers to multinational giants, like Sony, Disney, the World Bank and Boeing. As Hammonds (2006) notes, Google's no. 1 rule is: 'the users are in charge.' Ten people work full-time just reading e-mails sent to the company and distributing them to the right people within the firm: Google's philosophy is that nothing is more important than keeping their people satisfied.

Google's success is driven by its executives, who run the company with limited visibility. On the surface, the extremely informal working environment they create – casual wear, blue lava lamps, rubber ball chairs, and no cubicles separating those who write the pay-cheques from those who write the program code – gives the impression that there is no management. This casual atmosphere extends to their weekly meetings, as these Google 'runners' believe that it boosts productivity, and creates a collegial environment with no fears of hierarchy. More importantly, it ensures to create maximum communication between Googlers. Engineers work as teams of three, rotating leadership and fixing problems, and exchanging and applying new ideas about products and services. They are told they are allowed to fail: but they must fail for a reason, and they

must fail fast! Therefore, IP people in the firm are motivated to innovate and generate new ideas based on collective efforts and talents. Google executives also know how to attract talents, and are always busy hiring people. They receive 1,500 CVs a day, and invest an average of nearly 90 hours on hiring a new Googler, according to Hammonds.

IP also represents both Google's future success, and also its future challenges. Google is a strong believer that its growth depends on its ability to develop further IP assets by developing its existing patent-protected technology: the accelerated obsolescence of technology means such a firm can never stay ahead of its rivals without constant innovation. Patent protection gives Google, as the original owner of certain technologies, incentives to continuing its creativity. And in terms of innovation, Google has been prolific with new creative solutions, including its alliance with AOL, New Blue Google Mini (for SMEs), Google Video, Google Desktop Search, Google Local, Google Maps and Google Earth.

However, IP also means more challenges. As patented technology is disclosed into the public domain it invites licensing solutions, but also further innovating and exploitation in surrounding areas. The rivalry and threats spurred by such disclosure form the major challenges for this young multinational. First, rivalry comes from a number of industry players. Yahoo is one of Google's key competitors in the IP competition, and bought Overture Services and Inktomi (for US$1.5 billion) in 2002 to strengthen its algorithmic search patents and other rights covering web crawling, indexing and query processing, according to Wild (2005). Microsoft would also 'like to get a piece of Google's action'. Microsoft owns search-related patents, including methods for searching directory listings, a system for search selection, and a method of keyword-based concept searching. They have hired experts and the plan to launch a new web search technology. Amazon also owns an advertising search patent, and a patented method allowing auction adverts on its website. The rivalry in this crowded IP technology landscape means Google faces many challenges and has no monopoly space. Therefore, Google needs to employ corporate tactics to keep abreast of its rivals' IP. Apart from the existing rivals, the barriers for new entrants can seem relatively low, as mathematicians can design new algorithms very cheaply. But investing in IT hardware and hiring IT specialists raise entry costs substantially, and these barriers work to the advantage of Google and other existing players. They are further reinforced by the high costs of continued product innovation, maintaining the corporate name and retaining IP specialists.

Second, Google needs to give its attention to legal IP proceedings and handling infringement threats. In 2005, Google had an IP dispute with

Overture over advertising technology which ended up costing Google US$300 million, a settlement which contributed to a quarterly loss for the company. Google also agreed to sign licensing deals to use some of Overture's patented technologies, but now faces a number of other claims for infringing IP rights. Lawsuits like this not only contribute to financial losses for the firm, but also distract management from its core focus of running the firm's business.

Finally, there have been numerous challenges to the trademark-protected status of the word 'Google'. Wild argues that Google stands out from its competitors because of its irreplaceable name. However, Google's popularity means it is obviously in danger of becoming a generic name, a verb meaning 'to search'. Once this happens, the trademark authorities may restrict the mark monopoly which would allow competitors to use it, disrupting Google's business and identity. Historically, the words aspirin, escalator and gramophone were IP-protected, but they are now household names, without IP ownership. A more recent example involves Sony's loss of its trademark right to the name 'Walkman' in Austria. The Time Tron Corporation used the word in its catalogue, and the Supreme Court ruled that Walkman had become a generic term, and Sony had not taken measures to prevent it. (The word is now listed as a noun in a German dictionary.) Google needs to learn from this episode, and take steps, such as monitoring the media to prevent the word 'Google' from being used as a verb or noun, and sustain it as the company's unique mark: again such defensive monitoring will cost money and use up attention.

Intellectual property facts: Intellectual property insurance: Insure . . . or unsure?[6]

The European Commission is currently inviting views as to whether patent insurance should be mandatory across the EU, a policy which, if in place, could allow firms to litigate at 20 per cent of the costs of patenting. The move towards mandatory insurance stems from the great cost variations in EU states of insuring patents (as shown in Figure 7.3). Only one in 1,600 patents is sued in Europe, as litigation is expensive (the worst example to date cost US$ 9 million), lengthy (taking firms an average of five years) and disruptive to legitimate businesses. This 'IP facts' section discusses the pros and cons of this new form of IP business.

First, we need to clarify what IP insurance currently exists. Insurance companies like Kiln offer cover for IP products and services, licensing revenues, royalty receipts, IP value (using a pre-determined method as

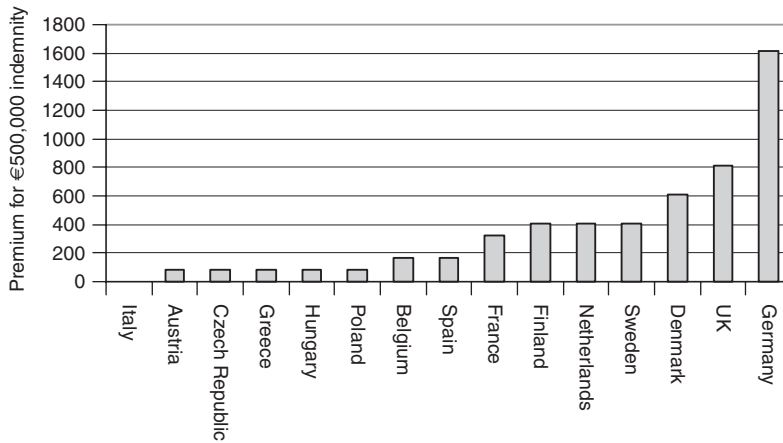

Figure 7.3 EU country variations in patent insurance
Source: Created by the author based on the information from Nurton, J. (2007) EU Mulls Mandatory Patent Insurance, *Managing IP* December 2006/January 2007:15.

discussed in the next chapter), R&D expenditure and enforcement. Coverage can be geographically worldwide and include all the IP rights of a firm, including challenges to ownership rights and infringements. Companies like M-Sure will indemnify non-US based companies against IP litigation up to the level of £2 million per claim.

Supporters of mandatory IP insurance are hoping for an element of 'sureness' in IP business. IP business is vulnerable in the face of uncertainties, such as the unpredictability of generating value from IP, the difficulties of defining accurate claims and boundaries for protection, problems with changing government regulations, and loss of value from threats, such as corporate espionage and piracy. For example, there is confusion about different countries' IPSs and their effectiveness in protecting corporate IP. Corporate espionage and piracy (which is dealt with in a later chapter) both have eroding effects on the value and corporate development of IP. Meanwhile there has been the increasing recognition about the importance of IP value in the business world. Mandatory insurance would make litigation more affordable and accessible to the SMEs (it is currently often beyond their financial means), by widening the participation of IP insurance schemes and thus bringing indemnity premiums down. Whether the increased ability of firms to afford litigation would lead to more costly litigation actions, or whether the fact that firms could afford to go to court would actually lead to more disputes being settled without litigation is perhaps a matter of conjecture.

However, there are serious doubts about the effectiveness of such a scheme. First, there are clearly political difficulties in coordinating an EU-wide scheme, and harmonizing the insurance regime across EU countries would involve considerable effort. The learning curve for gaining experience in this relatively new sector would be particularly difficult for specialists in three fields – IP, insurance and litigation. Second, there will be considerable business apprehension about such a scheme. Currently, IP insurers are concerned about the potentially high risks they confront in this relatively new and uncertain business. Statistically, only 0.1 per cent of EU patent holders are covered by insurance, 'making the premiums too high for patentees and the risk too great for many insurers', according to Nurton. Even if IP insurance becomes mandatory, and premiums come down, it will still take time for IP insurers and IP patentees to gain experience and understanding about the new insurance environment. Third, information incompleteness and limited choice of IP insurance will add further reservations about the policy's effectiveness. High awareness levels will take time: this will be a learning process for the whole sector, with insurers not knowing IP well enough at first to provide appropriate advice and cover, and IP owners in the meantime unable to gain full information. Cover may not include all the risks associated with IP, and there is likely to be incongruity between what policy makers, insurance firms and IP companies each anticipate, and the subsequent outcomes. In consequence, some companies are not particularly attracted to being part of such a scheme – but unless all parties are involved, it could not be properly effective.

Summary

This chapter focuses on managing IP assets, that is, IP people and IP products and services. IP managers need to link IP with corporate contexts so that IP activities serve the corporate vision accurately and decisions can be made accordingly. To manage IP people effectively, management first needs to identify the company's corporate position as an IP company – is it a 'super IP firm', or a small entrepreneurial outfit with few IP products, services and people – to allow them to analyse what resources are needed. Within the company, management also needs to ensure a balanced distribution of IP resources to maximize IP productivity and identify the necessary outside support needed, such as valuation consultants and attorneys. Moreover, management also need to manage IP people carefully to minimize IP information disclosure. Managers need to understand their IP portfolio, that is, the detail and

duration of protection of their IP assets, their relevance to corporate vision, and whether to license or assign a particular IP. More specifically, they should employ a combination of corporate tactics – including R&D, accumulation, improvement, competitive intelligence, benchmarking, marketing and anti-generic tactics – to exploit their own assets and remain alert about the IP products and services associated with their competitors.

The two cases and IP facts section further illustrate the importance of IP people and products. The opener instances a recent Coca-Cola conspiracy case to discuss how corporate espionage can threaten IP-related companies. The need for potential victims to tighten access to confidential information underlines that in-company IPP is a managerial as well as a legal issue. The closer demonstrates that IP is both the driver behind Google's speedy success and also the source of the challenges it faces. Google's success has been due to the existence and quality of its IP assets, and the ability of its IP people – the Googlers – to develop and extend them. The competition from its rivals (Yahoo, Microsoft, Amazon, etc.) is also IP-intensive. It also has to confront the dangers of infringements as well as acting to prevent 'google' from being turned into a generic word. 'IP facts' demonstrates the divided views on a new initiative for mandatory IP insurance in the EU. While IP insurance would minimize uncertainties and unpredictability so companies could manage their IP more effectively, the high risks for the insurance companies and the high premiums for IP companies are obstacles to its wider take-up. A mandatory EU policy for IP insurance might allow firms to overcome these barriers, but it would depend heavily on wide support and coordination among EU member states – and from the insurance industry.

Notes

1. This case was written by the author based on the following information. (1) Anon. (2006) Coca-Cola Three Appear in Court, *BBC* at http://news.bbc.co.uk/1/hi/business/5156646.stm, on 8 July 2006; (2) Anon. (2006) Coke's Secret Formula Safe, Despite Court Proceedings, *Managing IP*, 1 July 2006; (3) Coca-Cola (2006) *The Chronicle of Coca-Cola*, at http://www.thecoca-Colacompany.com/heritage/chronicle_birth_refreshing_idea.html, on 18 July 2006; (4) Fisher, D. (2001) Is the Secret of KFC finally out? *News: Northwest* 20 January; (5) Kingsbury, K. (2006) You Cannot Beat the Real Thing, *The Times*, 9 July 2006; (6) Weber, H.R. (2007) Ex-Coca Secretary Gets Eight Years in Prison, *USA Today*, 23 May 2007; (7) Wright and Roy (1999).
2. Anon. (2005) Intellectual Property Must Be Managed Like Valuable Assets, *Japan Times*, 26 December.

3. Ibid.
4. The case was written by the author based on the following information: (1) Clarke, R. (2006) The Rise of Google: Google's Gauntlets – Challenges to 'Old World Corps', Consumers and the Law, *Computer Law & Security Report*, 22: 288–98; (2) Google (2006) Corporate Information, at www.google.com/intl/en/corporate/facts.html, on 2 August 2006; (3) Hammonds (2006); (4) Haque, N. and Deloitte, G.S. (2006) The Economic Role of IP, at www.buildingipvalue.com/06KTI/048_051.htm, on 3 August 2006; (5) Wild (2005).
5. Google, originally Googol, was coined by Martin Kasner in 1938, who was the nephew of American mathematician – E. Kasner. Martin was asked how to call a 1 followed by 100 zeros. He answered Google. He called Googleplex for ten times of Googol. Now, within the Google firm, people are Googlers and their open space office is Googleplex.
6. This 'IP facts' was written by the author based on the following information: (1) Hogg, M. (2006) IP Insurance for Economic Loss, *Patents: Realising and Securing Value*, Conference organized by European Patent Office, OECD and UK Patent Office, London, 21 November 2006; (2) Lewis, I. (2006) Insurance for Litigation and Liability Risks, *Patents: Realising and Securing Value*, Conference organized by European Patent Office, OECD and UK Patent Office, London, 21 November 2006; (3) Mas II, E.A. and Surrette, R.A. (2006) Successful Early Resolution Strategies: Helping Companies Avoid the Enormous Costs of Litigation Complex Patent Cases, *Executive Counsel*, 3(4): July/August; (4) Nurton, J. (2007) EU Mulls Mandatory Patent Insurance, *Managing IP*, December 2006/January 2007: 15; (5) Vestergaard, M. (2006) Danish Experiences on the Establishing of a Patent Enforcement Insurance Scheme, *Patents: Realising and Securing Value*, Conference organized by European Patent Office, OECD and UK Patent Office, London, 21 November 2006.

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8
Valuing Intellectual Property

Contents

Focus and structure

This chapter focuses on the valuation of IP, and covers four main themes. First, it shows how people from different backgrounds can perceive value very differently. Second – the most important theme of this chapter – is the evaluation of the market, cost and income approaches, the three most frequently used and widely accepted valuation methods – for measuring IP assets. Third, some less frequently used methods are outlined. Finally, the significance of valuation is discussed to examine how IP valuation can serve different purposes in business.

The opener, closer and the IP facts sections present further discussions relevant to the chapter themes. The opener emphasizes how doing

homework thoroughly is the first step to generating IP value for the IP owner. The closer examines how a famous author's IP assets were valued for inheritance purpose when he died in 1991, and how his creative legacy lives on in the form of the historical assets he has left for lovers of his work. The IP facts section shows how royalties vary across businesses.

Opener: An intellectual property deal starts with homework

Without doing their homework thoroughly, IP owners cannot be certain about the commercial value of a particular IP product, and as a result may fail to gain the income they deserve. Poltorak and Lerner (2004) recount the (true) story of 'My wife's diamond ring'. An inventor has decided to sell his patented invention to a multinational experienced in IP. When the company asks him how much he is looking for, instead of negotiating step by step to make the most of his patent, he tells them he wants US$20,000 as an up-front payment – because he has never been able to afford a diamond ring for his wife before, and would like to do so now – plus one per cent running royalty, i.e. one per cent of the net sales of the products. He is very happy when the company offers him twice as much as an up-front payment: but does the deal he has made represent the true commercial value of his invention? How can he know? This example reveals two lessons. First, the inventor has not investigated the true market potential of his invention, and has not done any homework as to the value of his patent. Second, he lacks basic negotiating skills, and has revealed his 'trump card' at the very beginning, putting the multinational into a powerful position in the deal-making.

To do their homework thoroughly, IP owners must understand the three-step *Value–Valuation Decision Chain* (Figure 8.1). When an invention is born, the IP owner must assess its *patentability*, its *manufacturability* and its *commercializability*. The first step – after an invention has been created which looks as if it might be marketable – is to conduct a *search* to ensure there is no other identical or similar invention. This step also involves the assessment of the patentable *criteria* – novelty, inventiveness and utility (see Chapter 2). Moreover, an IP owner should also consider the *claims* – the scope of protection – to make, so that IPP can be clearly defined. The misconception is that the owner can leave all the work to the IP attorney. However, an owner who is clear about what should be protected will be able to help the attorney to accelerate the process of application for patent grant.

In the second step, IP owners need to consider how the invention should be manufactured. Can the owner implement this task

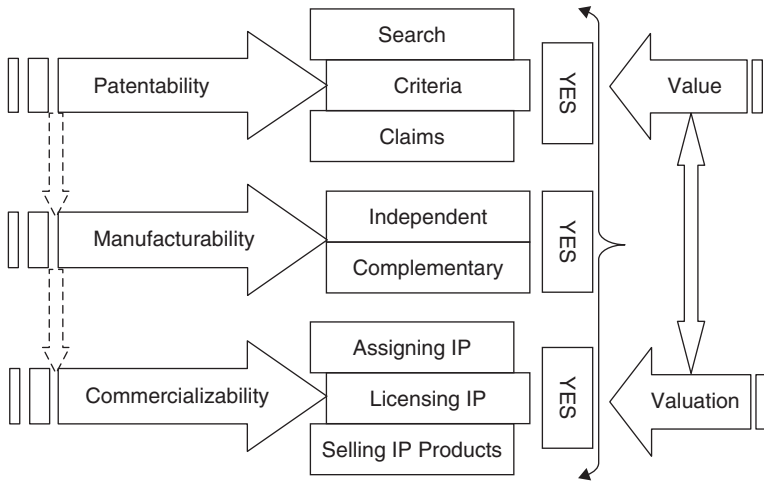

Figure 8.1 Value–valuation decision chain
Source: Created by the author.

independently? This may be out of the question if the inventor is independent. Nonetheless, he/she could decide to go it alone, opting to borrow the necessary money for manufacturing. It can also be difficult for universities to consider manufacturing, unless there is a university spin-off company to carry out the task. Otherwise, complementary assets must be sought to do so, in other words a partnership must be established with a company that has the manufacturing capacity in terms of staff, equipment and financial backing for the necessary investment.

Finally, IP owners also need to make plans about how to commercialize the patented invention. There are a number of choices that are associated with international IP commercialization (which are delineated in more detail in Part IV), but briefly three methods are commonly used. First, if the IP owners do not possess the necessary complementary assets to commercialize it themselves, they could consider selling – *assigning* – the IP outright to a company. Second, the owners may *license* the IP to a company who will handle the commercialization over a limited time within a defined geographical area, so the owner gains income, but without giving up ownership of the IP. Third (in the option labelled Selling IP Products in Figure 8.1), the owners could market their IP-embedded products themselves, that is, *Do It Yourself* or *internalizing* approach by utilizing their IP internally to carry out manufacturing and marketing activities.

Once these three matters have been resolved, the next step is to gauge the value of an IP using different valuation methods. An IP owner may

think this is an IP valuer's job, but, in fact, this is part of an IP owner's homework. If IP owners learn how to use the different valuation methods to estimate the value of their IP, they will gain important knowledge about comparative IP value and its assessment methodologies, and thus increase their bargaining power to help them reach a good deal with potential buyers or partners. This opener emphasizes that IP valuation is not just a job for specialist valuers, it is also a managerial task for the IP owner to gain a critical understanding about IP value. It thus leads us to the core of this chapter – valuing IP.

8.1 Varied perceptions of intellectual property value

People can perceive value very differently. In this context, value can be broadly defined as the future benefit (financial or otherwise) an IP owner can expect to obtain from his creation (Smith and Parr 2000; Sullivan 1999). This value can fall or rise according to time and place, owner and product itself. Clearly, in most situations value has some relationship with price paid, but it can also be a much more abstract term (Smith and Parr 2000). As Warren Buffett defines: 'Price is what you pay, and value is what you get'.[1] A house or a car may be 'worth' more (or less) to its owner than its realizable market value – with a piece of jewellery or clothing, or a picture or a book, the two amounts may have only a limited relationship. And how could one value a memory . . .?

In the same way, people tend to value IP by different yardsticks, and the picture can be every bit as complex. As with tangible assets, different people perceive the value of IP according to what it means to them. A musician or an author may perceive the pleasure of their audience and the popularity their work has brought them as the true indications of its value, and despise the attitude that everything can be measured in money terms as downgrading the artistic creativity involved. Inventors will tend to emphasize the functionality of their creations as the valuable core. But when a patented invention is presented to economists and business people, its potential for monetary returns represent, in effect, the most obvious way for them to assess its value. If corporate managers think the invention 'fits' with their company's core competence, they will inevitably value it in terms of the costs of investing their complementary assets, the prices resulting products might command in the market-place, and the profit they can therefore expect from taking on the invention.

Valuing IP is also more complex than valuing tangible products because there are competing valuation methods. For tangible products

(given that associated sentimental value is impossible to measure), monetary value can be calculated simply from costs of inputs and outputs, or by reference to the market for similar items. But for IP assets, there is no standard method that is agreed amongst specialists.

Like the variations in perceiving value in general, scholars tend to argue over the value of IP. Historically and contemporarily, the value of patents attests conflicts, but also a gradual rise in the value attached to IP. Studies from the 1950s to the 1980s show a gloomy assessment of the value of patents (e.g., Brooking 1998; Caves, Christensen, and Tretheway 1983; Cohen, Nelson and Walsh 2000; Harhoff and Reitzig 2004; Levin et al. 1985) because more effective ways could be adopted to protect innovative activities (e.g., secrecy, complementary manufacturing).

Schankerman (1998) concludes from a renewal study that the value of patents in the pharmaceutical, chemical, mechanical and electronics industries were distributed in a highly 'skewed' shape, with low value of patents at about $15,000, and the first two industries showing much slower rates of depreciation than the latter two. Greenhalgh and Rogers (2006) conclude that the valuation of R&D differs substantially across technological sectors, with the science-based sector showing as having the most intensive R&D and the highest proportion of firms applying for UK and EPO IP. They also find that firms with UK patents tend not to possess significant market premium, but registration of marks in the UK and patenting through the EPO enhance market value.

Recent econometric studies and surveys seem to show rising value of IP. The gist of the argument is that owning patents stimulates R&D activities (Ginarte and Park 1997; Griliches; 1990; Jaffe 2000; Maskus 2000). Although patent values are not distributed symmetrically, the 1993–7 data record high mean values between €300,000 and €1 million (Gambardella, Harhoff and Verspagen 2005; Harhoff, Scherer and Vopel 2003). Survey results prove that patents increase the value of innovation and stimulate R&D activities across all manufacturing industries (Arora, Ceccagnoli and Cohen 2003). Licensing activities have also been growing in terms of value, demonstrating the profitability of patents, particularly in developed countries (UNCTAD 2006). For example, Germany's royalty receipts from foreign affiliates increased from US$106 million in 1989 to US$1,176 millions in 2003. Arora (1996) and Hall and Ziedonis (2001) therefore argue that patents nowadays are increasing in value, and are proving powerful bargaining tools for owners.

Figure 8.2 shows the ranking and value of the best global brands in 2007. We can make four observations from the data. First, firms tend to value their corporate IP differently, as they do for their tangible assets.

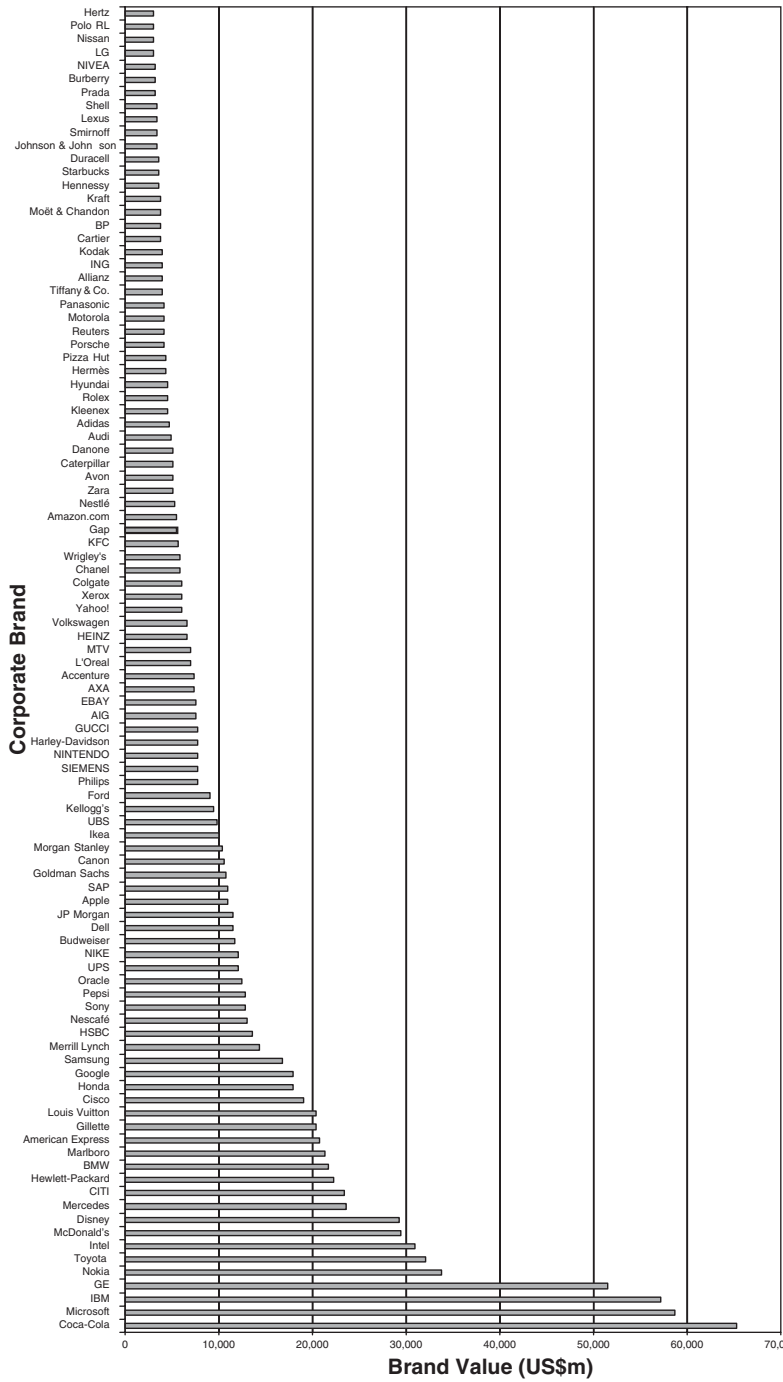

Figure 8.2 The top 100 best global brands ($m)
Source: Created by the author based on Kiley, D. (2007) Special Report: Best Global Brands: How Five Names in this Year's Rankings Staged their Turnarounds, *BusinessWeek*, 6 August: 56–64.

The mean value of the top 100 brands is US$11,014 million, with a range from US$3,026 million to US$65,324 million. Second, the top brands are predominantly owned by triad power countries, with only a few exceptions (such as Samsung, Hyundai and LG from South Korea and Accenture from Bermuda). Third, the brand value of firms can be time- and place-dependent. It can be time-dependent because firm assets can rise or fall with time for a variety of reasons, such as IP itself, reputation, quality and consumer interests. Thus Ford and Gap were ranked 30 and 52 respectively in 2006, but dropped to 41 and 61 in 2007 when their values declined 19 per cent and 15 per cent respectively. The decline at Ford has been attributed to the presence of some ill-fitting luxury divisions (such as Jaguar and Aston-Martin) that have distracted management concentration from its central non-luxurious brand image. Gap failed to offer consumers the products in a basic and fashionable manner, and has been hit by the 'Primark is the new Prada factor' where young customers, with little sense of garment quality and cut are no longer interested in the cachet attached to labels, and prefer to buy their clothes as cheaply as possible. IP value can also be place-dependent, as factors, such as the standard of living or awareness of IP will impact consumers' purchasing decision. Where awareness of brand image is low, and prices are beyond reach, clearly brand value will count for little.

Finally, the value of an IP will depend on the methods used in its calculation. For their calculation of the 100 top global brands, *Business Week* and Interbrand agreed on a method that represents the economic worth of a particular brand via a three-step calculation taking into account: (1) corporate total sales over five years; (2) earnings attributable to the brand vs. other IP; (3) earnings discounted to a present value, i.e. taking into account current interest rates and risk profiles.[2]

8.2 Three major valuation methods: Pros and cons

Three methods are commonly used to value IP, although a wide range of methods has been suggested (Anson, Suchy and Ahya 2005; Bryer and Lebson 2002; Damodaran 1994; Forbes 2000; Razgaitis 2002; Reitzig 2004; Rivette and Klein 2000; Smith 1997; Smith and Parr 2000; Turner 2000). The three are the *market*, *cost* and *income* approaches, which are illustrated and considered below.

8.2.1 Market approach

The market approach uses the share price of a firm to calculate the total capital value of the firm, and then deducts the tangible assets and

liabilities to obtain a value for its intangible assets. When it comes to IP value, it is assumed that 10 per cent of market capitalization can be considered as unidentified intangibles and should be deducted from the total capitalization (Turner 2000). This 10 per cent deduction is not agreed by all specialist valuers. First, great variations may occur across firms in terms of the distribution of different intangible assets. Even two companies in an identical industry can have different IP value if their internal contexts differ, and their IP portfolio structures may account for a very different percentage of their total invested capital. Second, due to the lack of standardization about IP valuation, firms (or their valuation consultants) may prefer to use a percentage higher or lower than 10 per cent based on their experience. Because of the arguments above, IP valuation is about estimation rather than the pursuit of precision. However, the author adopts Turner's 10 per cent deduction method as a reasonable estimate because it is a general average based on experience, and 'the residual value of the company after deducting the value of the net tangible assets' (Turner 2000: 7). The equation thus is:

$$IP = 0.9C - NT \tag{8.1}$$

where C is market capitalization (based on unit share price times number of shares), and NT represents net tangible assets (total tangible assets minus total liabilities). Table 8.1 uses this equation to calculate the IP value of a number of football clubs in Britain. Football clubs rely heavily on their brands to boost their business opportunities, and the table shows that while nearly 70 per cent of Manchester United's value is generated from its IP assets, Tottenham Hotspur's IP value is negative, indicating that it does not contribute significantly to the club (Yang and Sonmez 2005).

The market approach has both merits and drawbacks that must be taken into account. This method can be very useful when the market is active, i.e. when a company's IP products and/or services, and similar products from competitors, are being actively traded in the market. As Turner (2000) stated, an active market is the best judge in deciding value, as it stimulates market competition and increases comparability between firms, such as Kodak vs. Fuji, McDonald vs. Burger King and Coca-Cola vs. Pepsi. This method is also useful to measure a firms' overall IP value, which can provide managers with broad knowledge as to how their firm is positioned in terms of IP development in a market. However, this can also represent a disadvantage of the market method, as the value of each individual IP asset remains unclear, and must be calculated by other methods. Finally, probably the most debatable characteristic of the

Table 8.1 The intellectual property value of the football clubs (£000)

Value	Manchester United	Newcastle	Southampton	Tottenham Hotspur
Market capitalization	721,020	58,840	11,990	27,640
Total tangible assets	156,833	36,644	10,624	31,238
Intangible assets	564,187	22,196	1,366	−3,598
Intellectual property as a percentage of market capitalization	68.25%	27.72%	1.39%	−23.02%

Source: Yang and Sonmez (2005: 42).

method is that it gives fluctuating valuations, as share price fluctuations resulting from market supply and demand can affect the stability of the IP value.

8.2.2 Cost approach

The cost approach, as the name indicates, is to accumulate all the costs that have actually been, or will be incurred on a particular IP product using one of two cost-based calculations (Anson et al. 2005; Smith and Parr 2000). The first one is called the *trended* (or *historical*) *cost approach*. This means that a firm keeps a record of all the costs actually incurred in relation to the development of a particular IP product (i.e., its historical costs), which will include materials, equipment, salary, administration, application fee for protection, search fee, etc. These *historical costs* are then converted (trended) into current values using the consumer price index, thus resulting in *trended costs*. This can then be used as a basis for the firm to decide how much the IP product is worth and to use as a reference to price the product for the market. Table 8.2 shows an example from Smith and Parr (2000), where the trended costs accumulated to US$20,207,000.

The second cost approach is the *re-creation or replacement cost approach*. This approach is similar to the trended cost approach in using aggregated costs, but it is 'future oriented', as value depends on how much it would cost for the IP product to be recreated in the future. For example, when BP re-branded itself from BP Amoco in 2000, it had to consider how much the exercise would cost, including mark redesign, searches to check the design and name were not in use, etc. This cost the company US$7 million, as well as US$100 million in the subsequent years for changing the signs, facilities, and advertising.[3,4]

Table 8.2 Intellectual property costs based on trended cost approach (US$000)

Year	Historical costs	Consumer price index	Trended costs
1999	750	2.15	1,612
2000	1,500	2.00	3,000
2001	2,500	1.87	4,675
2002	3,000	1.68	5,040
2003	4,000	1.47	5,880
Total	*11,750*		*20,207*

Source: Adapted from Smith and Parr (2000: 204).

There are both advantages and disadvantages to using the cost-based method. It is perhaps the best method to guarantee minimum return, as the aggregated costs allow firms to decide the minimum value of a particular product. The collection of such specific costs about R&D activities and other itemized costs also serves the purpose of helping firms to plan future IP activities, providing firms with a clear understanding of how the costs of IP activities are distributed. However, this method focuses on costs instead of the benefits derived from the costs. For example, prior to its market introduction, a new drug may have already involved many millions of dollars in R&D costs, and under this method, these sunk costs represent the IP value of the product. But if its clinical trial shows it to be ineffective in humans, it will not only have generated little benefit for the world, but will be worth virtually nothing to the company. Thus, this method should be used to complement other valuation methods in assessing an IP product, rather than being adopted as an independent valuation tool.

8.2.3 Income approach

As the reverse of the cost approach, the income approach emphasizes the maximum return of a particular IP product by calculating the discounted cash flows. This method recognizes that if an IP product does not generate economic benefit, it can have no value. Therefore, an IP will have a value if it exceeds its related costs and risks, taking into account inflation and other discounting factors. The equation of the income approach is as follows:

$$\text{IP V} = \sum_{t=1}^{n} \frac{Rt}{(1+i)^t} \tag{8.2}$$

where V represents the Value of an IP; *Rt* the IP Income in Year *t*; *t* a certain year in the future; *n* the length of time an IP owner anticipates the IP would generate income; and *i* the Discount Rate. If a firm estimates its potential annual IP income in the next five years at US$2.68 million, and the discount rate as 20 per cent, based on the income approach, the total income it estimates it would derive from the IP over the five years can be calculated as:

$$IPV = \frac{2,680,000}{(1+20\%)} + \frac{2,680,000}{(1+20\%)^2} + \frac{2,680,000}{(1+20\%)^3} + \frac{2,680,000}{(1+20\%)^4} + \frac{2,680,000}{(1+20\%)^5} = 8,014,841 \quad (8.3)$$

The most advantageous factor of this measurement is that income is considered in the calculation, thereby ensuring the IP owners' profit is included. This distinguishes it from the other valuation methods, as it takes into account the risks of commercializing a particular product, and makes it a popular method for firms. Companies doing IB are exposed to additional risks, such as kidnapping, nationalization and IP violations. These risks can destabilize the business environment and may undermine the market success of an IP product, and have to be taken into account when valuing a particular IP product. Risks need be assessed on a country-by-county basis – thus, Western European countries, with their long history of IPP, will probably represent lower risks than some newer European economies, where immaturity of IPS will mean risk factors are increased.

In addition to the unpredictability of the risks associated with the income approach, one disadvantage of this method is the non-standardization of accounting methods. For example, companies tend to treat IP differently as far as accounting is concerned. Some do not record IP in the corporate account, and it is then only reflected in the accounts when it comes to mergers, acquisitions and/or licensing. Others adopt a system where intangible assets (including IP) are recorded in corporate cash flows, although the proportion of IP that is included is not always clear. Such variations in accounting standards tend to have negative implications when international cooperation is involved, as deviations can be still wider, for instance, between the UK and China, leading to conflicting IP valuations.

Currency fluctuations can also be an influential factor to the valuation of IP in the international context, leading to substantial difference in valuations carried out at different times. The best way to resolve this problem is to use a stable hard currency to conduct the valuation. If local currency must be used to conduct such valuation, calculating IP value in

both local and 'hard' currencies can allow the gap to be identified and taken into account.

8.2.4 Method selection

Given the existence of these three major methods to value IP, the dilemma of which method to choose will confront firms wishing, for whatever reason, to value their IP. There is no simple answer: this is a complicated question, as the valuation can be restricted by environment factors, such as the prevailing local accounting standards, data availability and company preferences for a particular method. Smith and Parr (2000) recommend that, where there are no data availability problems, firms should use all the available methods, as variations in calculation results will allow the users to question why and how the gaps occur and leverage any substantial differences in their final assessment. Islam and Kremen (1998) recommend more specific tactics – establishing the reasons for the valuation before it takes place. Thus, for a company wanting to decide whether to buy a competitor's IP or build its own, the cost approach is an obvious choice. If the valuation is to enter into a competitive market of several players, the market approach is a natural option. However, if a company needs to merge or acquire another firm with IP as the main assets, the income approach represents the best alternative. Firms can also outsource their IP valuation requirements, so that external experts' valuation can provide an additional reference for firms to compare and contrast value estimates, increasing the amount of information available to support an appropriate decision.

8.3 Other methods in brief

Alongside the three major assessment methods, firms, institutions and government also use several less widely practiced methods to value IP assets: these are briefly illustrated in Table 8.3. For example, the software valuation practitioners Islam and Kremen (1998) find the capitalization method useful in taking into account all stakeholders' interests. This method relies on a logical assumption that IP value can be estimated with the following equation:

$$\text{IP value} = \text{Net Annual Income/Rate of return on the invested capital} \tag{8.4}$$

They provide an example as follows to illustrate this method. Assume the potential gross annual income of an IP product is $3 million, with expenses anticipated as 25 per cent; 90 per cent financing is required at

Table 8.3 Other valuation methods of intellectual property

Method	Exposition	Pros	Cons
Capitalization	Net annual income divided by the rate of return on the invested capital	Taken into account return, risks and costs	Relying on estimates
Excess operating profit	Margin differential of profit from an IP in a firm in comparison to the ones generated by a similar business of other firms without the IP and then discount to the present value	Profits and risks are taken into account	Difficult to isolate IP from other factors, such as production facility or distribution network
Premium pricing	Margin differential of revenue in comparison to other firms in the same business and then discount to the present value	Costs, profits and risks are taken into account	Difficult to find unbranded product
Cost savings	Present value of the cost savings due to an IP	Costs	No comparison with a third party if they use a similar IP
Royalty savings	Calculate the present value of the royalties saved by a particular IP asset	Popular method; estimate can be conducted for licensing return	Difficult to find comparable licensing agreements; royalty information is usually non-public
Residual profit	Separate profits attributed to IP as the incremental profit from routine sales, such as manufacturing and distribution	Costs, profits and risks are taken into account	Difficult to isolate IP from other sales
Hitachi index	Calculate the effects of each IP, such as royalties, enforcement costs, transferability; method adopted by Japan Patent Office	Manage IP separately, allow comparison of each IP contribution to the overall business; works for firms in management	Difficult to benchmark the method, as each firm has its own characteristics across industries, and countries.

Instinctual approach	Managers and outsourcing experts reach consensus on the value of an IP	Valuation based on logic and experience	Can be bad instinct
PRISM model	Classify IP into monopoly, licence, defensive tool and joint venture	Manage IP individually, allow comparison of each IP contribution to the overall business; works for firms in management	Difficult to benchmark the method, as each firm has its own characteristics across industries, and countries.
Option pricing	Buy or sell an IP at or before some specified time allowing for random variation of the price at the time of transactions	Take into account managerial flexibility towards IP	Unsuitable for the analysis of IP portfolios
Econometric	Use citations, renewable data and patent owners' estimates to analyse policy implication for innovation	Measure effects of an IP	Retrospective valuation
Demark model (IPScore)	Qualitative measure indexing legal status, technology, market conditions, finance and strategy and quantitative projection based on development costs, time, market and product conditions	EPO acquired the rights of this model for wide use in the member states; provide preliminary estimates for more in-depth calculation	Subjectivity occurs impacting consistency of valuation across firms, sectors and countries
Singapore model: SurfIP	Valuation tool provided by the Singapore IP office to estimate IP value	Provide preliminary estimates for in-depth calculation	Subjectivity occurs impacting consistency of valuation across firms, sectors and countries

Source: Synthesized by the author based on Anson, Suchy and Ahya (2005); Islam and Kremen (1998); Pitkethly (1997); Rugman and Hadjiloucas (2005); Verlinden, Smits and Boone (2004); WIPO (2005).

an annual interest rate of 6.25 per cent, and the company also wants to have a minimum return at 15 per cent on its 10 per cent equity. The investment is to be returned at 20 per cent a year over a five-year period. Based on the above equation and data, the IP value is:

$$\text{IP value} = \frac{3,000,000 * (1 - 25\%)}{0.9 * 0.0625 + 0.10 * 0.15 + 0.20} = \text{US\$}8,294,931 \qquad (8.5)$$

These methods share some common features, suggesting there is no 'one-fits-all' method. But, despite their pros and cons, they are in general less widely used in practice than the three major methods: indeed some (such as the Hitachi index method) only serve for in-house valuation. They generally tend to serve different purposes: thus option pricing, premium pricing, costs saving and royalty savings tend to be more popular approaches with firms, while qualitative methods may be more appropriate for preliminary analysis leading to more precise calculations at later valuation stages and econometric methods may serve the purpose of policy direction of innovation. The sheer variety of these methods suggests that we are still far from reaching the level of standardizing IP valuation methods. One of the major reasons is the difficulty of reaching a level of consistency about which method to use, and about how to use the different methods on different forms of IP, between different firms, across different industries and sectors, and in different countries, due to the great number of variations involved. Another important reason for lack of consensus is the subjectivity of valuation in using different methods, with valuations depending on the valuers' experience and outlook, thus undermining the reliability of each individual valuation. The best solution probably remains the tactic of combining a number of valuation methods to gain a 'true' picture of the value of a particular IP.

8.4 The significance of intellectual property valuation

The valuation of IP serves many different business purposes, and we will illustrate its significance for some major business activities. First, a straightforward trading deal that 'assigns' the ownership of an IP asset from one owner to another relies on being able to value the IP asset to settle the financial details of the transaction. Such deals may be between an inventor and a commercializing company. Suppose Alana, an independent inventor (A), has just invented a new machine that can manufacture cups with massively increased productivity. She has successfully patented her invention in the EU and various other countries, but she does not have the resources (complementary assets) with which to

commercialize the patented invention. Instead, she sells her ownership of the patent outright to a company called Big Machinery Ltd (B), which has been producing different machines for over a century. In order to strike a deal, valuers are called in to calculate how much her invention is worth, and the two parties agree a deal if they think mutual benefits can be achieved. After the assignment, the ownership of the IP will belong to B, but Alana's name will still be recognized as the inventor on the patent certificate.

Second, licensing is probably the most common situation where an IP valuation is required. If Alana can't make a successful deal for selling her IP, she finds a firm Commercial Partners (C) that offers her a promising deal where she can profit from her patent by licensing it. Here, A, as the IP owner becomes the *licensor* and negotiates a contract authorizing C – the *licensee* – to develop her IP for commercial purposes. (This would normally be for commercialization within a certain geographical region and for a certain period of time: she can sign different deals with different licensees in different countries.) Instead of (or as well as) obtaining a one-off payment, she will receive regular royalty payments from licensees for their use of her patented rights (which, unlike where she sold them outright, still remain her property). In order to strike a licensing deal, the licensing parties must agree on what valuation methods should be used so that the value of the IP can be estimated and agreed.

Third, IP valuation will be necessary for raising finance. Suppose Alana cannot find a good deal for either outright assignment or licensing of her invention, but, as a spirited entrepreneur, she decides she would like to 'Do It Herself', and start up her own company to commercialize her invention. She has no complementary resources to support her; therefore, she has gone to the bank to take out a loan. In addition to her personal financial status, the bank must be able to put a value on the patented invention and its future prospects to decide whether lending her money makes financial sense to them.

Fourth, valuation is also useful to decide the share of a partnership. Let us suppose Alana finally succeeds in gaining some financial support from the bank, but the amount is not sufficient to cover all the costs involved – renting a factory location, hiring a workforce, buying raw materials and advertising to promote the product, etc. After negotiating with some potential partners, Alana has decided to collaborate with a UK company called Diamond Products (D), which is conveniently located and has substantial relevant experience and strong financial foundations. In the end, they strike a deal at 50–50 stake, i.e. profits, losses, risks and costs are all shared with the new venture called Alana Diamond Ltd (AD). But how

can both sides be happy with the deal? Quantifying the tangible aspects of the venture on both sides is straightforward – but unless the value of Alana's patented invention asset as part of her share can be agreed, their negotiations will stall through lack of full information.

Fifth, valuation plays an important role in deciding the costs, damages or profits in the case of an IP infringement. Let us suppose the AD has successfully commercialized their cup-making machine. Their success attracts the attention of counterfeiters, who reverse engineer the machine, and introduce a cheaper substitute on the European market that sells very well, and undermines AD's potential revenues. In their turn, AD reverse engineers the competing product, and concludes that it has infringed Alana's patent rights. They call in the relevant government department to investigate the matter. Aside from taking measures to stop the infringement, this department also needs to be able to calculate how much damage has been done, the profit lost due to the infringement, and damages. If these calculations cannot be made (and, as we have seen above, they can involve three different calculation methods), the department may have to refer to an assignment or licensing deal of a similar patent to try to judge the amount of compensation the infringer should make to the owner.

We do not lack examples to illustrate the importance of valuation for firms involved with infringement problems. In a famous case, Polaroid benefited from a boost to its reputation as well as significant financial compensation from the success of its influential patent litigation against Kodak.[5] The instant camera invented by Edwin Land in 1948, which involved pictures that didn't need external developing, revolutionized the camera industry. The company filed one of the largest patent litigations in US history in 1976 against Kodak for its infringements of its instant photography patents. When the case was finally concluded (ten years later) Kodak was judged to have infringed seven of the patents. In addition to instantly withdrawing from the market and terminating all its instant camera activities, Kodak paid Polaroid US$925 million in compensation, as well as paying voluntary damages to customers. Behind the dispute, the case shows the importance of IP value and valuation in the process for Polaroid to seek compensation from Kodak.

Finally, valuation of each firm's IP will be essential in the negotiations surrounding mergers and acquisitions, and bankruptcy. Suppose AD, after its initial successful commercialization period, has been financially wounded by the IP infringement it has endured, and is now struggling to remain profitable. A US company called EveryMachine (E) has had its eye on AD for a long time and now makes an offer to acquire the

Table 8.4 Valuation differences (US$ million)

Assets	E's offer	AD's valuation
Patent	5.2	6.0
Trademarks	2.0	2.5
Licensing rights	3.4	3.8
Other assets	6.4	6.3
Liabilities	(6.9)	(6.9)
Net Assets	10.1	11.7

Source: Created by the author – based on assumptions.

firm. AD is tempted, but suspects its actual value exceeds what is being offered. Valuers are called in to assess the firm's worth, including that of its IP assets, such as Alana's patent plus any trademarks and licensing rights it owns. Table 8.4 shows the comparison between E's offer and AD's valuation, and shows that, without the value of its IP assets, AD is very unattractive, being worth (on both sides' calculations) around minus half a million in terms of its other assets minus its liabilities. However, when patent, trademarks and licensing rights are included, AD's assets exceed $10 millions under both calculations, although they differ by $1.6 million, indicating how values can vary depending on valuation methods. This gap will clearly be the subject of some hard negotiations between the two.

In the same way, if AD were to go bankrupt, calculating the correct level of payments to its creditors would require an accurate valuation of all its assets, including its IP rights, so they could be sold to fund payments to creditors. In this case, the valuation would have to be on the basis of the realizable value of the firm's assets – including the IP rights – where (depending on its age) Alana's patent might have some continuing value, but (unless the firm were sold as a going concern) its trademarks would not.

Closer: The intellectual property assets of the *Green Eggs and Ham* man[6]

The prolific American author and illustrator Theodore Seuss Geisel (aka Dr Seuss) became immensely popular for his humorously illustrated verse, including his beginners' reading books *Green Eggs and Ham* and *The Cat in the Hat*. His creative works earned him seven honorary doctorates, one best cartoon Oscar, two Emmys and many Booker prizes. His books had sold over 200 million copies in 15 languages by the time of his death,

and nearly 30 had been adapted for television and video programmes, and their influence has continued after his death with CD-ROMs, theme parks, games, advertising and movies being based on them. This closer illustrates how Dr Seuss's IP assets were valued when he died in 1991.

When his estate was passed on to his widow – Audrey Geisel, it was valued for tax purposes, as required in the US, and this task involved valuing the IP assets, mainly copyrights and trademark rights. Although the Spring Museum and Dr Seuss Enterprises when interviewed by the author, refused (for reasons of confidentiality) to reveal the actual values and their breakdown, they did indicate that experienced experts adopted a combination of historical costs, income and market approaches to estimate the value of Dr Seuss's assets. They projected royalties from copyrights and trademarks based upon actual historical experience and took into account IP potential, including the remaining duration of each IP right, to select capitalization rates. Based on the historical data, and the potential of IP development, they concluded the present value of the IP rights, and, subsequent commercial IP activities have showed the valuation to have been surprisingly accurate.

Dr Seuss's family continues to benefit from the licensing of his IP rights. In 1993, Audrey Seuss set up a new firm – Dr Seuss Enterprises – to monitor any infringement of Dr Seuss's trademarks and copyrights and to license his IP rights for commercial purposes. Even Dr Seuss could not have imagined how his works could have been built into a commercial empire, with over 500 million copies sold in 20 languages and the reproduction of the characters he created spreading across over the game, movie, toy and video industries.

This case demonstrates the importance of IP value in people's daily life and business. It also reinforces our earlier conclusion that there is no fixed method to value IP, and that a combination of different methods should be adopted for the best result. This case also indicates how IP does not stand still – it may grow or shrink with time: in this case, with appropriate IP management by Dr Seuss Enterprises, the value of the assets has grown and grown!

Intellectual property facts: Royalties for value[7]

Royalties are payments made by the user of a particular IP to the IP owner. Table 8.5 is a list of average values of royalty rates categorized by companies, industries and products. The listed companies are all well known in their particular businesses, and therefore, overall, the royalty charges are higher than the 'normal' payment of 5 per cent. The data demonstrate

Table 8.5 Average royalties by company, product and industry

Company	Royalty (%)	Industry	Royalty (%)	Product	Royalty (%)
Harvard University	6	Automotive	4.7	Chewing gum	3.75
Waldorf-Astoria	8.5	Chemicals	4.7	Tennis rackets	3
Reebok	6	Computer hardware	5.2	Patented waterbed	9.4
Adidas	6	Computer software	10.5	Medical products	13.75
Kodak	5.5	Consumer goods	5.5	Oil drilling technology	5
Michelin	5	Electronics	4.3	Automobile parts	5
Goodyear	4	Food	2.9	Electronic games systems	10
L'Oreal	7	Internet	11.7	Biodegradable plastic	4
Chanel	12	Healthcare products	5.8	Fire retardant products	3
Skiwear Brands	2	Machines/Tools	5.2	Database software	15
Rollerblades	12	Pharmaceuticals	7	Home video	4
Walt Disney	10	Semiconductors	4.6	Hand cleansing soap bar	3.5

Source: Compiled by the author based on information from Bertolotti (2000); http://www.royaltysource.com/; *Licensing Economics Review* (2001–5); Poltorak and Lerner (2004).

how IP cannot be compared across companies, industries and products, with royalty rates varying considerably across industries, and even more across different IP products.

Royalties have become an important source of income for firms that generate value from IP. IBM is a well-known example, owning over 34,000 patents worldwide following an IP tradition started when Louis Gerstner took office as the CEO in 1994. The cost of this large scale patenting activity is compensated by increasing royalty payments: thus, IBM is both a big spender on IP (US$6 billion on R&D), and also a greater earner from IP (US$1 billion). Its yearly royalty payment has made it one of the most profitable IP firms in the world: for example, in the three years from 2000 to 2002, the firm received royalty payments of US$1.6 billion, 1.8 billion and 2.1 billion respectively.

Many factors are taken into account when royalty percentages are agreed. The rule of thumb is to follow a 25 per cent norm, i.e. royalties are set at 25 per cent of the anticipated operating profit of the licensee. For example, if the gross operating profit is 40 per cent of the patented product sales, the royalty should be $0.25 * 0.4 = 10$ per cent of sales income. The famous Georgio-Pacific Corp. v. United States Plywood Corp. case in 1970 set an example of how a royalty rate is calculated by considering 15 factors. These factors were associated with costs, value and industrial experience, the 25 per cent rule, expenditure and value on both licensor and licensee sides. Under normal circumstances, licensors tend to bear the technical risks, including R&D, and technological advancement while licensees endure commercial risks, such as product positioning and market development. Poltorak and Lerner (2004) suggest that when licensing parties are unsure what rate to set, they should adopt a 5 per cent rate to start with.

Three payment methods are commonly used. The first is a lump sum payment – the IP user provides a one-off payment to the owner for an IP-related project. The advantage of this type of payment is that both parties can get on with their work without worrying about the payment. However, such payments usually require the licensee to have a considerable amount of money in hand, and the method is not recommended when the licensing partners are new to each other, because outstanding payments will encourage partners to abide by the licensing contract. The second way of paying a licensor is by percentage of units or net sales, that is, the amount of payment is calculated based on the number of products sold or the net sales. This is a common practice for publishers paying royalties to the authors, for example, payments are at 4 per cent for the first 1,000 books sold and 7 per cent thereafter. This type of

payment depends on the actual sales, i.e. a licensee bears no risk if nothing is sold: but by the same token, the licensor runs the risk of recouping nothing from the deal. The third method of payment is a combination of the above two methods, i.e. an initial lump sum payment followed by instalment payments (at agreed intervals, and calculated by either unit or net sales) until the end of the contract period. For example, in 2001, Lasersight Inc. and Bausch & Lomb Inc. struck a non-exclusive patent licensing deal for commercializing Lasersight – a laser vision correction system. They agreed on a lump sum payment of US$3 million and a further $2 million by instalments.

Summary

This chapter focuses on one theme: IP valuation. It provides a critical understanding of IP value, and shows how IP is perceived variously depending on people's background. There is no consensus among specialists – either historically or contemporarily – as to how to perceive IP value. In financial terms, IP value can vary according to time, place and methods of valuation. Business activities need IP valuations to provide financial information for IP trading, licensing, financing, partnership, damage claims, bankruptcy, mergers and acquisitions. In practice, three valuation methods are applied widely to value IP. They are the market approach (using the share price of the company to decide the proportion of IP value); the cost approach (based on the calculations of historical or replacement costs converting into present value and estimating future value); and the income approach (in which the value of a particular IP is calculated based on the net sales discounted to present value). Other methods are briefly illustrated, and all have their merits and demerits. Those in search of IP valuation are advised to take advantage of the merits, but wary of the drawbacks, with a sensible approach being to combine a number of methods to conclude and compare the values.

The opener, closer and IP facts sections illustrate IP valuation in practice. The opener advises IP owners to do a thorough piece of homework and consider the value of their IP via the *Value–Valuation Decision Chain*. The patentability, manufacturability and commercializability of an invention must be assessed before the value of an IP product can be calculated, by any valuation method, and this exercise will equip the IP owner with the bargaining power to strike a reasonable commercial deal. The closer: 'The intellectual property assets of the *Green Eggs and Ham* man' depicts the importance of IP assets left by the legendary children's author Dr Seuss. Thanks to IP valuation, his IP assets have continued to

generate wealth for his family and their value carries on growing through the licensing activities of Dr Seuss Enterprises. The IP facts section takes the valuation discussion further to look at the value of royalties in a number of industries, companies and products, as well as discussing the calculation of royalties and payment methods. In short, the message of this chapter is that IP has important value, and that the different methods used to convert this value into wealth should be understood thoroughly by IP owners before they launch into commercialization ventures.

Notes

1. Hagstrom, R. (2005) *The Warren Buffett Way* (2nd edn), New York: John Wiley & Sons.
2. Kiley, D. (2007) Special Report: Best Global Brands: How Five Names in this Year's Rankings Staged their Turnarounds, *BusinessWeek*, 6 August: 56–64.
3. Anon. (2000) BP Goes Green, *BBC*, 24 July.
4. Language considerations can also be important in the recreation process, as different cultures can give a brand name different meanings. Thus, at one time, GM promoted its products in Puerto Rico under the name 'nova', only to discover it sounded like 'no va', which means 'does not go' in Spanish. In the end, after an expensive advertising campaign, GM had to change the name (Wilton 2004).
5. See (1) Anon. (1976) Polaroid Sues Kodak, *The Times*, 10 May; (2) McElheny, V.K. (1999) *Insisting on the Impossible: The Life of Edwin Land*, New York: Perseus Books; (3) Wensberg, P.C. (1987) *Land's Polaroid: A Company and the Man Who Invented It*, Boston: Houghton Mifflin Company.
6. The author has written this case based on the information from (1) Cohen, C. (2001) Personal interview, 18 August; (2) Morgan, J. and Morgan, N. (1996) *Dr. Seuss and Mr. Geisel: A Biography*, New York: Random House; (3) The author's own email interviews with Springer Museum and Dr Seuss Enterprises, 12 August 2006.
7. This 'IP facts' was written by the author based on the following information: (1) Anon. (2007) IBM and Amazon Settle Patent Dispute with Cross Licensing Agreement, *Out-Law*, at http://www.out-law.com/page-8032, on 9 May, 2007; (2) Anon. (2001) Recent Transactions, *Licensing Economics Review*, October: 5–6; (3) Berman, B. (2002) Positioning IP for Shareholder Value, *Managing IP*, March; (4) Bertolotti (2000); (5) *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Suppl. 1116 [SDNY 1970]; (6) Poltorak and Lerner (2004).

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Part IV

Intellectual Property Strategies

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9
Commercializing Intellectual Property Internationally

Contents

Focus and structure

This chapter considers internationalizing strategies to profit from IP knowledge, that is, the commercialization of IP in international markets.

First, it emphasizes the pre-commercializing evaluation of the idea of expanding internationally. Such an evaluation should be conducted to assess the owners' capacity, reasons to expand abroad, international IP environment and timing for IP commercialization. Second, further evaluation should be made to analyse which IB strategies are available for IP commercialization. These strategies need to take IP into account in assessing the costs, profits, risks and levels of headquarters (HQ) control involved in adopting a particular international commercializing strategy. Finally, the chapter discusses the decision making process to the actual selection of an appropriate strategy for internationally commercializing an IP.

In relation to these discussions, this chapter addresses IP commercialization in practice. The opener discusses how the Karaoke king has never benefited from his invention, while the closer illustrates how YouTube has become worth billions of dollars. The IP facts section presents figures demonstrating the positive association between high-impact (i.e. highly cited) patents and market leadership in the mobile telecommunication industry.

Opener: Singing karaoke with the cockroach-killer seller![1]

The impact of karaoke around the world has been as striking as the sounds from the machine: it is one foreign word that can be understood around the world without translation. Karaoke – literally an 'empty orchestra': a singing-along machine, providing songs without lyrics – allows people to entertain themselves and each other by singing along to pre-recorded music tracks. Its impact in the world has been just like the sound it generates – loud, wide and rhythmic, with its most noticeable, harmonious effect on ordinary people. With this 'music box', people entertain themselves as a group – families, colleagues and other communities – and it has become such an indispensable element in generating a cheerful atmosphere, easing away tension and stress, providing a setting where people can get to know new chums and amuse old pals, while entertaining themselves and others. It has not been confined to Japan – while perhaps still most popular in Asia, the sound of Karaoke has reached to the far corners of the world. In an English pub, the blackboard reads: 'Karaoke here!', while in a hotel in Latin America, the sign reads: 'KTV room here for you!'. The 'no-man band' has established itself not only in households and restaurants, but in sophisticated hotels, companies and organizations: it is, undeniably, a multinational product generating global business.


Photo 9.1 (left) Inoue and the first karaoke machine
Photo 9.2 (right) Inoue today
Courtesy of Mr Daisuke Inoue – the karaoke king.

And it is multinationals that have been the biggest winners from karaoke. When it first showed signs of popularity in the 1970s, Japanese manufacturers grabbed the opportunity to profit. They had the R&D support to upgrade the technology, and the complementary assets and financial grounding to undertake massive production levels to satisfy the ballooning popular demand. By the late 1980s, it was a major export product from Japan, worth an annual US$10 billion by 1996.

But who invented this incredible miracle? And how much did they benefit from it? The truth is while the world is singing along to a karaoke machine, its inventor, Mr Daisuke Inoue, is selling cockroach killers (for karaoke machines: he believes that 80 per cent of the damage caused to these machines is due to cockroach penetration into the wiring.) And how much has the inventor earned from this billion-dollar business? – The answer is 'Nothing'!

Inoue was the drummer of a six-man band playing in bars in Osaka in the 1970s, where they were often asked to play music for businessmen to sing country-and-western or military songs. One day, when a business executive in Japan requested the band play on an overnight trip, Inoue gave him instead a taped music accompaniment – and invented the karaoke machine. Following Inoue's initiative, his band created another 11 machines, equipped with tapes and amplifiers, which were leased to different bars where they instantly gained popularity. This attracted large multinationals' attention, and they started massive production. Inoue also formed his own firm, but it did not profit, and eventually went bankrupt. As an inventor, he never dreamed his idea could create such

a lucrative business with such an enormous world impact. And he never thought of patenting his creation until it was too late: had he done so, it could probably have made him, perhaps, US$150 million.

Despite making a zero financial gain, Inoue has benefited from the honour and fame of being recognized as the originator of karaoke, but that had to wait until a Singapore TV company uncovered the story in 1996. By then, Inoue was selling cockroach killers, unknown even in his hometown. In 1999, *Time* magazine had named him one of the most influential Asians of the century,[2] and in September 2004, he became an Ig-Nobel Prize winner,[3] receiving his honour at Harvard University in front of 1,200 distinguished guests. Inoue's citation (for the peace prize) hailed him for 'inventing Karaoke, and providing an entirely new way for people to learn to tolerate each other'. His life story has been made into a biographical film, but he continues in the cockroach killing business, while working on his one remaining ambition – training people to love their pets.

Reflecting on Inoue's experience, one can't help feeling 'it's not fair!', and regrets that it was the multinationals and not him who made massive financial gains from his invention. However, his case is not unusual and even now many inventors know little about their intellectual rights. (An English engineer once asked the author how to spell 'intellectual property'!) The case shows how IP systems are still imperfect, and that even though the concept of protecting IP was borne out of a notion of being fair to the genius (and toil) of the individual inventor, the sophisticated edifice of modern IPS can still legitimize such obvious unfairness. It seems the lesson is simple – if you are an inventor, you need to know about IP and IPP.

Another reflection is about the element of reward for intellectual work. While he has lost a lot of money, Inoue does have fame and recognition as the 'Karaoke King'. This situation is reminiscent of the reward system under the old Communist regimes, where inventors are awarded medals, honorary degrees, certificates and wide public acclaim, but where their inventions are shared by the general public. Such a system both emphasizes fame and honour, and encourages dissemination. Perhaps surprisingly (to a Western view) it was widely accepted under Communist regimes, where inventors felt honoured to share their knowledge without financial returns. But giving one's creativity to be shared by society in return for fame and honour can also happen in industrialized countries. One case in point is Charles Babbage, (a nineteenth-century English mathematics professor at the University of Cambridge) who was a forward thinker and as controversial a figure in his times as Charles

Darwin. Although he patented his dozen inventions, he also made them publicly available for development. Such a gesture would have been considered natural in a communist society, but in a capitalist world where invention rights were highly protected, Babbage was deemed either 'a fool or a philosopher'. The message here is just the same: if you are the owner of an IP – whether inventor, scientist or corporate manager – you should understand what strategies are available to you to generate value from your ownership (even if – like Babbage – you don't choose to follow them up).

9.1 Pre-commercializing evaluation

Before considering what IP strategy to adopt for commercializing an IP, IP owners need to conduct an overall assessment of the feasibility of commercializing their IP. The assessment includes the IP owner's capacity, the reasons behind the profiting activities, market orientation and timing.

9.1.1 Intellectual property owner's capacity for profiting internationally

IP owners can be broadly categorized into three types, as briefly noted in the opener of Chapter 8. One is the independent IP owner – such as the owner of the copyright on a novel, or of a patented invention or design – who is differentiated from other types of owner by having no affiliations with institutions, organizations, and firms. The second type of ownership belongs to a university and/or a consultant conducting systematic R&D activities for firms and/or organizations. The third type of IP owners are firms, whether they are MNEs with a rich stock of IP portfolios, or start up firms, possessing just one or two IP rights.

To a great extent, this simple positioning indicates how to think about strategies for commercialization. Independent owners tend to rely on their own creations to generate income professionally. However, they tend not to control the kind of complementary assets – either input production factors, such as finance, labour, machines etc. needed for the industrial application of the IP, or output factors, such as advertising and promotion – necessary to commercialize their IP assets (Teece 1986). Therefore, their consideration of IP commercialization may be most concerned with access to such assets. University or start-up firm IP owners may confront the same situation of needing to seek out complementary assets for commercialization, although there may be exceptional cases, such as large universities who have firms within their

own structure that focus specifically on the industrialization of university generated IP. When an MNE is the IP owner, it will most likely also control sufficient complementary assets that can be directly applied to industrialization.

No matter what category an IP owner is classified in, they should be aware of the advantages and disadvantages they have in seeking to commercialize their IP. At this stage they should decide whether to assign or license their IP directly, and seek potential buyers or partners accordingly, or whether to try to market their IP product or services themselves. This decision will allow them to assess further the position of their IP in the market, as well as understanding what the potential competition looks like.

9.1.2 The driving forces behind internationalizing intellectual property

In addition to the owner analysis, a commercial analysis must be conducted as to the reasons behind the intention to commercialize an IP abroad. A simple answer to address the driving force of course is profit, but a specific issue needs to be addressed, i.e. the real reason behind the profit generation. There can be a combination of reasons for commercializing IP activities. The IP could involve a unique product or process that is unavailable elsewhere, and the wider the geographic field of commercialization, the more profits can be generated. When a commercializing orientation, for example, is from the UK towards India, the reasons can be the cheaper production costs in terms of labour and raw materials, which would allow the IP owner to achieve economies of scale, and then use a low price strategy to achieve a better profitability from massive sales. Costs may also be lower, if protecting an IP in the target country represents a saving (compared with home country costs), while any tax incentives used by the local government to attract capital and technological inflows (which could be considerable in the case of a rare IP product) will also enhance profitability.

The decision to commercialize an IP abroad can be both internally or externally driven. First, commercialization may be initiated by a foreign partner – perhaps an existing partner already doing some generic product trading, or a new contact from an IB exhibition or introduced by a local chamber of commerce. Second, competition avoidance can also be a good reason for deciding to commercialize abroad: stiff competition at home for a particular IP embedded product, will drive down the price exposing the owner's profit to increased risk. Diversification abroad into a less competitive environment may give the firm better opportunities

for high profits. Third, IP owners may also consider that a particular IP product may be popular in a market where it is a good fit with local consumer preferences, incomes and consumption cultures. The intensity of technological exchanges between developed countries indicates that they appreciate how the similarities of income and customer expectations, tastes and fashions between them create similar markets that will welcome familiar-looking products.

Cultural or historical familiarity associated with geographical proximity often creates similar consumption patterns among consumers, and allow closer partners to do businesses with better understanding. A case in point is the comparative preferences for different Chinese investment locations. Historical associations have led many Japanese investors to establish links with the Manchurian regions in North East China, while the same historical reasons have made Shanghai a hotspot for European investors. Meanwhile, Hong Kong and Taiwan investors favour Canton and Fujian Provinces respectively, due to cultural similarities inherited from their proximity.

Finally, commercializing IP can also be driven by the desire of an IP owner to extend the life cycle of the IP. As IP is nation-based, if it was registered at different times in different countries, these patented technology maturity dates will differ, thus making product life cycles vary with geography. (This effect can be particularly noticeable between developed and developing countries.) IP owners can take advantage of these variations to extend their IP product's life cycle and arrange for the product to continue to generate IP income in locations where it is still protected.

9.1.3 Targeting countries

Aside from the evaluation of the owner's capacity and the motivational factors behind the move to international commercialization, another important consideration for the owner to measure is the target market for commercialization. Owners intending to commercialize their IP internationally must conduct an IP environment analysis (as delineated in Part II) to balance the pros and cons associated with their IP position. This includes assessing whether the political atmosphere is generally favourable to IP-related investment and what political risks an IP owner needs to anticipate. Is the economic development situation likely to be generally helpful to the commercialization of this particular IP? Is the IPP environment strong enough to protect the owner's IP from being infringed? Social and cultural factors can affect reactions to a particular IP, and should also be assessed. Once the advantages and disadvantages

have been spelled out, an IP owner will be able to work out how to take advantage of positive factors and avoid the role that disadvantageous factors may play in their commercialization plans.

9.1.4 Timing

The timing of commercializing IP refers to when the IP commercialization activity in a particular country should best take place. The pre-condition to deciding the timing is that it must be delayed until adequate IPP is in place: without it, the IP is unprotected, legitimizing IP violations. This includes both IP that needs to be registered for protection (patents, trademarks and industrial designs etc), and IP that is automatically protected, such as copyrights and trade secrets. Once registration takes place, the start of IP commercialization in a particular country may have to be decided with reference to competitors. In other words, IP owners need to balance the pros and cons of commercializing an IP as a first mover, or just as a follower.

Investing in a foreign country as market leader or a follower has both advantages and disadvantages. A market leader has a unique product, and can be the first to capture consumer demand. Sales volumes can be established based on low prices if demand is high, yielding scale economies. Market leaders will be able to benefit from their longer presence in the market than followers, and this cost advantage would discourage consumers from easily switching to substitutes. Nonetheless, a market pioneer bears more costs than a follower in terms of advertising to create awareness of their product, and this is particularly the case if consumers are unfamiliar with the style of the product or services. Followers are more interested in exploiting the potential of adding a substitute to the market. Obviously, both positions have their pros and cons: the key is to balance the costs and benefits against the IP product or services before a decision is made. In other words, when a firm is financially tight and is willing to be a distant competitor of the big players, it may be a sensible decision to act as a follower. However, if a company is a multinational with strong financial hold and a big player in the world market, it may consider a 'going first' IP strategy.

9.2 Internationalizing intellectual property – Costs, profits, risks and control

As well as the factors already discussed, the scale of commercializing IP – that is, the level of investment involved – needs careful consideration. It could be small scale, a one-off assignment involving little

risk, control and costs and yielding quick benefits from the IP, or it could be much larger, involving higher levels of cost, profit, risk and control for the investor. There have been many studies on internationalizing strategy (e.g. Agarwal and Ramaswami 1992; Anderson and Gatignon 1986; Brouthers 2002; Buckley and Casson 1976; Chen and Hu 2002; Filatotchev et al. 2007; Hill, Hwang and Kim 1990; Madhok 1997; Mani, Antia and Rindfleisch 2007; Papyrina 2007), although studies linking these strategies and IP have been infrequent, and mostly reflect a common view: that IPP strength impacts on internationalizing decisions – the stronger the IPP in a country, the higher the scale of internationalization involved (An and Puttitanum 2007; Chung 2001; Luo 2001). These studies tend to treat IP as a macro factor in examining its causal relation with internationalization, rather than considering IP at the product/service level.

By contrast, this Part focuses on discussing these strategies with relation to IP products and services at a range of scales, from small-scale trading, to medium-scale licensing, franchising and JVs to large-scale mergers and acquisitions. The focus is on the considerations of the advantages and disadvantages in terms of costs, profits, risks and control of commercializing IP products/services that can allow decisions to be made about appropriate strategies for foreign market expansion.

9.2.1 International intellectual property trade

The international trading of IP can be divided into two types. One is IP sale (assignment) itself to a potential buyer in a foreign country. When this occurs, it is very similar to internationally trading tangible assets: the buyer and the seller reach an agreement to transfer the ownership of the IP at a fixed price. This usually happens where owners of a particular right (such as individual inventors, university research centres, etc) have insufficient complementary assets to support the international commercialization, and instead, assign the right to make a quick and definite profit. This may also occur where corporate owners possess IP that is not in line with their corporate vision and an international buyer may make a good industrial use of the creation. The other type of international IP trading is to trade in another country or countries products or services that are imbedded with IP. This is different from straightforward international product trading, because it does not include any international transfer of IP ownership. Instead, the seller (perhaps a licensee) is authorized to promote the products imbedded with IP in the designated country.

These two types of international IP trading have their advantages and disadvantages due to the different nature of the transactions: we focus on the costs, profits, risks and control involved to identify their similarities and differences. In the case of IP assignments, as with internationally trading a tangible asset, once the deal is reached, the original IP owner has no further costs, risks or control, as they all shift to the IP purchaser. In exchange, the original owner benefits from the sale of the IP, in the form of profit.

As for internationally trading an IP-related product, due to concentrated production at home, the owner bears low costs and low risks of operating internationally. This would allow the owner to achieve economies of scope by selling the IP-related products in different parts of the world. The accumulation of international sales enhances the customer base and marketing network for the products, thereby benefiting the IP owner. However, this low-scale international IP commercialization has its disadvantages. Low control is the first issue. Firms owning an IP usually use a local agency in a foreign country to deal with sales, which can involve the local agency acting in its own interests. This cannot happen when a long established and experienced agency plays the role of multiple suppliers within the same industry. Under this circumstance, it may be to its maximum benefit to promote one particular product more vigorously than any other brands. The IP product owner perhaps far away, may have neither knowledge nor control over the distribution process. Competition may also be generated if an IP product is popular in a foreign market. Local companies see the product's market potential and may introduce cheaper imitations and substitutes due to being able to take advantage of local materials, cheaper labour, and also being conversant with local distribution networks.

Transport can also involve higher cost for the exporting IP owner than for local competitors. For example, both Pepsi and Coca-Cola tend to save transportation costs by exporting their syrup to destination countries and organizing the preparation of the finished products in foreign countries. Finally, IP owners also need to take account of the tariff issues of the export destination. Importing nations tend to use a variety of policy instruments to either encourage or restrict the imports of certain products for their own national interests. An IP owner must investigate whether their IP product falls within the range of restricted products in the targeted foreign market for trading. If so, they may opt for other internationalizing strategies that are discussed below as alternatives for IP profitability.

9.2.2 Intellectual property turnkey project

A turnkey project is a contractual operation between an IP-holding company and a foreign host country government or company to set up an exploration plant, such as a mining site and/or an oil refinery. Under a contractual deal like this, the IP holder uses their relevant technology and know-how to complete the project and hand over the operation to the host when it is ready to operate. The application of this commercialization method is associated with government policy instruments. In other words, nations tend to have restrictive policy on foreign investors' involvement on certain industries and sectors for political and economic reasons, such as protecting local companies, securing their defence and high technology industries and protecting national sovereignty. Given their importance and size, oil exploration and refinery have become protected fields for many nations. However, for operating large projects like oil exploration effectively, foreign technologies provide developing nations with essential support. Therefore, a turnkey project has become a popular choice.

There are both advantages and disadvantages to being involved in such a project. The IP holders do not bear any of the costs of the project – all these are borne by the host nation. They make their profits by using their know-how and patented technologies to set the project up. Despite the low risks and profit advantages for IP owners, it appears that this commercialization method also possesses four potential problems for either side. First, due to the large size of such projects, diverse interests on both sides may lengthen the complex process of a deal negotiation. Second, the supplier's level of commitment to a project that will serve the local host can be questioned, i.e. as the project will be handed over to the host country eventually, the know-how supplier, who has no real long-term interest, may not be fully committed, which can adversely impact the success of the project.

Third, IP owners are concerned about how to guard against the possibility of infringement, either by their partner or by third parties. Separate IP contracts (more specifically discussed in the next chapter) should be signed for the provision of know-how IP and of the physical plant or refinery, etc. Finally, as with trading an IP product, there is the potential for competition to be created, as during such projects, the host will obviously be learning the arts of operating such a plant, and generally strengthening itself as a player in the particular technology field. Saudi Arabia and Indonesia are good practitioners in the oil refinery sector, having learned much from Western companies under turnkey projects and become strong competitors in the world. This creates a challenging

atmosphere for both sides, as competition is the stimulus for quality and advancement. Under the new competitive environment, strong players strive for better performance and more advanced technologies while new players with the example of market leaders to follow, are motivated to improve their performance within existing conditions.

9.2.3 Intellectual property licensing and franchising

Licensing and franchising IP are discussed under the same heading in order to compare and contrast these two commercializing methods. Licensing IP allows a licensee the authority to exploit the right, that is, make, use, offer to sell, sell or import the licensed IP product directly or products obtained under the IP process. Suppose company A in Britain possesses a product with a new patent imbedded and the commercialization of the product has been very successful in Europe and the US. Encouraged by its success, Company A now plans to introduce the product to India and exhibits the product in a trade fair. Company B, in India, believes the product could generate a lucrative profit. After a few rounds of negotiations, the two companies sign a licensing contract, with the British company A as licensor and the Indian company B as licensee.

Franchising is similar, but authorizes a franchisee to use the IP rights to run a business where the franchiser's rules must apply. For example, if McDonald's franchises its brand to a franchisee in Argentina, despite the authorization to provide local products for use under the McDonald's mark, the franchisee must follow practice standards as stipulated by McDonald's. Thus, while the food provided can be adapted to take into account local cultural preferences, McDonald's will stipulate the way the outlet is managed and the quality control and services standards that must be followed.

This theoretical explanation may leave the differences between these two commercializing methods still obscure, and so some more specific comparison and contrasts follow. Table 9.1 provides the author's appraisal of the major differences between licensing and franchising (Comparators 1–7) in relation to IP. First, as far as business practice is concerned, licensing and franchising tend to have different focus. Licensing is more focused on manufacturing, with licensees authorized to use patents and know how to manufacture an IP protected product. Franchising is more commonly practiced in the service sector, to authorize the use of marks and/or managerial skills. Second, licensing and franchising differ as to the extent of using of the owner's marks. Licensing contracts tend to allow production to take place without using the licensor's mark, and consequentially, quality is less of concern for the

Table 9.1 Compare and contrast licensing and franchising intellectual property

Comparator	**Licensing**	**Franchising**
Differences		
1. Usual business and IP	Manufacturing; patents and know-how	Services; marks
2. Product	Usually have a different mark	The same mark
3. Management control	Limited	High
4. Operational involvement	Low	High
5. Expansion	Can be restricted; Can be slow	Low restriction; can be quick
6. Duration	Can be short	May be indefinite
7. Quality	Depends	Crucial
Similarities		
8. Costs	Low for IP owners	Low for IP owners
9. Profits	Depends on royalties	Depends on franchising fee
10. Risks	IPP	IPP
11. Political restrictions	Low	Low
12. Competition creation	Very likely	Very likely

Source: Created by the author.

licensor. But it does concern the franchiser, because under franchising agreements, the franchisee is usually required to use the owner's mark, and therefore the quality of the services provided by the franchisee has a direct bearing on the reputation of the franchiser.

Third, the extent of management control varies. The licensor's control tends to be limited, as they are primarily interested in the royalty payments. It is the licensee's responsibility to control the company and to make profits by succeeding in promoting the product and generating a good return. The franchiser will operate under stricter owner control, again to defend the reputation of the owner's mark. Fourth, there are similarly differing levels of operational involvement on the part of the owner. Involvement will tend to be limited in licensing, although the licensor may be involved with technical support at the initial stage of operations. However, owner involvement will continue in franchising situations, due to the ongoing need to monitor the operation for quality purposes, and to check it abides by the franchiser's corporate standards.

Fifth, business expansion can be restricted in different ways for the two activities. The expansion of a licensor or a licensee can be restricted

depending on the type of licensing agreement between them (detailed discussions in the next chapter). The agreement may stipulate that the licensor is not allowed to market its product directly in the licensee's market. In comparison, franchising activities have less restriction on both parties, i.e. franchisers have freedom to offer as many franchising licences as they please (subject to no restrictions from the government) in a country. In short, franchising allows for a quicker expansion than licensing. Sixth, the length of agreements can differ. The duration of a licensing agreement can be short, and will in any event be restricted to the length of the relevant patent. However, a franchising deal may last indefinitely, and will probably be defined by how long the franchisee can keep the franchising chain going. At least in theory, such deals could last indefinitely.

Finally, quality matters to a different extent in these two commercialization methods. As far as the licensor is concerned, the quality control must be tight if the licensee is supplying IP products to the licensor, as they have to consider the marketability of the products at home. However, quality control may become less of a concern where the licensor is detached from the product sales arena. As for franchising, quality control is essential to maintain the good reputation of the IP owner and has direct bearing on the service sales. A business traveller might stay at the Hilton Hotel in Singapore, enjoy its services and leave the hotel with a good impression. On another trip to a European city, he remembers his past experience, and decides to stay at the same chain again. Unfortunately, this time, the service is disappointing, leaving the traveller unsure whether to patronize the chain on a future trip. Even though quality control is exerted in every franchising deal, maintaining quality standards can be a difficult challenge. Moreover, the process of adapting a product or service to suit local needs may endanger standards, making the product or service more suitable for local people, but not necessarily for visitors.

Despite the above differences, licensing and franchising do share some commonalities as comparators 8–12 illustrate. The costs can be low for both franchisers and licensors, as they authorize the use of their IP rights and little financial input is involved. The profits depend on the agreements – about royalties or franchising fees – between the two parties. Licensors and franchisers also share similar responsibilities as to risk – to protect their IP from being violated by their partners or third parties. This is particularly the case with regard to protecting know-how and managerial skills, as they are not restricted by the duration of the IPP. Necessary actions need to be taken, for example to sign a separate

and specific contract stipulating how to handle any violations, including penalty stipulations.

Another similarity between these two methods concerns how political restrictions are handled. As mentioned earlier, nations tend to use political instruments to encourage or discourage foreign business activities, particularly in technologically sensitive industries. Licensing and franchising may allow IP owners to bypass such hindrances, because the major operational actor is a local company. Avoiding political restrictions lessens the owners' exposure to political risks. However, for both strategies, earning repatriation to home countries can be restricted if government limits the amounts that can be sent abroad. Nations tend to encourage local earnings to be spent on boosting the local economy. This is obviously an issue that potential licensors or franchisers need to take into account at the planning stage.

Furthermore, both licensing and franchising are very likely to assist local competition. Licensees tend to strengthen their skills by using the licensor's IP, putting them in a better position to introduce an attractive product to the market, which could also attract competitors to introduce imitative substitutes into the same market. In addition, a licensee, supported by their experience of the market, could become a rival to the licensor and compete with them in the international market after the licensing deal expires. Likewise, franchising would also attract interested parties to establish more franchising chains, increasing the number of competitors and the intensity of competition.

9.2.4 Intellectual property joint venture

Joint ventures (JV) are another form of commercializing activity where value can be generated from IP. It involves a partnership between two (or more) independent parties to form a third independent company. When the partners are from different countries, the partnership is an international JV. Such ventures can be broadly divided into two types. An equity JV is a common type of practice – the partners sign a JV contract and decide their costs, profits, losses and risks on the basis of their equity share. In other words, if partner A's equity is 40 per cent, it would bear less costs, losses and risks, but enjoy less profits than its counterpart(s). In comparison, a contractual JV relies heavily on the contract stipulations as to how costs, losses, risks and profits are to be divided. It is important to clarify at this stage that strategic alliances should be differentiated from JVs. Strategic alliances tend to be partnerships between two independent parties focusing on a particular project, rather than forming a new

venture (although venture partnerships are also an option). In addition, strategic alliances tend to take place between two (potential) competitors so that, for example, their technological abilities can be strengthened towards the success of a joint project. On the other hand, JV partnerships tend to have much broader partner candidate selection, and partners may have entirely different areas of expertise so that their collaboration can be complementary. For example, one partner may have high technology strengths, while the other has valuable local distribution networks, and good knowledge of consumers.

There are two advantages to adopting the JV strategy. The first is direct knowledge dissemination due to the interactions between partners. The marriage obliges partners on both sides to contribute their expertise for the mutual benefits of the relationship. For example, one partner may have IP as part of the equity investment and knowledge can be disseminated to the other partner in exchange for local expertise, such as knowledge and experience about local culture, suppliers, consumers, and distribution channels. Clearly, this can be particularly beneficial when the JV is targeting the local market. Such close liaison allows partners to work on an IP industrial application through which the improvement of existing technologies may take place. Second, if knowledge dissemination on both sides involves sharing 'the good times', bearing costs and risks together, the 'downsides' are also halved. A JV is certainly a beneficial choice when the partners feel the vulnerability of potential exposure to risk in a foreign country.

However, JV partners need to err on the side of caution and be aware of the disadvantages and potential risks associated with this form of partnership. First is the control of their IP, the ownership of which can become blurred in such close liaisons. Although it is a JV, the IP owners will have to make it clear that the ownership of the IP will remain with them. It is, therefore, essential to sign an IP agreement in addition to the JV partnership contract, which stipulates the scope of the IP and any payment for authorized use agreed by the partners. The scope is an important stipulation, as clarity here will allow the JV partners to understand what is and is not to be shared. Second, like any other JV across borders, culture is an inevitable consideration. This means that language, religion, social structure and education factors impacting on cross-cultural understanding must be considered. The complexity of IP may exacerbate the cross-culture issue if the two IP environments differ, particularly when there is a disparity of IP development between the two partners' countries, and especially if the notion of sharing has local priority over that of private IP rights.

Finally, as a JV partner with IP ownership, one potential drawback can be the restrictions on the wider dissemination of IP, and this needs to be taken into account before the partnership is set up. This is because, despite the JV agreement, a separate licensing agreement needs to be signed between the owner and the JV company. Would the IP owner want to have only that one licensee in that particular country? If not, will the other partner allow the owner to license the IP out to any other potential licensees? Answering questions like these are prerequisite to the negotiation discussion as to what type of JV will be formed, and will determine what type of licensing agreement needs to be signed (see next chapter).

9.2.5 Intellectual property operations with whole ownership abroad

Wholly owned enterprise (WOE) operations are considered the largest scale for IP commercialization, and tend to have three types of presence abroad. A WOE operation involves establishing a (foreign) subsidiary whose operations are entirely controlled by the (home) headquarters. The three types of operations – greenfield developments, mergers, and acquisitions – need to be clarified first before discussions take place about the pros and cons of such 100 per cent owned IP activities. International greenfield developments involve establishing a brand new subsidiary abroad, in other words, the headquarters will start from recruiting a new subsidiary manager, then, recruitment of new employees will take place, location will be selected, and tangible assets will be purchased before official operations commence. In contrast, mergers and acquisitions both involve existing firms that originally belong to a different company. Mergers are formed when two or more firms join forces into one for the purpose of strengthening their power in a competitive market. This type of WOE tends to change their corporate names and marks to suit the requirements of the new enterprises. Such a marriage is archetype pooling of strengths, and can be very beneficial for both sides when both own IP assets. The joint efforts would allow them to become financially stronger to commercialize their IP products and services. The AstraZeneca merger between Astra, Sweden and ICI, UK in April 1999 is a case in point.[4] It generated a market capitalization of US$70 billion and a portfolio of tens of thousands of patents. The merger was IP-driven because both firms were facing the potential loss of market due to expiry patents, and mounting costs of R&D and of managing IP. It has pooled IP strength together in addition to cost reduction and created the third largest pharmaceutical company in the world.

Acquisitions are more common than mergers. This is because it is not easy to find two companies with identical strengths and so many interests are involved with the two parties; hence complicating the merging process. On the other hand, acquisitions allow strong companies to acquire weak companies for the purpose of expansion. In the 1990s, for example, the Chinese government had a policy of supporting 1,000 elite state-owned enterprises and allow others to seek their own profits and losses. Some of these companies, driven by competition, became successful, but many were on the verge of bankruptcy and were available for acquisitions. This created opportunities for local and foreign companies to purchase these companies and start a new business. Another example concerns Texas Instrument.[5] It acquired a firm called AMATI for US$450 million, even though AMATI had lost over US$30 million the year before the acquisition. Many would not understand the logic of TI purchasing a shrinking company. However, TI managers knew that the key patents of digital subscription lines owned by AMATI could potentially generate a handsome amount of royalties. This was proven an accurate prediction because, with US$450 million spent on the acquisition, TI earned billions from the AMATI patent portfolio.

Regardless of the forms of the whole ownership, establishing a 100 per cent ownership subsidiary has both advantages and disadvantages for handling IP. First, unlike in the JV or licensing/franchising situations, profits do not have to be shared with any partners and the foreign subsidiary is free to collect all the benefits derived from the IP operations. When an IP product proves popular, WOEs have the freedom to establish economies of scale appropriate to the particular country where they are operating. More specifically, unlike a licensing, franchising or JV deal, where a foreign partner's freedom of manoeuvre may be restricted by agreements, a WOE is independent from such limitations, and can expand to optimize low-cost production and thus generate profits for the company.

Second, tight control of the operational process also allows the subsidiary to protect its IP ownership fully. WOEs can avoid the complicated negotiation processes to guarantee IPP associated with working with a partner, and this is particularly relevant in helping the company avoid its IP being leaked to outsiders. Third, the intensive learning allows managers to accumulate local knowledge and transfer it back to home country headquarters. Like other scales of operations, this involves the learning of the host country's IP environment, including its political economy, social/cultural attitudes and business practices as far as they relate to IP. But this learning process can be even more intensive for WOE managers

because of their relative independence from local companies. Nonetheless, the learning allows these managers to accumulate local knowledge, some of which may bring benefits to the headquarters when they are re-transferred back home. The obvious disadvantage of this type of IP operation is the bearing of 100 per cent of the costs and risks. Companies choosing this strategy for IP expansion need to conduct a thorough IP environment analysis about the risk factors they need to take into account. They may have great gains from their IP productions, but they will have to spend massively first and they will also have to bear all the risks on their own.

9.3 Selecting an appropriate intellectual property strategy

The discussions above allow a company to analyse all the relevant factors associated with internationally commercializing an IP, but a holistic approach must be adopted to select an appropriate strategy. In other words, a company must take into account all the elements that may impact on its commercialization and balance the pros and cons before a decision is made as to what strategy to adopt to maximize the benefits for the company from IP assets. As well as considering the strengths and weaknesses of each strategy, the company's own driving forces to expand abroad and the target country's condition for the commercialization and timing for such an expansion, the holistic approach should particularly pay attention to the IP competence of the company. Two points should be stressed here.

First, in practice, companies tend to start from a small scale and increase their scale of foreign expansion when they gradually build up their corporate presence in a country and become more familiar with the market. This conservative approach puts the companies into a 'wait-and-see' position, that is, when the future is promising, they move ahead; otherwise, they can back away without a complete defeat. Such a gradual penetration also avoids companies from being fully exposed to local competitors with a full-scale expansion, and is the more usual procedure. However, large multinationals may be able to countenance going straight into a foreign market in the form of a 100 per cent subsidiary without worrying about the costs, risks and competition effect on them because they have the financial backup and core emphasis on IPP.

Second (and relevant to the holistic approach) is the matter of taking into account IP competence. For example, if a company has a trade secret or know-how that forms the core of its commercial profitability, it may well adopt a large-scale expansion from the beginning in order to

keep its trade secret or know-how to itself. This would save the company from troubling itself to negotiate a trade secret or know-how contract that may be protected insufficiently in the host country. However, the company still needs to consider the possibility of internal protection of such valuable assets from employees, and IP management will need to consider employer–employee contracts designed specifically to prevent IP espionage (see detail in Chapter 7). The same considerations also apply to patent protection if a patent is newly granted when the owner would prefer to commercialize the technology with its own complementary assets, allowing the firm to harvest all the profits from the popular IP product. However, this consideration appears to be more flexible than know-how protection because the company may well benefit from licensing the corporate assets to other companies. Therefore, apart from having a 100 per cent subsidiary, the company may also simultaneously consider licensing the patent-protected technology to different independent companies in the country to achieve scale production and marketing. This can benefit the company when the host country is geographically large and costs low.

However, when an IP is in its latter stages of protection, adopting licensing or JV structures may generate quicker profits for the owner. Non-exclusive licensing would allow the owner to benefit from collecting royalties from different licensees and guarantee quick income from commercializing the IP product instead of having to deal with commercializing matters itself. The JV option would allow the owner to take advantage of the local partner's distribution and marketing expertise to harvest the revenue more quickly than promoting the products itself.

When a company's IP involves managerial know-how or trademark protection rather than technological expertise, no one choice is obviously any better than any other, as franchising, licensing, JVs or WOEs could all bring benefits to the company. The choice would depend on assessing the extent of local IPP, and other pre-commercializing considerations, together with the pros and cons of each strategy. However, where such know-how relates to a company's continuing high-technology research, it may be better off to choose the WOE option, in order to keep its R&D efforts in-house.

Where a company's IP assets are limited, it may profit either through the JV or the WOE form. All companies have IP assets, but are differentiated by the different proportions of such assets. When such companies expand abroad, they may be seeking to benefit from low-cost production and high profit levels from populous local markets. If they know the market well, it would be beneficial for the company to go for the

WOE option, and retain all the profits in-house. However, given that local learning, local sourcing and local promotion can be more efficiently achieved with a local partner involved, establishing such a partnership may be the more attractive option, the more so if the partners have had an established history of collaborating over a number of years.

To summarize, there is no simple approach to deciding the best IP commercial expansion strategy, as all have their pros and cons: the best one is the strategy that most suits the company (see summary in Table 9.2). There is a range of alternatives, but company-by-company case analysis needs to take place taking both the atomic and holistic approaches into account before a decision is made as to the best. In other words, companies need to assess their capacity, their driving forces (IP-driven and/or from other intentions), the IP environments, timing, and costs, profits, risks and control of different IP strategy choices independently and holistically to optimize their internationalization solutions.

Closer: YouTube – Bubble up with intellectual property[6]

This case focuses on the quick rise, potential fall, and new look of YouTube and how IP is so closely linked to the three stages of the company's short history. The San Mateo-based firm, originated by Chad Hurley, Steve Chen and Jawed Karim, was established in February 2005 and offers a do-it-yourself site for people to upload their original videos for online watching and sharing. A unique business entity, the 67-employee company has gained international standing within just 19 months, and accounts for 60 per cent of online video watching and nearly 30 per cent of the US multimedia market. This case study discusses how YouTube rose so quickly and what IP elements have been significant. It then focuses on the associated IP problems, which are in danger of turning the company into a 'bubble', and finally looks at the effects of its timely acquisition by Google, why the acquisition was so expensive and how IP was involved.

YouTube attracts attention all the time from different directions, including from venture capitalists, media, etc. The initiative started with nearly US$12 million of venture support from Sequoia Capital. Its fame spread largely by word of mouth at first: but as the general public found that 'broadcasting yourself' was so user-friendly, it became the best publicity a company could have. This publicity was taken to a new peak when the National Broadcasting Company (NBC) asked YouTube to remove some NBC copyrighted materials. But NBC also realized YouTube's wide public appeal represented an opportunity, and the two companies went

Table 9.2 The pros and cons of internationally commercializing intellectual property

Entry mode	Pros	Cons
International IP Trade	1. Low costs 2. Scale economy 3. Customer base, market and network 4. Low risk business	1. Local competition 2. Transportation costs 3. Tariffs 4. Low control 5. IP protection
IP Turnkey project	1. Profit on know-how 2. Low risk business	1. Limited long term commitment 2. Know-how protection 3. Potential competition 4. Complex and lengthy negotiation
IP Licensing	1. No costs and risks of investment 2. Avoid government restrictions 3. IP dissemination to other companies	1. Low control 2. IPP 3. Create a competitor 4. Profit repatriation
IP Franchising	1. No costs and risks of investments 2. Avoid government restrictions 3. Know-how dissemination 4. Quick international expansion	1. Quality control on product and services 2. Know-how protection 3. Profits can be difficult to take out of a country
IP Joint Venture	1. Local knowledge and experience 2. Cost and risk sharing 3. Market access 4. IP dissemination	1. IPP 2. Cross culture conflicts 3. Limitation of location economy
Wholly owned IP enterprise	1. IPP 2. Tight control 3. Learning and scale economy	1. All costs 2. All risks

Source: Created by the author.

from loathing to loving, and into partnership to promote NBC videos. Within a very short time, YouTube had secured partnerships and content supply lines from 29 companies, including the BBC, Universal Music Group, Sony Music Group, the Columbia Broadcasting System and National Basketball Association. Even the White House used YouTube to publicize its anti-drug policies and activities.

The firm's success is attributed to its successful handling of its IP, although it is measured in terms of technological advancement and brand development, rather than in finance. The sophisticated technology allows the user friendly uploading, downloading and online watching of personally submitted videos. Anecdote estimates that YouTube contains the equivalent of 60 million videos, of which 60 per cent are licensable, and could generate just over a US$3 billion dollar revenue a year for the company. This in turn increases the reputation of the firm. Moreover, the user submissions of personal videos automatically grant YouTube rights as follows:

> worldwide, non-exclusive, royalty-free, sublicenseable and transferable license to use, reproduce, distribute, prepare derivative works of, display, and perform the User Submissions in connection with the YouTube Website (and its successor's) business, including without limitation for promoting and redistributing part or all of the YouTube Website (and derivative works thereof) in any media formats and through any media channels.

Thus uploaders authorise licensing rights to YouTube, but ownership remains with the original owner, and the authorization brings the uploaders fame, rather than financial gains.

YouTube's brand reputation has been further advanced by the deals the company has signed up with many giant media and entertainment companies. These partnerships have also added these companies' reputations to YouTube's brand reputation, allowing them to mutually co-promote their businesses with the authorization of these giants to allow YouTube to advertise the multinationals' businesses under copyright.

However, IP is also a serious problem that has, and will continue to threaten the firm. First, users are often involved in copyright infringements, by submitting works for online sharing when they are actually owned by somebody else. Although the 'Terms of use' of YouTube stipulates clearly that users will not 'submit material that is copyrighted, protected by trade secret . . .' without the consent of the right owners, users still post copyrighted materials online deliberately or

inadvertently. YouTube say they will not 'be liable for user submissions'. The company has expanded its IP restrictions to operate under US and foreign laws and international conventions, as well as having its own designated copyright agent to deal with infringement notifications – notify infringers and remove copyright materials from the site. But this enforcement approach, which relies on infringement 'victims' flagging the problem up to the company is not effective enough to prevent some users from deliberately breaching others' copyrights. There was only one formal litigation against YouTube before the company was acquired by Google, when Robert Tur – a journalist filed the case in the summer 2006 against YouTube for hosting copyrighted materials. Tur subsequently dropped the case and joined an action group of individuals and organizations[7] against the now Google-owned YouTube. YouTube is potentially a defendant in many such infringement cases: for example, the MTV owner Viacom threatened to sue Google-owned YouTube in March 2007 for US$1 billion alleging the loading of 160,000 unauthorized programmes into YouTube.

Second, there are considerable technological costs associated with YouTube's bandwidth. *Forbes* estimates that YouTube, in streaming 40 million videos daily could be using 200 terabytes a day, resulting in a monthly bill of US$1 million. The company has always carried a strong notion of developing a social community, with earning not being their main priority. However, a firm's sustainability and growth need financial support, and the company had no earnings until March 2006, when they started selling advertising space. With the growing number of visitors – the number of visits has reached nearly 20 million a month – and astral costs, it will be necessary for YouTube to establish a business model to guide its further development.

Google's acquisition of YouTube looked like a heaven-made match for the two firms, and has created a new phase to allow YouTube to benefit in financial terms from its under-exploited IP assets. While the acquisition has helped make YouTube a household name, many people have their doubts: UMG's CEO Doug Morris has dubbed YouTube a 'copyright infringer' that would be 'sued to oblivion', saying that 'only a moron would buy YouTube'. However, looking carefully, it would not be difficult to notice the strengths of the match: the two companies are so identical in experience (as startups with no business models) and their liaison will mutually benefit both companies. Google has the reputation of profiting from advertising without sacrificing user interests, which matches YouTube's community orientation. They will also be able to collaborate on video sales and earning from licensing, areas both companies have

been exploring. Google can also use its rich experience and strong IP team to help deal with YouTube's copyright controversies with individuals and companies. Thus, with their joint strengths, they should be able to build on their already established brand reputation and create a stronger and more profitable firm.

This $1.65 billion deal is a mix of IP potential and IP dread for both, and people may wonder whether this is a match made in heaven and why it is so expensive. The IP potential for revenue is in the promising licensing deals, the YouTube reputation, the managerial and technical skills in dealing with user submission, the brand itself and licensing-in deals with large companies. The costs are in the potential litigation and already accumulated bandwidth costs discussed earlier. Using a new business model, Google and YouTube have joined forces and are entering a new phase of balancing community interests and corporate benefits: Google possesses the brand, reputation and huge user pool and matches with YouTube, the giant supplier of video contents.

Intellectual property facts: High impact patents and market leadership

High impact patents refers to patents that are widely or frequently cited in scientific papers and patent applications. The number of citations demonstrates the value and importance of a patent, and can be used as a reference for mergers and acquisitions, valuation of R&D firms and their performance, and strategic technology planning (Lin, Chen and Wu 2007). It is important to design a patent citation analysis technique that can successfully identify 'hot patents' – those patents which are impacting strongly on contemporary technology progress (Thomas and Breitzman 2006).

The number of high impact patents is positively associated with market leadership. The mobile communications industry is a case in point. In a recent study, a patent was defined as having high impact if its number of citations exceeded one standard deviation above the mean of 23 citations (He, Lim and Wong 2006). In total, there were 1,026 high impact patents owned by the four giant mobile phone firms (Motorola, Ericsson, Nokia and Samsung). Of these, Motorola accounted for 58 per cent during the 1976–2002 period, although its dominance diminished after the mid-1990s.

Figure 9.1 shows the distribution and changes of high impact patents, from which we can make two interpretations. First, Motorola leads the high impact patents in both time length and number of citations as

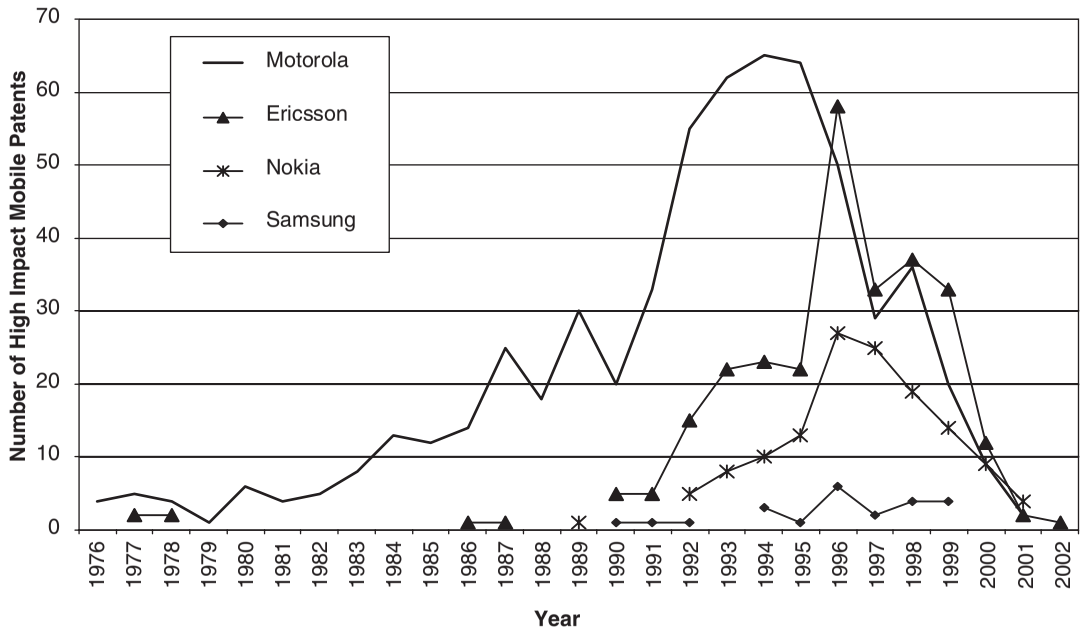

Figure 9.1 Relationship between high impact patents and market leadership
Source: Created by the author based on the information from He, Lim and Wong (2006).

the market leader, particularly in early years. Interestingly, as He et al. pointed out, Motorola's high impact patents are most cited by its market followers: in effect, it was doing R&D for the whole industry. It may also imply that the company's not citing its followers' work as vigorously contributed to its fall. It indicates that the followers – Ericsson and Nokia – conduct more bibliometric analysis (discussed in Chapter 7) than the market leader and enjoy knowledge spillovers from Motorola. This also shows the need for Motorola to be outward looking so as to follow up the technological progress by its competitors. For example, Motorola was the market leader for essential early GSM patents (Bekkers, Duysters and Verspagen 2002), but later fell behind its followers in technology advancement, which contributed to its decline from market leadership in later years.

Second, the gap between the three main players in terms of high impact patents is shown as narrowing, and also citation numbers are fluctuating. These moves indicate that, as Motorola has lost its leadership position, competition between the top three has become more intense and their technological distance has narrowed. From 2000 onwards, there is no clear dominance on the part of any one of them in terms of high impact patents.

Summary

This chapter focuses on the available internationalizing strategies that owners can adopt to commercialize their IP. As a first step, it is essential to evaluate the owner's capacity, the driving forces to commercialize, the target country analysis and identify the optimum timing to enter a particular country. The strategies of choice can be from small-scale direct exporting, or direct assignment to obtain quick benefit, through turnkey projects, licensing, franchising, and JV to large-scale investments into a country, i.e. 100 per cent subsidiary. There is no generalized answer as to which internationalizing strategy is 'best'; instead a case-by-case analysis must be conducted to assess the pros and cons in relation to costs, profits, risks and control. In addition to these four factors, owners also need to consider the implications of their IP rights themselves, as their differences in duration and the extent of need for protection can have a direct effect on what is the best strategy decision.

Two relevant cases and the IP facts sections further stress the importance of strategically commercializing IP. The opener reveals how his lack of awareness of IP means the Karaoke King gained no financial benefit from his invention, despite its world-wide popularity. The closer

discusses how its IP assets have allowed YouTube to become a billion dollar company. The IP facts section demonstrates the strong association between high impact patents and market leadership in the mobile phone industry. Here, Motorola dominated the market when it had more high impact patents than other main players. However, from the late 1990s, the number of its high impact patents decreases, as does its market leadership, perhaps due to its lack of energy in advancing its own technologies.

Notes

1. This case was written by the author based on the following information: (1) Anon. (2003) *Japanese Inventor Loses Patent to Songbox*, at www.theage.com.au/articles/200301/13/1041990224535.html, on 24 January 2007; (2) Anon. (2004) *Harvard Gazette Archives*, at www.news.harvard.edu/gazette/2004/10.07-ignobel.html), on 1 February 2007; (3) Anon. (2007) *Japan News Corner: Karaoke: Somebody really Invented it*, at www.japanconer.com/news/news_detail.asp?story=1528, on 26 January 2007; (4) Babbage, C. (1989) *The Economy of Machinery and Manufactures*, London: Longmans; (5) Coldwell, R.A. (1998) Did Chuck Babbage Predict Software Piracy, *Association for Computing Machinery*, *Communications of the ACM*, 41(8): 25–7; (6) McNeil, D. (2006) Karaoke Inventor Plays It Again, *Independent*, 27 May; (7) Iyer, P. (1999) Daisuke Inoue, the *Time* 23-30 August, 154(7,8).
2. Alongside Ghandi, Mao Zedong, Ho Chi Minh, Sun Yat-sen, Lee Kuan Yew, Deng Xiaoping, and the Dalai Lama.
3. The Ig Nobel award started in 1991, and is awarded by the Annals of Improbable Research at Harvard University each October for ten categories of genuine achievements, including literature, physics, chemistry, medicine, physiology, engineering, biology, peace, public health, and interdisciplinary research. In the Harvard Gazettes phrase, 'They offer a humor counterpoint to the actual Nobel Prizes each October'. As the award body stated: 'The Ig Nobel Prizes honor achievements that first make people laugh, and then make them think . . . celebrate the unusual, honour the imaginative – and spur people's interests . . .'. See detail at http://www.ignobel.com//.
4. (1) Anon. (1998) Zeneca and Astra Merge to Form Drug Giant, *BBC*, 9 December, at http://news.bbc.co.uk/1/hi/business/the_company_file/231213.stm, on 3 February 2007; (2) Nurton, J. (1999) Putting Together a Mega Deal, *Managing IP*, September.
5. Wild, J. (2005) *Investors Learn to Appreciate the Value of IP*, at www.buildingip-value.com/05_intro/008_011.htm, on 16 June 2006.
6. This case was written by the author based on the following information: (1) Anon. (2006) Mark Cuban: Only a 'Moron' Would Buy YouTube, at CNET news.com, on 30 September; (2) Anon. (2006) YouTube hits 100 m Videos Per Day, *BBC*, 17 July 2006, at http:// news.bbc.co.uk/2/hi/technology/5186618.

stm, on 20 December 2006; (3) Anon. (2007) Viacom will Sue YouTube for $1bn, *BBC*, at http://news.bbc.co.uk/1/hi/business/6446193.stm, on 14 March 2007; (4) Anon (2006) White House Uploads Anti-Drug Videos to YouTube, at www.cnn.com/2006Tech/internet/09/19/youtube.drug.policy.ap/index.html?section=cnn_tech, on 16 December 2006; (5) Anon. (2007) Cameraman Drops First YouTube Suit to Join Class Action, *Out-Law*, Autumn, accessed at http://www.out-law.com/default.aspx?page=8363, on 10 August 2007; (6) Frommer, D. (2006) YouTube, Whose Dime? *Forbes*, 28 April; (7) Hansell, S. (2006) YouTube's Video Poker, *The New York Times*, 30 September; (8) Hansell, S. (2006) Hollywood Tries to Get Grip on YouTube, *The New York Times*, 1 October; (9) Lashinsky, A. (2006) Turning Viral Videos into a net Brand: Interviews with Steve Chen and Chad Hurley, Co-founders, YouTube, *Fortune*, 11 May; (10) Tew, C. (2006) Analysis of the YouTube Acquisition by Google, at http://www.pvrwire.com/2006/10/10/google-youtube/, on 20 December; (11) YouTube (2006) Company Information, at www.YouTube.com/about, on 20 December; (12) YouTube (2007) Press Release: NBC (2007) YouTube Announces Strategic Partnership, at http://www.youtube.com/press_room_entry?entry=c0g5-NsDdJQ, on 30 February; (13) YouTube (2007) Terms of Use, http://www.youtube.com/t/terms, on 30 March; (14) YouTube (2007) Press Room: YouTube Fact Sheet, Media Coverage and Press Release, at http://www.youtube.com/press_room, on 30 March.

7. The individuals and organizations include author Daniel Quinn, reporter Robert Tur, the Finnish Football League, the UK Rugby Football League, the US National Music Publishers' Association, French football league and tennis association, the Premier League, and music publishing company Bourne& Co.

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10
Licensing and Contracting Intellectual Property Internationally

Contents

Focus and structure

This chapter extends previous discussions to detail the strategy of licensing IP in the IB context. First, it explains the basic categorizations of licensing activities. Second, the different types of possible relationship between licensing partners are spelled out. Third, the chapter emphasizes the importance of using negotiating skills to arrive at a successful

international IP licensing contract. Finally, it focuses on what should be included in a licensing contract to stress the fundamental importance of signing as thorough a contract as possible. The importance of a cooperative manner in implementing the contract for the mutual benefit of the contracting parties is underlined.

The chapter's cases and facts further the discussion. The opener identifies the gap between the rules and practice of compulsory licensing using Thailand as an example. The closer spells out another debatable issue – the activities of patent trolls (see later definition). The IP facts section reveals how, despite the considerable attention it gains, licensing arrangements currently offer only limited value generation.

Opener: Compulsory licensing: Easier said than done![1]

Compulsory licensing refers to non-voluntary licensing agreements without owner authorization. They tend to be imposed by governments for their own or third parties' use in the national interest, and also to aid the wider dissemination of a patented invention. Since 1995, it has been mandatory for WTO members to include compulsory licensing as part of their patent law stipulations. Thus, TRIPS members' patent laws must stipulate the conditions in which patents can be authorized for use without the owner's consent. However, putting compulsory licensing into practice is not as easy as governments might imagine. The difficulty lies in finding the best balance of interests between the licence authorizer (the government) and the compulsory licensee (who may also be the government) on one side, and the IP owner (who becomes the unwilling licensor) on the other. The example of Thailand demonstrates how compulsory licensing can be easier said than done.

In late 2006 and early 2007, the Thai government authorized three compulsory pharmaceutical licences – for *Plavix* (owner: Sanofi-Aventis and Bristol-Meyers Squibb) for heart disease, for *Kaletra* (Abbott) and for *Efavirenz* (Merck) as part of its drive against the AIDS virus. Under compulsory licensing, the cheaply produced drugs would only supply local market needs and would be distributed to the poor. For example, the compulsory licensing for Efavirenz was a five-year contract to manufacture the drug with a cost reduction of 50 per cent, equivalent to €17.6 million per year, in return for which Merck (the IP owner) was to receive a royalty of 1 per cent of the value of sales in Thailand.

A compulsory licence is usually granted on three conditions. First, the IP has never been commercialized since the grant. Nations require owners to put their patents into industrial applications, and these are

called 'work-requirements' or 'working-requirements' so that societies can benefit from the intellectual creations. Second, the working requirements tend to have a time limit. In other words, the patent must have already been granted for a period of time. Most countries stipulate, if the patent holder fails to fulfil the work requirements within three years from the date of the grant or four years from the date of application, the patent becomes liable to compulsory licensing. Third, the potential licensee has attempted to negotiate a licensing agreement with the owner on 'reasonable terms and conditions' but failed to obtain his/her agreement. (This third condition may be disregarded if a nation faces a national emergency, such as a disease pandemic or other disaster, where the use of the patent would either alleviate the situation or prevent the disaster from reoccurring.) A compulsory licence may be granted to a licensee to exploit a particular patent right if a judicial review body believes the request has fulfilled the compulsory licence requirements, after taking into account the interests of the owner and the potential licensee. Once such a licence is granted, the owner of the IP right has a non-exclusive and non-assignable deal with the licensee, and enjoys the same entitlement to receive royalties as with a voluntary licensing agreement.

The action of the Thai government caused a storm of controversy because of the conflicts of interests mainly between the Thai government, the users of the drugs and their supporters (developing country governments), and the three drug companies and their supporters (developed country governments). The Thai government argued that the purpose of the compulsory licences was to bring down the market prices and thus allow sufferers access to the drugs, and that their action was intended to contribute to social well-being in Thailand where (according to WHO estimates), 600,000 people are HIV positive. Without this move, the drugs provided by these companies are too expensive, and their price structures undermined the Thai government's commitment to effective health care for its citizens. The government estimates that compulsory licensing will save the country US$24 million annually. Non-governmental organizations, such as the Aids Access Foundation, Oxfam and Médecins Sans Frontières offer strong support for the broad principle of compulsory licences, on the grounds that such licences could benefit many people, and their use would establish the example for other countries to use compulsory licensing for social welfare.

On the other hand, this action is a bold challenge to the R&D based developed-country companies and their governments. They feel their IP security has been threatened and their R&D achievements have been undermined. Abbot Laboratories responded to the Thai action by saying

it would no longer license any new drugs for sale in Thailand. The companies also argue that they should at least be consulted before any compulsory licensing was issued: in this, Merck allege that there had been no previous voluntary licence application, and they only learned about the decision two days before it was announced.

The controversy has developed into a heated debate between the developed and developing country camps. The European Commission warned the Thai government that such actions would have repercussions in the long run for new drug development. The US demanded Thailand cancel the compulsory licences unless they could clarify their scope in using them. The Thai government and the developing country counterparts argue that issuance of compulsory licences conforms to TRIPS stipulations. The WHO endorsement at the annual meeting of the 193 member states in May 2007 appears to have temporarily halted the debate. The WHO showed its official stance on this issue, promising a commitment to the technical and policy support for using compulsory licensing to access medicines. However, this may only be a temporary 'ceasefire', as the conflicts of interests remain unaltered.

To resolve these conflicts, the author argues that some fundamental issues must be determined, although perfect solutions can never be found given the difficulties of balancing interests. First, the scope of compulsory licensing need greater clarification. Both sides use TRIPS as their argument tool: the Thai government emphasizes that TRIPS allows countries to interpret and implement the compulsory licensing stipulations in support of their national interests and to promote access to medicines; The drug companies argue that compulsory licensing should be authorized only if licensees fail to obtain consent from the owner or under extreme national emergency, and that the Thai situation could not be so described. Given that TRIPS is a broad framework that allows countries to freely stipulate the details of their own policy, both sides of the arguments appear to have some strength. However, when the compulsory licensing involves parties from different countries, which was exactly the case in Thailand, the complexity of the problem increases. Despite the WHO's stance, the implication is that the WTO needs to specify more closely what can be compulsorily licensed, when, and how.

Second, looking back, the Thailand compulsory licensing case has not only caused controversy, but has also both increased the pressure to find acceptable resolutions to such matters, and encouraged other countries (e.g. Brazil) towards the wider application of compulsory licensing. But another important matter to consider from the government's perspective is the need to attract and maintain good relationships with

business interests. At least some negotiations with the relevant companies could have taken place, which would have led to more amicable long term relationships, encouraged multinationals to continue to invest in Thailand and – hopefully – led to some compromises about drug prices and arrangements for further international cooperation.

Compulsory licensing is easier said than done, and this can be seen in both historic and contemporary contexts. In 1769, James Walt was granted a patent for his tremendous improvement of steam engine technology that led to the wide use of efficient steam power across many industries, and in fact become absolutely fundamental to the industrial revolution. However, controversies about him remain: Watt monopolized his invention and prevented others – notably William Murdoch (his employee) and Jonathan Hornblower (a rival inventor) – from further developing steam technology. It has been suggested that, had Watt's patent been compulsorily licensed, society would have benefited from efficient steam engines at least ten years earlier than it did. But while many countries have included compulsory licensing clauses in their patent laws – the author's examination of legislation in 193 countries finds that more than 90 per cent of them include the relevant stipulations – it nevertheless seems difficult to implement a compulsory licence – or, at least, the right to do so is still very much under-used. In Canada, for example, there were only 86 applications for compulsory licensing between 1935 and 1989 (of which 17 were granted and 15 rejected, the remainder being withdrawn, abandoned or not pursued for other reasons) while since the 1990s, Canada has virtually stopped using the provisions, according to Reichman and Hasenzahl (2003). The US has been an even less active user of compulsory licensing on public interest grounds. As far as developing countries and LDCs are concerned, only a few have authorized compulsory licences, as both Thailand and Brazil have done for the manufacture of patented medicines.

Without some form of regional and international monitoring system, the compulsory licensing system will be difficult to implement at the wider international level. The difficulties lie in the discrepancies between different national laws, and the imprecise international stipulations about how to deal with compulsory licensing when cross-border activities are involved. However, international efforts may provide clearer stipulations. For example, the vague TRIPS stipulation that licensors should be informed 'as soon as practicable' about any compulsory licensing procedures that affect them could be replaced by a specific duration, such as up to three months unless it is national emergency, for example, pandemic disease. A second step would be to set up an international

system to centralize the granting of compulsory licences in cross-border situations, such as the Thai case, and monitor activities to ensure fairness to both licensors and licensees. Such a system would also allow the parties to file any complaints with a designated body, so that disputes could be resolved quickly. While such international efforts may, on the one hand, serve to encourage compulsory licensing, it could also, on the other, reduce international conflicts through effective international coordination.

10.1 Licensing and its forms

The licensing categorization presented here is synthesized from IP practice. First, licensing can be seen from the two perspectives of the licensee, and of the licensor, which describe the flow or direction of licensing activity. *In-licensing* (or *licensing inflow* or *inbound licensing*) means a company is in the position of being an *IP licensee*, with authority from the IP owner to make, use or sell the relevant product or service. From the IP owner's standpoint, this can be seen as *licensing-out* activity (or *licensing outflow,* or *outbound licensing*), where the owner (the *IP licensor*), licenses out the right to the other party. In-licensing and out-licensing are rarely used as contractual terms, but their differentiation allows a company to understand its licensing position clearly.

Second, licensing can be divided into *voluntary* and *compulsory licensing* according to the licensor's willingness. Of course, most licensing agreements are voluntary – that is, they are signed with the consent of both parties. However, when an IP owner is unwilling to give such authority to a potential licensee interested in commercializing the product or service, the latter may be able to gain government support to get the IP compulsorily licensed under certain conditions (as we have discussed earlier). Licensing may cover various types of IP rights, including patents, trademarks, know-how, industrial design, and so on, namely *patent licence, trademark licence, know how licence*, etc. Agreements can involve a *paid-royalty licence* – where a lump sum is paid to the licensor at the time of signing the licensing deal – or a *running royalty licence*, where royalty amounts are paid periodically to the licensor based on the units or net sales of the product involved.

More specifically, depending on the extent of geographical restrictions on a licensor and/or a licensee, licensing can be divided into three different types, as illustrated in Figure 10.1. A *sole licence* is a licence granted to a licensee that excludes anyone else – *even the licensor* – from making, using or selling the particular IP product within the specified time and

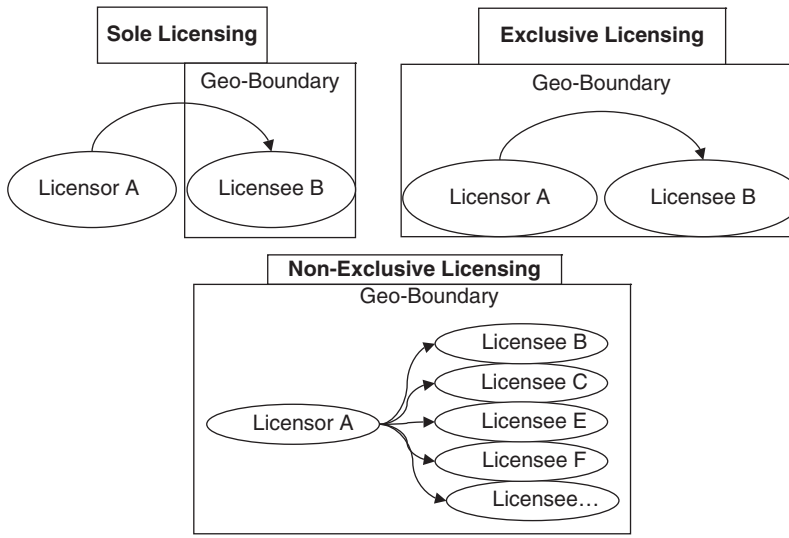

Figure 10.1 Different forms of intellectual property licensing depending on the geo-restrictions
Source: Created by the author.

geographical boundary. Inside this boundary, the licensee will be the only – thus the *sole* – company with manufacturing and selling rights: the exclusion of all others, including the licensor, is absolute. On the other hand, an *exclusive licensing right* (despite its nomenclature) does *not* exclude the licensor from exerting the particular right(s) stipulated in the licensing agreement, but *does* exclude any other licensees from so doing. The final type of licence is the *non-exclusive licensing right*, when two parties agree a licensing deal, but the agreement does not exclude the licensor from signing further deals with other licensees to operate in the same time/geographical space.

To conclude this section, licensing can have different types under various classifications, but in IP practice, these terms tend to be used simultaneously. The concepts of in-licensing and out-licensing are not types of licence, but essentially managerial shorthand to describe licensing direction: in managerial terms, a company's licensing strategy could be seen as a balance of these opposing flows. As far as the actual types of contract are concerned, a sole licence will be most expensive to the licensee, as it restricts the licensor's activity most. But the most important factor about these different licensing types is that they do not exist independently and are not mutually exclusive. Rather, they can (and

do) appear simultaneously within a firm's licensing portfolio, and point again to the need for companies to succeed in the managerial act of achieving a balanced IP strategy for commercializing IP, whether as owners or not.

10.2 Licensing relationships

This section uses cases to illustrate five licensing models adapted based on Choi, Budny and Wank (2004) and explain how these relations work for licensing companies. Figure 10.2 shows the five types of relationships: company size is indicated by a circle, although they could be either licensor or licensee. The number within each circle indicates an interested party as a potential licensee or licensor, and the arrow indicates the direction of licensing request to either a licensor or a licensee.

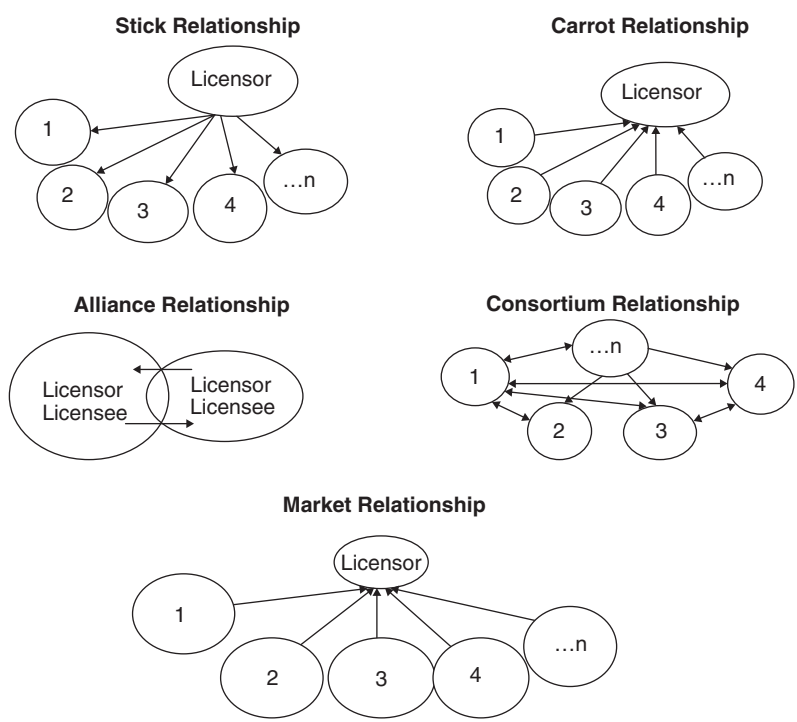

Figure 10.2 Licensing relationships
Note: Arrows refer to the licensing request direction to a licensor or a licensee.
Source: Adapted by the author based on Choi, Budny and Wank (2003).

The first relationship – the *Stick relationship* is a licensing strategy commonly adopted by large multinationals. As the name suggests, it involves the MNE pressurizing interested firms to sign licensing contracts. Multinationals tend to adopt this strategy because they are likely to be the pioneers of technological development in their field. Followers are obliged to look for the chance to invent around the MNE's protected IP. However, as this can easily lead to inadvertent infringement (which could mean lengthy and costly court action), the alternative of a licensing deal established under the stick relationship may be rewarding for both sides.

Texas Instruments (TI) is a company that uses the stick relationship to its advantage. In 1985, when Jerry Junkins took over as CEO, the company was suffering from declining market share due to competition from Japan and Korea.[2] One of the key competitors was Casio, whose handheld calculator sold well in Asia. Junkins believed TI had to focus on its patent portfolio to sustain its competitive position, and an analysis of the patents in TI's portfolio led them to discover that their rivals (including Casio) had used TI's patent rights without authorization. Subsequently, Jenkins expanded TI's legal team to collect evidence of infringements against their rivals, starting with Casio. Confronted by TI, companies like Casio and a string of Japanese and Korean firms had two alternatives: going to court for a solution or signing a licensing contract which commits them to paying royalties for the patents that they have used. TI was an aggressive IP enforcer with a history of success in court. The licensing alternative at least allowed Casio and the other infringing firms to continue trading and using TI's technologies. By 1993, such 'stick relationship' deals had generated US$1.5 billion for TI.

In comparison to TI, Microsoft is more a recent user of this strategy. As software is easy to copy and software IP rights easily infringed, piracy of its software is an ever-present phenomenon for Microsoft. Although the company still frequently brings piracy firms to court, it has gradually oriented itself towards stick relationship licensing as a more pragmatic strategy to resolve the problem.

The reverse of the Stick relationship is the *Carrot relationship*, where potential licensees approach a licensor to request a licensing deal. This is a common practice for commercializing IP, and serves the purpose of IP benefiting society through knowledge dissemination. If we call the stick relationship a 'forced' relation, the carrot relationship is an 'encouraged' relationship: its basis is willingness on both sides. This is the outcome of both governmental encouragement and the corporate attraction of

a particular IP and should allow for a healthy collaboration in the long run.

The *Alliance relationship* is in effect a *cross-licensing* structure, where licensing partners act as both licensor and licensee. This tends to occur when two companies – maybe competitors – are in an identical business and both sides have certain technologies that can contribute to the development of certain products. This type of activity involves a mutual and beneficial exchange of information, allowing both parties to take advantage of the relevant technologies possessed by the other. Without such cross-licensing, radio commercialization and the dissemination of radio technology knowledge might have been delayed (Choi et al. 2004).[3] Radio was initially created for military communications during the First World War. However, Radio Corporation of America (RCA) realized its commercial potential for the general public, and adopted an aggressive strategy to monopolize the commercialization. It acquired American Marconi (one of radio's originators), purchased patents from United Fruit and Westinghouse, the WEAF and WCAP radio stations and the network from AT&T, plus the New York and Washington broadcasting chains to form the NBC, as well as buying the Victor Talking Machine Company, the largest phonograph manufacturer. To overcome the reluctance of IP holders to assigning their IP, this monopolizing process was achieved through cross-licensing deals with patent holders, which allowed different invention holders to benefit from the commercializing activities.

In this technological age, the alliance relationship has become increasingly popular as a strategic tool to bring mutual benefits for the companies involved: Table 10.1 shows a few recent examples.[4] This relationship appears to be particularly beneficial for competitors, given that it can prevent head-to-head competition between rivals and avoid infringement accusations. The partnership also gives rival companies opportunities to learn from each other, and such complementary effects by firms bring benefits to society overall, because the joint corporate effort tends to accelerate commercialization.

A *Consortium relationship*, as the name implies, involves companies, probably in the same, related or supporting industries, forming an organization to share IP information more effectively. Consortium members may be primarily licensors or licensees or both. This relationship is probably the most effective way to develop ideas, disseminate knowledge and standardize technology from the joint efforts and talents among members. An illustrative example is the Joint Electron Device Engineering Council (JEDEC). Since its establishment in 1960, it has expanded into

Table 10.1 Recent examples of alliance relationship established in Asia

Companies	Product	Deal	Date
Fijitsu (Japan) and Samsung (Korea)	Plasma display panel	Litigation to start with, but settled with a licensing deal	April 2004
Sony and Samsung	Patent sharing in semi-conductors and industry standard technologies	Cross-licensing deal after a year negotiation	December 2004
Microsoft and Toshiba	Computer and digital consumer electronics	Cross-licensing after one month negotiation	April 2005
LG (Korea) and Matsushita	Plasma TV	Cross-licensing after a six-month bitter dispute in court	April 2005
AU (Taiwan) and Samsung	Technologies for LCD TV flat panels	Cross-licensing deal	January 2006
LG and Toshiba	Optical disc products	Cross-licensing for worldwide patents of optical discs and the disc drives, etc.	February 2006

Source: Synthesized by the author based on Barraclough, E. (2006) Asia's Licence Fever, Asia-Pacific Focus 2006, *Managing IP*, 1 March.

an organization of 2900 participants, 280 companies.[5] The origin of JEDEC can be traced back to the early twentieth century when there were many radio manufacturers, but no agreed standards for radio manufacturing. Therefore, in 1924, the Radio Manufacturers' Association was set up to standardize radio manufacturing and marketing issues. Since then the association has expanded into TV and (from 1958) semi-conductor standardization. Due to the collective contribution of its different members, the council has been able to combine their assets together to standardize semi-conductor technologies. With the creation of the JEDEC website in 1998, this standardization knowledge has been disseminated more effectively through publications and via the Internet at no extra cost.

Besides the semi-conductor industry, this type of relationship has developed most rapidly in the software industry, through associations, such as the OSI, etc. Like JEDEC, these associations use consortium licensing to share their creations so software technologies can be developed and disseminated much faster. The sharing deals among members also eliminate the fear of infringements, which is particularly useful relationship for the software industry, due to the fragile nature of software products, where one product may contain thousands of patented software technologies. In effect, members are encouraged to build on existing software to push forward the development of the whole industry.

Finally, in a *Market relationship*, large enterprises approach a small firm to request a licensing deal. The structure contrasts with that of the carrot relationship, which is composed of small licensees approaching a larger licensor. Here, the licensor will be the smaller – may be a start-up or entrepreneurial company with an innovative spirit, but without the financial strength to commercialize their technological IP-embedded products. In this relationship, IP licensing is essential for the development of the licensor (whereas, in carrot relationships, by contrast, it may only be a secondary strategy for the licensor). Choi et al. (2004) offer ARM, a leading provider of microprocessor solutions essential for electronic applications, as a typical case of the market relationship. With only 12 engineers working on designing the microprocessor, they lacked both financial and human resources to commercialize their technological product. But because their IP was vital for next-generation product development, they were able to conclude commercializing deals with much larger companies – joint production ventures with financial backing from Apple, Acron and VLSI and licensing deals with Palm, Intel and TI.

10.3 Intellectual property negotiation

10.3.1 Negotiation – an art

Negotiation is an art, and the process of reaching an agreement for a particular purpose between parties requires skills and techniques to plan an IP negotiation correctly and to implement the plan on time and with good results. Assuming there are two parties, it is a game of three possible outcomes – win-win, lose-lose, and win-lose (or lose-win). Parties involved in negotiations can vary significantly from the informal negotiators arguing for their own interests (e.g., correcting a wrong bill from a gas company) to formal negotiations between government organizations to resolve policy conflicts, between business representatives and government to argue for government policy changes and business–business cooperative negotiations and/or dispute resolutions. Depending on the context, negotiations can be very protracted – indeed, the WTO has been nicknamed the World Torture Organization because applicant countries must go through the lengthy procedure of negotiating separately with each member state. This procedure has become more frustrating for recent applicants, who now have to negotiate with 150 other members (Tonga became the 151st member in July 2007): thus, it has taken China 15 years (1986–2001) to become a member, involving probably a record number of WTO negotiations.

10.3.2 Intellectual property negotiation – a complicated deal

While they are a regular part of business life, negotiations can become extremely sensitive when related to IP at the international level. Cultural clashes derived from different values, belief and norms can become very intense, while partners from differing IP regimes can have different understandings about some IP issues, which may protract the negotiations. The confidentiality of IP and its vital importance for firms can further complicate the negotiation process, which can also be affected by sensitive issues relating to other business activities, such as pricing, payment, time control, contractual implementation, and so on. A good example to illustrate the difficulties of international IP negotiations is the protracted dialogue on IP between China and the USA in 1994. As noted earlier, China was accused by US MNEs of infringing some of their IP rights, and put on the US 'Priority Watch List' in the early 1990s. Both sides threatened trade embargos against each other, but were aware that a trade war would only harm the increasing – and increasingly important – trade links between the two countries. The US sent Charlene Barshefsky, a Clinton Cabinet member and former USTR to negotiate with the then

Chinese Trade Minister, Wu Yi. Only after many rounds of negotiations, and despite cultural, personality and IP understanding clashes, could the two sides agree a memorandum of understanding (MOU) on the protection of IP.[6] This demonstrates how, in negotiations, skills, personality, culture, experience and knowledge all matter – but mutual understanding is also a vital element for success.

10.3.3 Intellectal property negotiation – a team matter

The success of an IP negotiation needs team endeavour that can be affected by negotiators' personalities, culturally derived behaviours and negotiation styles. Richie (2002) categorizes negotiators into four types on the basis of their personality, which he labels the 4Ps – the Personal, the Persuader, the Practical and the Precise. He illustrates these types by telling the following story: Paul just returned from his regional sales trip and reports a new idea to his Marketing Manager, Evan, saying 'I have just seen a new product in this trade fair. It's so great our customers are bound to want it.' Evan asks, 'Will this product give us competitive advantage over our competitors?' At the end of the conversation, Evan is convinced that introducing this new product would indeed increase their market competitiveness. They then visited the Chief Finance Officer Linda and Chief Production Officer Adam to explain their brilliant new product idea. Linda asks: 'Can we make profit from this? I will need to conduct a feasibility study before we go off on some wild goose chase.', while Adam's response is: 'This is the third good idea this month and I am still trying to figure out how to respond to the first one.' Table 10.2 summarizes the 4Ps, and it is clear how they all have their strengths and weaknesses. It is important to take such personality differences into account when forming a negotiation team, as a combination of these negotiators' strength will enhance its effectiveness.

In addition to personalities, different behaviours derived from cultural origins also affect team efforts towards a successful negotiation. Prior research has vividly discussed how to deal with cross-culture negotiation behaviours in business (e.g. Gesteland 2005; Morrison et al. 1994). From an IP negotiation perspective, once again, China and the US offer enlightening contrasts. American negotiators are goal-oriented while Chinese are problem-oriented. This was reflected in the IP conflict negotiations discussed earlier between Barshefsky and Wu Yi. The American Barshefsky believed both parties should focus on how to implement better IPP in China – which reflected the outcome she desired from the negotiations; the Chinese negotiator Wu Yi believed they should first

Table 10.2 Types of negotiators

Trait and Profession	Personal	Persuader	Practical	Precise
Talk–Listen	Talk	Listen, but talk with purpose	Listen	Listen and relevant talk
Unfocused–Focus	Skips	Focused and goal oriented	Very focused in their own area	Very focused
Oral–Written	Verbal persuasive skills	Balanced if goal is served	Both	Written
Emotion–Logic	Emotion-driven	Use both for their benefit	Both	Logic and facts
Details–General	General; dislike details	Value details if relevant to goals	Details in their area	Details
Enthusiasm	Bored easily	Level-headed, hate to lose, and can push hard to win	Defensive and push to win within their own boundary	Can defend their position using hard facts and conclusions
Listen–Read	Listen	Both if relevant to goals	Both	Read
Typical Professions	Firm owners or founders Sales manager, Customer service Creators	Sales or marketing head, CEO Owner	Procurement manager Chief administrator Supervisors Production managers	Comptroller Accountant, Chief finance officer Engineer Computer officer

Source: Synthesized by the author based on information from Richie (2002).

examine the underlying causes behind the conflicts, reflecting the idea that, if both parties understood each other's position, they could jointly take responsibility for the problems, and thus for solving them. This difference in approach was perhaps the main reason behind the length of these protracted negotiations.

Second, American negotiators like to get things done as quickly as possible, and will often suggest starting negotiations immediately they get off the plane. While this focused attitude may seem admirable, it is very much out of line with some countries' cultural habits. In contrast, a Chinese envoy will arrange the schedule so their 'guests' have time to recover from jet-lag, and even show them around the city before serious talk commences. To an American negotiator, this is all a waste of time; to their Chinese counterpart, it is both good manners, and a golden opportunity to get to know their opposite number better. To the American, time is money – to the Chinese, time is life, and 'haste makes waste' – a sign of ill preparation.

Finally, contractual conflicts have always been an issue between the two countries, rooted in the Chinese lack of cultural familiarity with the concept of legal/contractual obligations, which are a much more familiar phenomenon in Western firms. They were not used to complex contractual discussions between partners, let alone about specific IP matters (about which they were also comparatively inexperienced). Although after 30 years of the Chinese Open Door Policy, contract negotiations are a business routine, Chinese businesses are still very much reliant on government organizations to influence their decision-making and this is particularly the case where companies are state-owned. For example, the Ministry of Commerce (MoC) strictly controls the levels of royalties that can be paid to a foreign partner. Unless a licensing deal is associated with a much-needed advanced technology, the MoC is unlikely to endorse royalties higher than 2 per cent.[7]

Assessing individual negotiator's styles is also an important step to understand combined team strengths. Salacuse (1998) conducted a survey of cross-nation and cross-occupation negotiations, and concluded that ten factors impact on negotiation styles, and can be used to assess negotiating teams so that potential conflicts can be identified at an early stage. They are:

1. aim orientation: goal- or relationship-oriented;
2. outcome orientation: win-lose or win-win relationship preference;
3. approach orientation: formal or informal;
4. communication style: direct or indirect;

5. time attitude: high or low punctuality; attitude to implementation on time;
6. emotionalism: high or low passion;
7. contract style: detailed or general;
8. decision-making: bottom up or top down;
9. team working: leader dominated or consensus; and
10. risk taking: high or low.

The author has used this framework to assess over 300 managers who have participated in the IP module and negotiation simulation she teaches each year. She concludes that areas where Japanese and British negotiators tend to have opposite styles are: aim orientation, approach, communication, emotionalism, decision-making and team working. For example, Japanese negotiators stress the importance of relationship development and formal styles of negotiation; they are indirect communicators showing little emotion, and put great emphasis on teamwork and collective decisions. Taken together, these factors make up their general negotiating style, while British negotiators will exhibit a different blend: such matters (which of course can involve considerable elements of generalization) need to be understood and taken into account if cross-border IP negotiating activities are to succeed.

10.3.4 Intellectual property negotiation – a protracted process

Despite the comparative lack of guidance as to the IP context, there is no lack of research on the art of cross-border negotiations (e.g., Gesteland 2005; Luecke 2003; Morrison et al. 1994; Rau, Sherman and Peppet 2006; Sparks 1993; Thompson 2005). All negotiations, as Sparks indicates, are a process of going through information exchange, inevitable frictions, uncertainty about the unpredictable outcome, and anxiety about resolving the uncertainty. IP negotiations share all these problems, but can be even more protracted processes, because of the complexity of clauses to be negotiated, such as royalties and penalty clauses, etc.

As a lead negotiator, three matters are important in keeping proceedings on the right track. The first is to keep focused – the aim of the negotiation should always be borne in mind. The second is to ensure that everyone is involved with the negotiation – preventing only one or a few voices steering the negotiation, which would make the process both non-collective and a waste of non-participants' time. Finally, it is vital to keep track of time, which means the process must be properly planned for. A prolonged negotiation process is neither efficient nor effective: it is a tiring war that should be avoided.

Every negotiation has to go through three essential steps – pre-negotiation, negotiation and post-negotiation stages. A wise negotiator with knowledge, experience and technique will understand how important thorough preparation can be to the success of a negotiation, where they are in the process, and how to behave and what to aim for at each stage.

10.3.4.1 Pre-negotiation stage: If you fail to prepare, prepare to fail

As in other business negotiations, pre-negotiations establish the foundations leading to the success of the main negotiation, and may well take much longer than the other two stages. The first step of the pre-negotiation stage is to conduct an analysis of the country targeted for IP business, including its IP environments and levels of industrial competition. The analysis would provide negotiators with some foundation knowledge about the pros and cons of the negotiator's market.

The second step is to establish contact with a potential partner, which could happen in several ways (Campbell and Adlington 1988). As briefly noted earlier, the contact can be an existing business partner, or a new partner introduced by a trusted intermediary, who knows both sides and how to match potential partners efficiently. Exchange programmes, such as business exhibitions, trade and FDI fairs, and delegation visits can also lead to contact connections. Moreover, promotion bodies for trade and FDI, for example, a Chamber of Commerce, in different countries can also generate contacts for potential partners. Finally, a contact may also be established when one potential partner directly approaches the other for possible collaboration. This is now a common practice, reflecting government organizations' encouragement to be proactive in seeking partnerships with technologically advanced or capital-rich companies.

The third step is to prepare information about the other side at the company level that establishes the grounds for negotiations. A matching exercise will be needed to find out whether the corporate vision, strategies, company size, and technological levels and IP development and procurement and distribution networks are in line with the company: do they match each other, or complement each other (either pattern could lead to a 'good fit')? The assessment helps to decide whether the partner can absorb a particular technology rapidly (thus reducing training costs), as well as in understanding whether the potential partner's procurement and distribution networks are good enough to help the IP commercialization process. These assessments are essential because they directly impact on the speed of IP commercialization. It is also worth

noting at this stage that probably the company may have a few potential partners in mind. This should be considered as an advantage, as this means that there is a competitive demand for the company's IP product, thus giving it bargaining power in the negotiation.

The fourth step is negotiation team preparation. The make-up of the negotiating team, the division of responsibilities and the mix of negotiators' personalities, culturally derived negotiation behaviours, and negotiation styles must be established before negotiations can begin. The negotiation team does not need to be large, but the responsibilities of each member must be made clear. The team will include a chief negotiator, in charge of overall direction and coordination (who needs to have the strength, if things go wrong, to steer the negotiation out of the bad situation, good time management and ability to focus), an IP manager (with expertise in whichever type of IP is involved), a production manager (if the negotiation relates to foreign country production), a marketing manager (if it is about selling an IP product into another country), plus any other specialist members who may be required. The combination of a team can vary significantly depending on the IP products and services involved, and specifics of the proposed internationalization. The other side of the preparation about negotiation people is the investigation into their personalities, behaviours, styles, (which directly link with earlier discussions in the section), team make-up and responsibilities. This is another matching exercise to find out if there are potentially conflicting points that can be prepared for tackling before hand.

Finally, the fifth step of preparation involves specific IP-related information establishment:

- First, a goal must be set that will be the lead for the whole negotiation. This may not be the same as the other side's at the start of negotiations, because they may not show all their cards before a negotiation. However, through correspondence, both sides should be able to anticipate what the other is aiming at, and, through comparing each other's aims and objectives, a negotiating team should be able to anticipate where potential conflict areas might be in the forthcoming negotiation. High compatibility of the two sets of goals is likely to help lead to a win-win outcome.
- Second, the counterpart relationship must be assessed in consideration of licensing. This is relevant to part of our early discussion about licensing, in other words, the company should be aware of their licensing position: as licensor or licensee, what type of licence they

aim to sign: sole, exclusive or non-exclusive, and what is the power balance in terms of licensing relationship: stick, carrot, alliance, consortium or market relationship? The assessment is crucial for the company to find out whether it is in a powerful or weak position: who wants the deal most? Are we desperate to get hold of the counterpart's IP to make money out of it? Are we keen to shift a clever bit of IP, which is not really part of our core business, out to our counterpart to gain royalties? Or is the balance of power roughly equal across the table?

- Third, the specific issues for negotiation that relate to contract clauses must be carefully considered (the specific clauses will be discussed in the next section as contracting information). The negotiators must take their counterpart's stance into account when preparing the clause. This means a concession plan can be prepared, so negotiators know to what extent the company can afford to compromise in specific areas or contractual clauses, together with a bargaining position in terms of what concessions might be sought from the other party in return. Preparation with this level of forethought will give the team a clear understanding of how much – or how little – flexibility they have at the table. This can be called: '*know yourself, know your counterpart*'.

10.3.4.2 Negotiation stage: Objective seeking, personality stripping and facts dealing

The negotiation stage is where the two sides work towards finalizing the deal they have planned, and is likely to follow a conventional procedure as follows: First, the teams on both sides are introduced and their specific responsibilities in the negotiation outlined. This allows each negotiator to identify their opposite number and get to know each other to see how they will work together. Specific discussions between them can take place, even on informal occasions, such as during tea and coffee breaks and lunch times. Second, the presentation time allows both sides to lay out the basis of their negotiating position and aims, to 'sell' their company as a good IP partner, and highlight any specific issues that should be covered during the negotiation. The presentations will allow the two parties to conduct a matching exercise to find out common grounds and differences in their respective aims and the issues proposed for discussions, and thus is an early opportunity to identify any potential conflicts that need to be prepared for.

Third, a question and answer session can clarify any issues raised in the presentations, and will give both sides time to assess whether their opposite numbers are well prepared and have the answers to any questions, as

well as revealing the extent of each side's sincerity for their future collaboration. Negotiations should demonstrate the intention to collaborate based on mutual trust, mutual benefits and equal treatment.

Next, negotiations move on to the bargaining stage. Here conflicts can easily arise, as each party would like the other to compromise more. If the original proposal has proved unacceptable to the other team, this is when an alternative plan may be proposed. If a mutually acceptable agreement can be reached, negotiations can result in a win-win deal for both sides. However, if the original or alternative plans prove both to be unacceptable, negotiations may reach a stalemate. Unless the other side makes any further and unexpected offers, compromise should not extend beyond what has previously been agreed as the firm's last concessions. Any further negotiation would involve conditions that have not been thought through beforehand, and would put the team at the disadvantage of being in a passive position. If this situation occurs, it would be better to suggest that a new round of negotiations continue in a future time, allowing both parties to cool down and consider the offers from the other party in more depth.

Finally, when closing the deal, it is crucial to avoid any future conflicts. All the agreed terms and conditions should be restated, and the definitions in the contract agreed. This is particularly important if the two parties speak two different languages, where each side must be sure that their understanding of the terms and clauses of the contract matches their partners'. When everything is clarified, a specific date can be set for signing the contract of collaboration.

10.3.4.3 Post-negotiation stage: Responsibility sharing and implementation monitoring

The post-negotiation stage tends to be treated in a relaxed manner, but concentration is still important, and certain procedures must be followed. A written draft of the contract must be studied carefully, including all the definitions, clauses and conditions, to ensure it has been drawn up as agreed. If any issues arise at this point, it would be wise to arrange further negotiations to specify any items that need further clarification. If no further negotiation is needed, arrangements may be made to sign the contract. If the project is a large one, this may involve a ceremonial occasion to celebrate the start of grand collaboration. And consideration of implementation of the contract should begin straight away.

Poltorak and Lerner's (2004) seven strategies to adopt and seven deadly sins to avoid in licensing negotiations, make a helpful summary

of this section. To achieve win-win negotiations, counterparts should adopt seven strategies as follows:

1. a clear goal;
2. an alternative plan;
3. strategies to achieve objectives;
4. an agenda to cover all necessary issues;
5. careful selection of the negotiation team taking into account combination of the other side's team;
6. negotiating based on good-will; and
7. keeping a record of the negotiations!

The sins to be avoided, by both parties, are:

1. negotiating on any basis other than trust and honesty;
2. last-minute announcement of problems (the earlier a potential problem is revealed, the greater likelihood that the problem will be resolved);
3. threats and arguments;
4. underestimating the opposite numbers;
5. bazaar haggling (starting from widely different positions, and then talking until exhaustion sets in: may work in a street-market, but not recommended here!);
6. negotiating against yourself by proposing an inconsistent position (making further offers before the other party has responded to the first position); and
7. poor preparation!

10.4 Intellectual property licensing contracting and implementation

Each IP licensing will differ depending on the circumstances, but there are some essential elements, which are discussed here in detail. The essential information includes full details of the parties signing the contract, the place and date of the contractual agreement, and the effective date of contract commencement, details of the specific IP elements involved (categorized by their scope) and definitions of the contractual terms. This is straightforward information, but contracting parties too often neglect the definitions. As mentioned early, IP definitions can be contentious for both scholars and practitioners, so it is clearly important for the negotiating parties to reach a consistency about their

understanding of all the terms used in the contract. If a contract is in two languages, it is vital to agree which language is to be used for the standard form of the contract to prevent any future language misunderstandings.

Contracting is the most important part of a licensing deal, and must include all issues relevant to the planned cooperation. This should include the type and scope of licensing, licensing payment, quality standards and warranties, details of duration, arrangements for termination, arrangements for accessing technologies developed during the partnership, provisions for technical assistance, settlement of disputes, and compensation for infringements (Apke 1998; WIPO 2001). Some of these are worth further consideration. It is clearly important to clarify the licensed scope of the particular IP involved, and each side should be aware of the temporal and geographical constraints, and of the product scope. The contract should detail the time period over which the contract will remain valid, and the geographical scope and limitations involved, which define whether and where the licensee has sole, exclusive or non-exclusive rights. Both parties also should make clear the extent of the licensee's right for exploiting the IP protected product. Licensing payment is often a sticky point for negotiations, and the relevant parties may need to justify why a lump sum payment, a running royalty deal or a combined method should be chosen (see detail of IP facts in Chapter 8).

Some other predictable elements must also be included in the contract, such as contract termination, access to technological developments during the contracting period, and dispute resolution. It is probably more appropriate to call these clauses prevention clauses, due to their role in anticipating and clarifying any future wrongdoings within the partnership. Regarding termination, for example, partners should make clear in the contract how the IP will continue to be protected, how the residual products should be dealt with, and how employees will be disciplined to continue to keep the secret of the know-how, and so on. For example, if, during the contractual collaboration, one partner improves the technology that is being used, it is vital that the contract specifies how such improvement would be dealt with. In theory, the ownership of the improved technology may seem obvious – whoever improves the technology should be the owner. However, such innovation may have been built upon the partner's previous technology, and it may be impossible to use the new technology independently without touching upon the previous technology. Should the ownership be shared? If it is not shared, the non-innovative partner may be able to use the technology without any new licensing deal. Alternatively, it may offer payment for using the technology in a non-monetary form, such as free promotion.

Another choice may be to sign a new licensing agreement. Whatever options partners opt for, the terms need to be as specific as possible, to prevent either side acting 'flexibly' to breach the contract.

An important clause that negotiating partners should never ignore is to agree how any disputes should be settled. This is another measure to guard against the unpredictable. Disputes may be between partners, or between the partners and an outsider. Disputes between partners will normally involve some straightforward non-compliance with contract or infringement of a partner's ownership rights, and penalty clauses should be specified in the contract to help prevent such situations arising. For example, if the licensee infringes the partner's ownership right by licensing overrun, compensation to the owner can be by direct payment (such as increased royalty payments), by indirect payment (for example by product compensation where a number of products are handed over for sale in the licensor's home country) or by termination of the contract. The partners should also specify what infringement or other non-compliance circumstances would empower a partner to end the contract. Disputes may also relate to third parties, and in this case, strategies should be agreed in the contract, which should specify what actions should be taken, which partner should take them, and how such action should be implemented. (Such strategies are called anti-piracy strategies, and will be delineated in the next chapter.)

Closer: Patent trolls: Legitimate dealers or harassers?[8]

The influential BlackBerry case between NTP, US and Research In Motion (RIM), Canada in 2006 draws attention to the phenomenon of patent licensing 'trolls'. The case, in which NTP is considered a patent troll, closed with them benefiting from a settlement with RIM of US$613 million. The pejorative term 'Patent troll' was coined by former Intel executive Peter Detkins, and has since been refined by other executives, journalists and judges. Although the relationship between a troll and its target is similar to the Stick relationship in licensing, it differs in that patent trolls (who are highly prevalent in the software and financial services industries), are companies that buy up patents (often cheaply from bankrupt firms or independent IP owners), and make no move to commercialize or develop them themselves, but hold them, awaiting related production or development from others, who they then try to force into lucrative licensing deals, by threatening to sue for infringement. Given the high costs of infringement litigation, this strategy often succeeds in securing a licensing deal. NTP is

considered a typical troll because it holds 24 inactive patents relating to wireless communications. In this closing case, we will analyse the problem of patent trolls, the reasons behind their existence, and strategies against them.

Patent licensing trolls are overwhelmingly a US phenomenon. According to *Managing IP* magazine, a number of companies present typical troll behaviour: *Acacia Technologies*, which controls 160 US patents and has licensing deals with MNEs all over the world; *Forgent*, which has profited by over US$105 million from licensing its coding system software; *Burst.com*, which is involved in audio- and video-on-demand technologies, and has earned US$60 million from Microsoft in 2005 and also sued Apple, iTunes and QuickTime for software infringement. (The latter company appears to realize the drawbacks of its troll reputation and claims to be re-orienting itself towards development.)

Patent trolls are much more criticized than defended. The pro-troll view says that trolls are market void fillers, buying low and selling high, and making legitimate business which allows independent inventors and R&D institutions to sell their output rapidly. It is argued that trolls hasten the commercializing process by targeting companies with un- or underused patents in hand, and persuading them to release them back onto the market. The anti-trolls believe that patent trolls increase the costs of manufacturing because of royalty payments and development costs resulting from the need to give a lot of attention to watching relevant patents for fear of infringement and any resulting actions.

Four factors can be considered as causes of the patent troll phenomenon: patent thickets, junk patents, the fear of court proceedings and the anxiety of business loss. The *patent thicket* refers to the overwhelming number of similar patents that has reached the extent that firms have to cut through too many barriers (the thicket) to commercialize a technology. These thickets make the process of granting patents too long (up to three years in the US) and too costly to keep in force (US$50,000 to 100,000). The existence of the problem implies that a simpler high-quality patent system would motivate innovation better. In recent years, patent applications have grown dramatically. For example, US patent applications increased by 9 per cent in 2006; in China the growth rate is even higher at nearly 35 per cent.

However, training an examiner takes, for example, up to 8 months in the US, and examiners need time to gain experience before they are fully proficient: but these time-scales do not keep pace with the speed and complexity of applications. The existence of such impediments to granting results in experts questioning the quality of processing and granting

procedures. The patent troll phenomenon in the US is more significant than in other parts of the world because the US has probably the most flexible patent conditions, for example, the industrial applicability is left to the discretion of the USPTO. In addition, it has a width of patent protection that is not supported in most other countries: thus software and method patenting which exist in the US, are also the two areas that have the most trolls. As a result, *junk patents* (patent with little value) are accumulating that trolls can buy cheaply, and hold on to them while they await their prey to generate income. Meanwhile, it is clearly costly and lengthy to go through the court proceedings, and victims would prefer to settle their businesses privately – the result would be an enforced licensing deal. Settlements will be attractive to victims who fear that court injunctions could lead to their business being partly or entirely shut down.

Given the increasing disruptions of patent trolls, strategic approaches need to be taken from both government organizations and firms. On the government side, effective preventive strategies that could benefit the troll victims include thinning the patent thickets, intensifying patent examiner training, increasing the quality of granting by narrowing down the scope of patents, making more stringent examination of injunction requests, reducing the fees for court proceedings and enhancing integration with other countries to prevent duplicate patenting. According to the US patent annual report, the USPTO has adopted an 'aggressive hiring goal', aimed at recruiting at least 1,200 new examiners between 2007 and 2012. However, it is insufficient for firms to rely on the government only; instead they should adopt alternative corporate strategies to defend themselves against trolls. Cote and Sadler (2006) suggest six strategies to avoid becoming a troll victim by:

1. the hard-line approach: Invent around trolls' protected patents to establish a sound company defence against accusations of infringement;
2. a declaratory judgment in court: Gain a court declaration as to the non-infringement and validity of judicial resolution may be sought before the trolls take action;
3. choosing the right judge: Examine patent handling history to select a judge, who is pro troll victims;
4. requesting re-examination: This would allow the validity of patent claims to be clarified so that infringement threats can be refuted;
5. joint actions among competitors: Companies in the same or related industries cooperating in litigations; and

6. intensifying cross-licensing activities: This enhances the development of patent portfolios and helps establish the validity of patent claims.

Intellectual property facts: Underexploited licensing assets attract attention

Statistical evidence shows that many IP assets are under-exploited. In other words, most IP assets have not generated profits for the owners and have not been commercialized from knowledge to products or services. This happens in both developed and developing countries, but more so in the latter (Pugatch 2004). Historically, for example, from 1950 to 1970, over 90 per cent of foreign-owned patents in nine developing countries were non-working in those countries (UNCTAD 1975). From 1932 to 1953, over 50 per cent of US patents fulfilled the working requirements (op. cit.). However, the percentage reduced to 15 per cent for Canada from 1957 to 1963 (Economic Council of Canada (ECC) 1971). Emmett Murtha, CEO of the US firm Fairfield Resources International, Inc. believes to his best knowledge only about 3 per cent of the US patents were actually commercialised.[9] He argues that 97 per cent of the patents were not licensed because they were not useful, unfeasible or unmarketable or simply because firms wanted to monopolize their technology.

Recent studies show signs of relatively increased use of IP, but also report that licensing does not directly generate revenue for owners (Kamiyama, Sheehan and Martinez 2006). For example, a survey of 150 technology-intensive companies and research universities in the US, Western Europe and Japan shows only 15 per cent of them utilized all their patents (BTG 1998). Another survey (RBSC 2005) of EPO applicants shows that licensed patents accounted for 8 per cent of patent portfolios in Japanese firms, 11 per cent in European firms, and 15 per cent in US firms. A survey conducted by the Japan Patent Office (JPO 2004) found that Japanese patents were more internally exploited (30 per cent) than licensed out (10 per cent), but the remaining 60 per cent had not been utilized.

Patenting tends to be treated more as a defensive than a profiting tool (Cohen et al. 2002). Undynamic owners with no commercial minds also contribute to the low percentage of licensing, as can be seen in Table 10.3. The defensive approaches adopted by the surveyed firms include copy prevention, patent blocking, and litigation prevention. These three approaches rank as the top three reasons from both

Table 10.3 Reasons to patent product innovation

Reasons	US response (%)	Japan response (%)
Copy prevention	98.9	95.5
Blocking	80.3	92.6
Litigation prevention	72.3	90
Negotiation tool	55.2	85.8
Reputation	38.8	57.9
Licensing	29.5	66.7
Performance	7.8	60.1

Source: Adapted based on the information from Cohen *et al*. (2002).

US and Japanese respondents. Strategic applications follow as the reasons to patent, including negotiating a business deal, maintaining the reputation of the firm and measuring corporate performance through the intensity of IP dissemination. The only reason directly related to commercializing – licensing – ranks respectively as fifth and sixth for the Japanese and US respondents. The table also shows that the proportionate difference between the two groups of respondents indicates that Japanese respondents regard licensing as more important a reason for patenting than US respondents. A survey of German firms confirmed the findings, but also found reputation and negotiating leverage have become more important reasons for patenting activities (FMER 2004). They are particularly relevant for SMEs, where appearing to be more technologically sophisticated by owning patents represents a negotiating 'plus'.

The above analysis shows how poorly IP is being disseminated, and certainly could be said to undermine the arguments in favour of IPP as a method of disseminating new creations, and rather to support those of critics of software patenting, who allege that patenting is most used as a tactic to stifle competition. The author suggests the following action to accelerate the dissemination process. On the government side, a policy could be imposed to toughen the penalties for inactive IP holders. For example, if an IP remains unworked for a period of time (say five years), the patent office could automatically revoke the protection entitlement so it becomes public property, allowing active exploitation from all sources free of charge; thereby accelerating dissemination. On the corporate front, toughening the non-working limitation would also pressurize companies into reaping the benefits of their ownership more quickly, again speeding up the dissemination process.

Although preventive measures are the main driver of patenting, it appears that companies in recent years have been increasing their licensing activities and becoming strategic towards commercializing their IP rights (Gambardella et al. 2005). This move is evolving over time, with a wider range of strategic reasons in place, such as patent portfolio accumulation, attracting finance and reducing transaction costs (op. cit.). For example, nearly 60 per cent of firms surveyed in the Asia Pacific region, Europe and North America have increased their licensing activities (Sheehan, Martinez and Guellec 2004). Asia Pacific and North American firms, due to their relatively lower transaction costs incurred in patent searches, seemed to have more dynamic licensing activities than European firms (Gambardella 2005).

Summary

This chapter discusses fully the widely practiced phenomenon of international IP licensing. It shows that licensing can take various forms, from in-licensing and out-licensing according to the direction, voluntary or compulsory depending on the willingness of the owner, IP right-divided licences, paid-royalty licences or running-royalty licences depending on the payment of royalties, and also sole, exclusive or non-exclusive depending on the geographical authorization. Between licensors and licensees, a licensing relationship can be forced (stick relationship); proactive (carrot relationship); a mutual exchange (alliance relationship); collectively open (consortium relationship); or a profit oriented (marketing relationship). In order to strike a potentially successful deal, international negotiation is an inseparable part of international IP licensing. Negotiating a complicated licensing deal is an art that demands teamwork, and can be a protracted process that delays international commercialization. Moreover, the licensing contracting and implementation stages that follow the negotiation must ensure that the right information is included, contractual clauses are clarified and the implementation strategy is in place.

In line with the chapter theme, two cases and the IP facts sections elaborate the importance of licensing. The opener uses the controversy behind compulsory drug licensing in Thailand to consider the TRIPS requirement for national compulsory licensing regulations and the difficulties of putting such licensing into practice. The closer analyses another controversial case – patent trolls – by explaining the reason behind their existence and suggesting possible strategies to avoid them. The IP facts section reveals evidence about the under-exploitation of IP

creations, showing that only a very small portion of patented products were licensed, even in the most dynamic markets. However, the importance of commercializing IP has attracted more attention in recent years and licensing activities have increased. This IP facts section shows that encouraging or even enforcing IP dissemination has become not only a policy issue but also a strategic issue for firms.

Notes

1. The author has written this case based on the following information: (1) Anon. (2007) Thailand Backs Patent Drug Copies, *BBC*, at http://news.bbc.co.uk/1/hi/world/asia-pacific/6310515.stm, on 19 March; (2) Anon. (2007) Why Thailand is at the Centre of a Patent Storm, *Managing IP*, 1 March; (3) Anon. (2007) Storm over Thai Decision to Break More Patents (updated), *Managing IP*, 1 January; (4) Ashayagachat, A. (2007) Thailand Firms on Compulsory Licensing, *Bangkok Post*, 22 August; (5) Head, J. (2007) US Drugs Firm Blacklists Thailand, *BBC*, at http://news.bbc.co.uk/1/hi/world/asia-pacific/6449779.stm, on 19 March; (6) Henry J. Kaiser Family Foundation (2006) Thai Health Ministry to Issue Compulsory Licence for Merck's HIV/AIDS Drug Efavirenz, *Medical News Today*, 5 December; (7) Henry J. Kaiser Family Foundation (2007) WHO Cautions Thailand against Issuing Compulsory Licence for Abbott's Antiretroviral Kaletra, *Medical News Today*, 7 February; (8) Hongthong, P. (2007) WHO Backs Use of Compulsory Licensing, *The Nation*, 25 May; (9) Kazmin, A. and Jack, A. (2007) Thai Government to Break Drug Patents, *Financial Times*, 25 January; (10) Muirhead, J.P. (1859) *Life of Watt with Selection from his Correspondence*, New York: Appleton & Co.; (11) Reichman and Hasenzahl (2003); (12) Thomson, J. (2003) *The Scot Who Lit The World, The Story of William Murdoch Inventor of Gas Lighting*, Glasgow: Janet Thomson; (13) WTO (1995) *TRIPS Agreement*, Geneva: World Trade Organization, Article 31.
2. Wild, J. (2005) Investors Learn to Appreciate the Value of IP, at www.buildingipvalue.com/05_intro/008_011.htm, on 16 June 2006.
3. See also Sobel, R.N. (1986) *RCA*, New York: Stein and Day.
4. Barraclough, E. (2006) Asia's Licence Fever, Asia-Pacific Focus 2006, *Managing IP*, 1 March.
5. See detail of the discussion from the JEDEC History, at http://www.jedec.org, on 4 February 2006.
6. The information was obtained from interviewing officials in the Ministry of Commerce, who were involved with the negotiation.
7. Information was obtained by interviewing MoC officials.
8. This case was written by the author based on the following information: (1) Anon. (2006) Settlement Ends BlackBerry Case, *BBC*, 3 March, at http://news.bbc.co.uk/1/hi/business/4773006.stm, on 15 November 2006; (2) Bennett, S. and Brook, D. (2006) The Truth behind dubious Patents, *Managing IP*, June; (3) Beyers, J. (2005) Rise of the Patent

Trolls, *News.Com*, at http://news.com.com/Rise+of+the+patent+trolls/2010-1071_3-5892996.html, on 22 December 2006; (4) Blonder, G. (2005) Cutting through the Patent Thicket: The current U.S. System is Harming Innovation. A Simplified Process with Stronger Patents Would Encourage Economic Growth, *BusinessWeek*, 20 December; (5) Cote, B. (2005) US: the Benefits of the Hard-line Approach, *Managing IP: Supplement: Patent Focus 2005*; (6) Cote, B. and Sadler, R. (2006); (7) Kiln (2006) IP Insurance for Economic Loss, *Patents: Realising and Securing Value*, International Conference 2006, organized by the European Patent Office and European Patent Academy, London, 21 November; (8) Malackowski, J.E. and Floberg, F.D. (2006) This too Shall Pass, *Managing IP: Supplement: Americas IP Focus 2006*; (9) Mamudi, S. (2005) Supreme Court Threat to Patent Injunctions, *Managing IP*, December; (10) Nurton, J. (2006) They're Out there Somewhere, *Managing IP*, June; (11) Mamudi, S. (2005) Supreme Court Threat to Patent Injunctions, *Managing IP*, December; (12) SIPO (2006) Annual Report, Beijing: State IP Office; (13) USPTO (2006) *Patent: Public Advisory Committee Annual Report*, Alexandria: USPTO.

9. Interview by the *Licensing Economics Review* in 2001.

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11
Global Piracy and Strategic Responses

Contents

Focus and structure

This chapter examines piracy and the possible corporate strategies against it, focusing on four topics. First, it explains how IP can lose its market value due to obsolescence, imitation or infringement. Second,

piracy as a concept is discussed and a typology of the ever-increasing piracy activities presented. Third, the chapter focuses on the impact of piracy on countries, companies and consumers. Fourth, it explores a combination of reasons derived from political economy, culture, businesses and consumers to explain the causes behind the prevalence of piracy. Finally, it recommends corporate actions and appeals to external assistance for the prevention, cure and alleviation of piracy.

The opening case examines the Da Vinci Code infringement case, its impact on the publicity of the authors and its implications for society. The closer analyses the success of Starbucks and records its continuing battle against trademark infringements. The IP facts section argues about the quantification issue of piracy, including the estimates, their reasons, and suggestions for improvement.

Opener: The Da Vinci Code case and the Smithy Code judgment[1]

In 1982, three historians – Michael Baigent, Richard Leigh and Henry Lincoln – published *The Holy Blood and the Holy Grail* (HBHG), a controversial 'pseudo-history' book, in which the three historians pursue their shared interest in the hypothetical saga of Jesus' bloodline. The premise was that Jesus married Mary Magdalene, and their descendants later lived in southern France and eventually married into a family with claims to the French throne, and the book was based on the history of the 'Priory of Sion', a secret society dedicated to protecting Jesus' bloodline. On its publication in 1982, the book was an immediate hit, and returns a 2003 *New York Times* best-seller.

These same ideas were fictionalized by Dan Brown in his 2003 detective thriller *The Da Vinci Code* (DVC), which tells a story of a Harvard symbologist stumbling into a conspiracy on a business trip to Paris. As the primary suspect in the murder of a Louvre museum curator, he sets off on a journey with the curator's cryptologist granddaughter to uncover the story of the marriage of Jesus Christ and Mary Magdalene and their bloodlines. The tale involves puzzles and anagrams, as well as links to such exotic elements as the Holy Grail, the Knights Templar and the Roman Catholic sect Opus Dei. It was an immediate hit and has continued to be a best-seller, since translated into 42 languages.

But did it contain plagiarized materials? This was the central allegation of a High Court action in London in February 2006, when Leigh and Baigent jointly sued Random House (the publisher of both books) for copyright infringement (Lincoln did not join the legal proceedings due

to illness). The argument, as Leigh put it, was that Brown had 'lifted the whole architecture – the whole jigsaw puzzle' – of their 6-year research done 20 years previously 'and hung it on to the peg of a fictional thriller'.

On 7 April 2006, the court battle ended when the Hon Mr Justice Peter Smith issued a 71-page written judgment (which even contained a secret code with italicized letters for people to try to crack, leading it to be called the *Smithy Code judgment*). The verdict went in favour of Random House that the ideas, central theme and structure of the Da Vinci Code showed no evidence of having been plagiarized from the previous work. While the Copyright, Designs and Patents Act 1988 clearly stipulates that owners of copyrights are protected for their original work, the general principle behind copyright protection is, as we have seen in earlier chapters, that copyright protects the *expressions of ideas*, not *the ideas themselves*.

It is worth noting the significant publicity impact the case had on both sets of authors, which has led some unkind commentators to suggest the whole affair was, in fact, just a publicity conspiracy. The chief executive of Random House – Gail Rebuck – admitted it was a rare occurrence for authors to sue their own publisher. HBHG had sold a steady average of 3,500 copies a year after its initial peak – but sold 365,000 copies during the year after the trial. The book returned once more to the bestseller lists, and the associated publicity also boosted sales of the authors' other publications. Meanwhile, DVC recorded sales of 500,000 in one week following the trial and its related media publicity. This second 'sales peak' came on top of worldwide sales of over 40 million. Nor, interestingly, did the publicity do anything to dampen audience anticipation of the Tom Hanks film version, released barely a month after the trial ended.

Such publicity is short-lived, but the implication of the case on people's understanding of copyright remains. This case makes people ponder about plagiarism – using others' work as one's own without acknowledgment. As far as creative fiction writing is concerned, it can be argued that it should not be deemed plagiarism if the user's work has demonstrated creativity, in other words, adding value to a piece of copyrighted work. This forms the main ground for argument for the DVC case that made Justice Smith rule in favour of Random House instead of the HBHG authors. The argument is in line with the intention of copyright protection: creative endeavours should be protected by copyright, but creative freedom should also be encouraged. However, what forms infringement is often a grey area, and dealing with such problems is both a court and a business matter.

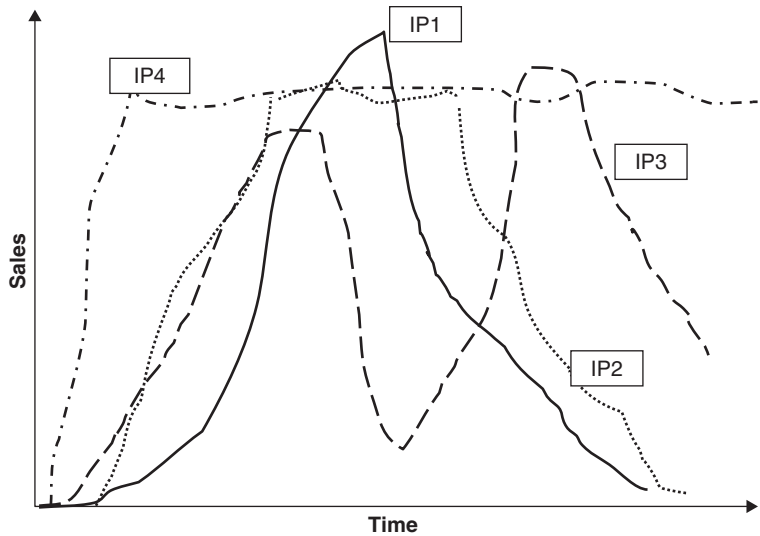

Figure 11.1 Intellectual property obsolescence cycle
Source: Created by the author.

11.1 Three ways to lose an intellectual property

An IP can lose its market value in three ways – obsolescence, imitation or infringement. Figure 11.1 shows the *obsolescence* process of IP: books, DVD films, music CDs, IP products with imbedded inventions and fashion design all follow these cycles. Different patterns can be observed over time. When an IP product is introduced onto the market, it is new, and therefore popular, and sales surge. Once they reach a peak, they may immediately go down again (IP1) or stabilize for a while before falling (IP2). Some IP products may record two peaks, or even more (IP3). In April 2003, the BBC's 'Big Read' programme ranked the all-time 100 most popular novels, and also produced a top 20 at Christmas time – this media publicity, naturally, brought these titles renewed popularity and sales. Meanwhile IP products that are in constant demand by consumers stay at steady sales levels (IP4). In this categorical cycle, the market value of the IP tends to be related to the reputation of any associated marks. Once a brand name is established and has gained credibility from consumers, and if the IP owners (or their marketing staff) make efforts to maintain the brand, branded product sales can remain at the IP4 level.

IP can also lose its market value if an original product or service is challenged in the market by *imitations*. As noted in previous chapters, such

imitations can derive from reverse engineering, 'inventing around' or via legal authorization from the IP owner. Owners of the original rights cannot prevent people from developing legitimate imitations, which will also, in their turn, benefit from IPP under protective claims. Indeed, some would argue that imitation should be encouraged, so that society can benefit from dynamic creative activities that reduce costs to the consumer.

Infringement is the third way an IP can lose its market value. In contrast to imitation, infringements, either innocently or deliberately, invade the legitimate protected territory of others' IP rights. This results in companies in legitimate businesses having to share market with infringers. Where the actor lacks knowledge of the original IP, infringements can be innocent.[2] An example of innocent infringement led to the dispute between George Harrison and Bright Tunes Music Corp.[3] Harrison's song 'My Sweet Lord', which topped the charts in the early 1970s, was challenged on account of its melodic similarity to 'He's So Fine' sung by the Chiffons in 1963. Harrison was found guilty of unintentionally copying, and paid a substantial proportion of the royalties from his song to the litigant.

Deliberate infringement is the intentional act of illegally using another's IP protected works for profit and/or personal interests, and constitutes an offence against national IP law. The term tends to be used interchangeably with piracy and counterfeiting to describe deliberate IP violations of others' work. (Piracy and counterfeiting are elaborated as the main themes of the next section.) An obvious example of such deliberate infringement is the counterfeiting of currency. In 2004, a Romanian couple were sent to prison for a total of over 9 years after being charged with running a multi-million pound forgery factory just two miles from the Home Office in London.[4] A police raid discovered 1,335 fake and 97 genuine EU country passports, together with 2,200 unfinished counterfeit credit cards, 1,620 forged £20 notes, forged national insurance cards, together with sophisticated machinery for producing counterfeits, such as cloning software, skimming devices, embossing machines, and blank plastic cards. The case demonstrates that traditional counterfeiting methods are still popular, although carried out at ever-more sophisticated levels.

11.2 Piracy and its typology

Piracy here broadly refers to 'the unauthorized use or reproduction of another's work',[5] such as a copyrighted software. It has much broader

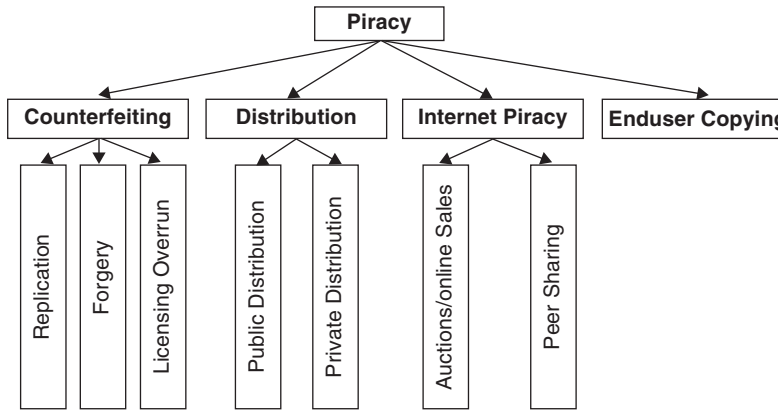

Figure 11.2 Types of piracy
Source: Created by the Author.

meaning than counterfeiting, which means 'to imitate exactly something valuable or important',[6] (such as currency) with the intent to defraud or deceive. In practice, piracy and counterfeiting tend to be used as two separate concepts, with piracy focusing on copyright infringements and counterfeiting on trademark and patent infringements.[7] This book would argue that, in fact, piracy and counterfeiting are not mutually exclusive, but counterfeiting is a type of piracy activities on two grounds. First, both involve the unauthorized production of IP-related products and services without the owner's consent and with the intent of benefiting from the infringement. Counterfeiting, as exact duplication, is one way of reproducing another's work, and thus is the same as piracy. Second, an IP product tends to be associated with a number of IP rights, including patent, trademark and copyright. It can, therefore, be difficult to separate copyright infringements from patent and trademark infringements for a particular product.

Piracy can be divided into four broad types, including some sub-types (see Figure 11.2). The first broad type can be categorized as *counterfeiting*, which itself can be further divided into three sub-types. The first involves *replication*, that is, copying an IP-protected work without any modification: counterfeiting currencies, as discussed in the previous section, is a typical case in point. Replicas appear in every business from fashion and design to the sophisticated pharmaceutical industry. The second sub-type is *forgery*, which occurs often in the auto, fashion and other imitable businesses. Either modifications are made based on the original

IP product, and marketed under a different brand name, or the (forged) trademark of a prestigious company is added to a product which does not come from the company. Finally, *licensing overrun* is a sophisticated way for licensees to take advantage of their licensing rights by over-producing the amounts stipulated in their licensing agreement, and selling these 'genuine' items on their own account. For example, if Manchester United (MU) PLC authorizes licensees in China or Thailand to manufacture MU branded T-shirts, the agreement might specify that 5,000 T-shirts will be exported back to the UK. But the licensees realize that there are a multitude of MU fans in these two countries who would be pleased to get their hands on the new T-shirt, and surreptitiously manufacture another 3,000 T-shirts, which they then sell locally at affordable prices.

Piracy can also be categorized as *distribution piracy* – pirated products have become a lucrative business that is spreading over wholesalers, retailers (department stores, street shops and vendors) – *public distribution piracy* – and individual consumers – *private distribution piracy*. Organized counterfeiting manufacturers tend to have organized distribution channels to ensure profitability. Small shops and street vendors are the easy-to-see channels to sell fakes in developing countries, and even in the streets and cafés of many European tourist destinations. The advancement of computer technology has certainly allowed such vendors to 'produce' thousands of copies of these fakes from one single original and one computer. Similar cases may happen between consumers, particularly among students. Thus, a student with an expensive or fashionable piece of software (especially a much-hyped computer game) can produce a number of copies to sell cheaply to his classmates or friends, and more than cover his costs. This type of consumer sharing is different from Peer to Peer (P2P or person to person) music 'sharing' and end-user copying that are discussed next, in that money and even (in retail/street situations, probably substantial) profits can be involved.

With the increasing sophistication of Internet technologies, *Internet piracy* has to be categorized as one broad piracy type. *On-line auctions/sales* are emerging as a significant source of profit from piracy, as millions of products can be auctioned on websites without any guarantee of product authenticity and quality. MU claims that hundreds of thousands of fake T-shirts are auctioned on EBay (Yang and Sonmez 2005) and these same problems infest Internet 'sales' sites. The discrete sub-type involves *peer sharing*, which are used to upload music, video or software for general public access. This 'borderless' piracy has created two problems. One is the benefit loss incurred for firms and artists when consumers opt for free downloading instead of buying 'original' music and movie DVDs from

shops or over the Internet. The other concerns the risks for down-loaders caused by viruses associated with P2P files. To try to combat these problems, record companies have introduced 'Pay-as-you-Go' Internet music supply systems, where consumers can download authentic music at competitive prices (although not, of course, for nothing!). This guarantees the firm some level of legitimate income and consumers virus-free music. Internet service providers (ISP), such as Microsoft's MSN, the Italian based Tiscali, and the American-based iTunes all offer this kind of service. While the Pay-as-You-Go strategy will not eliminate free-downloading altogether, it will attract consumers who want to save money, but don't want the risks of acting illegitimately or catching viruses. In the long run, as has been widely discussed, the pressure of P2P will force firms to find inventive ways to reform these IP markets: the conventional way of running the music industry appears now to be doomed.

Finally, piracy can also be *end-user copying*, where the copying is in fact carried out by the end users themselves – organizations, firms or individual consumers. This is common in the software industry and education sector. Whereas counterfeiting is aimed at profiting from fake product sales, this type of piracy is oriented towards consumer cost saving. For instance, a government organization or a firm may buy a software package and then install it on all their PCs in breach of their end-user licence. Individual consumers may act similarly, or simply 'borrow' the programme from a friend. (Some software companies take a kind of revenge against such 'software pirates', by equipping their programmes with code to throw rude messages up on the screen to discomfort unlicensed users!).

11.3 Impact: Where there's intellectual property, there's piracy

Piracy has been called a victim-less game, but it certainly has winners – the counterfeiters get rich. In fact, it is an unscrupulous practice, and it does have victims. Governments, consumers and companies are all victims in different ways (Yang, Sonmez and Bosworth 2004). National governments have to bear a variety of costs, including allocating resources to deal with piracy, such as piracy surveillance and enforcement as well as lost tax revenue and unemployment. Counterfeiters tend to operate underground, thus evading tax payments, and while they may create some (illegal) employment, they also create uncertainty for workers. It has been estimated that every 10 percentage point fall in piracy rates generates over 13,000 jobs in the software industry in China, and nearly US$80 million tax revenue for the Chinese

government in 1998.[8] Several authors (for example, Olsen 2005; Van Wijk 2002)[9] estimate that global piracy accounts for 5 to 8 per cent of world output, and 5 to 7 per cent of world trade. International trade in pirated physical products probably far exceeded US$200 billion in 2005, as this estimate excluded domestically produced and consumed counterfeit products (OECD 2007). To place this in some perspective, this amount exceeds the total GDPs of 150 economies (op. cit.).

As for consumers, the pirated products offer no warranties or after-sale services, and thus give no sense of security, and sometimes confuse consumers with low quality and low prices. And when fake products are associated with safety and health, such as food, drinks, drugs and car spare parts, victims of such forgery can pay with their lives. The WHO[10] estimates that up to 10 per cent of the medicines on the world's market are fake drugs, generating a total sales value of $35 billion a year. These percentages can be higher if we examine the drug markets of developing countries. Research by the Nigerian Institute of Pharmaceutical Research found that 60 per cent of the drugs sold in Lagos were fakes (Primo-Carpenter and Mcginnis 2007). In 2004, 13 Chinese babies died from drinking fake milk.[11]

Companies with IP ownership are perhaps the most obvious victims of pirates' speculation, as they must endure both financial losses and damage to their reputations. Financially, the loss is associated with swift decline of sales, leading to a drop in their market share with negative consequences for their workforces, and the longer run discouraging effects on their energy for research for new developments, and devaluating impact on their corporate brands and reputation. In addition, a firm may even have to bear legal liability for bogus products. A consumer injured while using a counterfeit product may sue the original company for not taking adequate measures to prevent fake products being sold in the market. If the court finds the company's preventative actions were indeed insufficient, it may award damages to the consumer. Firms also need to invest in educating consumers to differentiate fakes from the genuine. Due to the difficulties in eliminating piracy entirely by relying on government organizations, firms may also take actions to counter piracy, thereby incurring further costs. For example, Procter and Gamble spends on average US$3 million a year to combat piracy.[12]

11.4 Causes: Globalization of piracy

Several factors explain the prevalence of piracy – the IP environment, supply and demand reciprocity, and corporate factors.

11.4.1 Intellectual property environment factors

Three IP environment factors seem to play important roles in the prevalence of piracy – economic development, attitude and understanding derived from cultural origin, and the legal environment. The association between piracy and economic development was discussed in the IP facts section in Chapter 5. To summarize, piracy is related to income level, in that lower income levels contribute to the prevalence of piracy (e.g., Burke 1996; Husted 2000; Marron and Steel 2000; Ronkainen and Guerrero-Cusumano 2001; Traphangan and Griffith 1998; Yang and Sonmez 2007). This is partly due to the fact that low-income countries tend to have less manpower, police and judiciary force to handle IP-related issues, including piracy, but much more, of course, due to the mismatch between local disposable incomes and fashionably high or monopoly prices.

Similarly, Chapter 6 has extensively discussed the association between culture and piracy. To reiterate, prior research appears to concur with the view that the world can be divided into collectivist and individualist societies, which have, respectively, comparatively higher and lower rates of piracy (Shore et al. 2001). Individualist societies seem to have higher levels of recognition of IP and individual achievement, in contrast to collectivist communities, where sharing is legitimate, and an effective and recognized method of transformative learning (Kuanpoth 2002; Yu 2001). The difference between these two types of societies is also reflected in their motivations for creativity. Collectivist societies emphasize esteem, such as fame and honour, rather than the materialistic rewards that are more stressed in individualistic societies. Chapter 6 also studied education as a culture/piracy link revealing that, on the surface, there appears to be no direct link between education and piracy (Ginarte and Park 1997; Marron and Steel 2000; Yang and Sonmez 2007). However, education enhances people's understanding and IP-associated training can change people's attitude towards IP in the long run, while increased skill levels may also make it more likely that citizens may be involved in IP matters as creators themselves (Al-Jabri and Abdul-Gader 1997; Yang 2005).

The third IP environmental factor to impact piracy is the legal environment associated with infringements and penalties, which could entail either or both fines and criminal charges for piracy offences. Nations are tending to increase fines for piracy offences: for example, Russia has doubled its fine to US$20,000,[13] and the European Commission has proposed a new directive to harmonize the penalty fines to $120,000 if organized crimes are committed across member countries.[14]

Nonetheless, the maximum fines applied by nations to penalize IP offences still seem to be too lenient to prevent the offences being repeated (Yang, Fryxell and Sie 2008). As far as criminal charges are concerned, 76 per cent of 101 countries studied by the author have laws that count piracy as a criminal offence. However, it is often difficult to put criminal procedures into practice because of the problems of finding hard evidence. Pirates are aware of the illegitimacy of their conduct and discreet about recording their product sources and distribution arrangements. Thus arrests and charges can cause the police and judiciary major problems, and offenders are all-too-rarely convicted, or even apprehended.

11.4.2 Supply and demand reciprocity

Fundamentally, the supply of pirated products responds to consumer demand levels, which are increased by the price gaps between authentic and fake products. This demand allows manufacturers and suppliers of fakes to make quick profits from low prices, as they have no R&D, promotion or brand design costs to carry. Brand and innovation driven allegiance creates the desire for ownership of popular products, but such desires can only be satisfied when the financial means are readily available. In reality, the prices of innovative or branded products are often out of reach for the majority of poorer consumers, because they reflect the cost differences between innovating and manufacturing them, and simply manufacturing them (Bosworth and Yang 2006). Purchasing pirated products is a compensation strategy for poorer consumers to realize their materialistic goals.

Early research categorized consumers of counterfeits into two broad groups – the 'deceived' and the 'non-deceived' (Bloch, Bush and Campbell 1993). 'Deceived' consumers are those who unknowingly buy fake products. For example, among the most nefarious counterfeit products are those that are health threatening, such as anti-malarial medicines which lack any active ingredient. Obviously, in such cases, counterfeiters strive to make their products indistinguishable from authentic ones so as to fool consumers into buying them. This also applies to such products as automobile brake pads where failure or poor performance may result in injury or death.

'Non-deceived' consumers, on the other hand, are aware (or at least amply suspicious) that what they are purchasing is fake. As a result, suppliers of such products tend to be rather open about the non-authenticity of their wares, and aim at consumers who seek to be associated with branded products at a discounted price. This may be either because the authentic product is beyond their financial reach, or because the

premium asked for the original good is so high the purchaser concludes it is simply not worth paying. The fake products this category of consumers favours tend to include fake-branded fashion goods (e.g., Gucci® handbags, Rolex® watches).

Not all counterfeited products, however, so cleanly map onto these two consumer archetypes. For example, some counterfeit golf clubs (e.g., Callaway® or Ping®) are nearly indistinguishable from authentic ones and may be sold deceitfully as originals, whereas others are obvious fakes given their fairly obvious quality flaws and/or prices that are simply 'too good to be true', which clearly signal to the consumer that they are not originals. Broadly speaking, marketing to 'deceived' consumers is much more lucrative, as prices may (indeed, should, if the counterfeiters have any business sense) approach those of the originals, leading to very high profit margins. This is because counterfeiters may have improved the quality of fakes and made it difficult for consumers to clearly identify them as such (Bian and Veloutsou 2007; Gentry, Putrevu and Shultz 2006). Consumers assess the risks, price and quality of a product, then decide whether they should make the purchase. The assessments tend to be subjective, and therefore purchasing decisions are individual actions that impact on the market share of the genuine products (Matos, Ituassu and Rossi 2007).

11.4.3 Corporate factors

While they are certainly major victims of piracy, companies also themselves contribute to the spread of counterfeiting in several ways. First, high prices drive consumers away. But, as noted in Chapter 8, when setting a product price, companies take into account factors (such as high piracy rates) that they fear may undermine their market success. Subjectively assessing these risks, they tend to exaggerate them and then set high, or even monopoly, prices as a guarantee of profit and 'an insurance' (Pugatch 2004) of their corporate operations. The consumers are thus driven towards the pirates. Second, the distances involved in international operations can create difficulties in controlling piracy. Firms tend to seek cheap production in developing countries to minimize costs, and thus much production is operated from a distance (such as through licensing), which inevitably affects corporate ability to exercise effective control over piracy.

Finally, the products manufactured by firms are closely relevant to the extent of piracy production. Some products can be easily copied, allowing outsiders to introduce duplicates into the market. This category is mostly associated with copyright, trademark rights and sometimes

patent rights, and includes software, clothing, music CDs and movie DVDs, published books and medicines. Other products, where manufacture relies on highly sophisticated technology, will clearly be much more difficult to copy. Thus the company's choice of product, in itself, will tend to encourage or discourage piracy.

11.5 Solutions: Strategic actions for alleviating piracy

The prevalence of piracy warrants the need for companies to take corporate anti-piracy actions instead of depending solely on government resolution (Shultz and Saporito 1996; Yang et al. 2008). For example, administrative measures – corporate actions seeking support from governments to curb piracy – are perceived as a viable option for piracy solution (Simone 2002; Yang et al. 2004). Firms are willing to seek such support where access to the administrative bodies that focus on piracy problems is straightforward. Firms may also take judicial actions, initiating civil or criminal proceedings against piracy. Both must be associated with the actions of the relevant IP enforcement body, in other words firms take initiatives, but the verdict lies in the court and prosecution in the police. However, the weaknesses associated with such administrative measure and judicial actions enhance the arguments for corporate actions against piracy. Earlier discussions have already mentioned the limitations of using inadequate fines to penalize offenders. Other administrative measures include warning, public apology and injunction, which may also be measures that are too lenient to prevent further offence. In addition, judicial enforcement is often viewed as a 'last resort' as the costs incurred from long proceedings and the input of corporate human resources also discourage firms from taking legal actions (Olsen and Granzin 1993; Yang 2005). Moreover, sheer uncertainty about the court proceedings result in asymmetric expectations as to the outcome of the litigation (Priest and Klein 1984; Somaya 2003). The very secrecy of IP information can also give managers second thoughts about whether litigation should take place (Bebchuk 1984; P'ng 1983; Schweizer 1989; Spier and Spulber 1993). Court proceedings require information revelation that may undermine the value of the competitive edge protected by the IP. The inevitably unequal outcome of court proceedings may also deter some firms from taking legal actions – one party will always end up feeling unjustly treated, and thus enforcing eventual settlement may prove difficult.

Given the above, it is unsurprising to see firms nowadays adopt a strategic approach to alleviating piracy. Businesses may address the problem

of piracy in three ways: *awareness*, *action* and *assertion* (Harvey 1988). *Awareness* is about disseminating information regarding the piracy of products so as to alert consumers, distributors, and government organizations about the extent and nature of the problem. *Action* could include the company creating a specialized task force to combat piracy, and supporting its efforts with business and media influence. *Assertion* includes actions to enforce IP by various means (e.g., tracing fake products, informing government bodies, publicizing offenders, lobbing for stringent enforcement). Extending Harvey's argument, Delener (2000) believes that monitoring and product/packaging modifications should also be added to address piracy problems from corporate perspective. Yang et al. (2008) investigated the effectiveness of piracy strategies using foreign brands in China. They categorized strategies into three broad groups – administrative measures, judicial actions and corporate approaches. Taken together, however, no single approach seemed sufficiently effective, and they concluded companies should combine different strategies to tackle counterfeiting in order to maximize their effectiveness. The study by Lybecker (2007) in the pharmaceutical firms' strategies against counterfeiting was in line with Yang et al's finding. In other words, anti-counterfeiting strategies – adopting new technologies, enforcement, monitoring supply chain and educating consumers and healthcare professions – are not equally effective, but increasing penalties and securing the supply chain can reduce the levels of counterfeits on the market.

In the following sections, we use relevant cases to delineate ten frequently used corporate strategies against piracy based on a taxonomy of proactive approaches to prevent piracy, defensive weapons to cure it and networking means to protect against it in the long run (Figure 11.3 and Table 11.1). Each strategy is explained as a measure, together with its strengths and weaknesses. In line with other research, the emphasis is that, despite the prevalence of piracy, companies should be solution-oriented in handling piracy, that is, treating piracy as a 'daunting challenge rather than an affliction' (Yang et al. 2004: 471). The most effective method to handle piracy cases is by using a combination of the ten strategies.

11.5.1 Prevention is better than cure – proactive approaches

11.5.1.1 Technical solutions and effective labelling: The Budweiser strategy

This strategy commonly involves using either technical solutions to prevent the piracy of product technicalities (such as printer cartridges), or

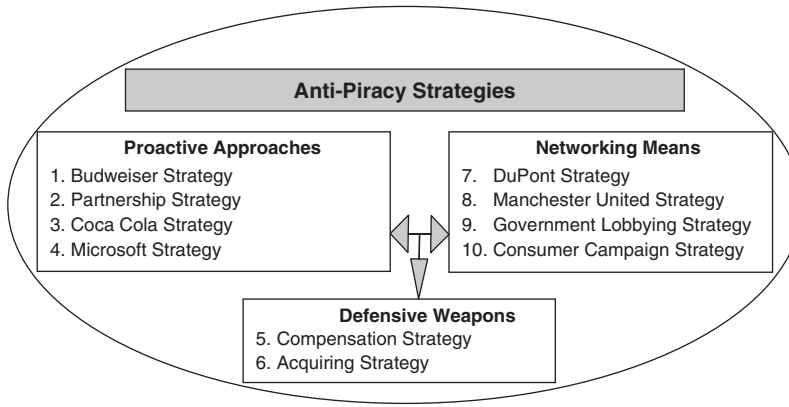

Figure 11.3 Corporate strategies against piracy
Source: Adapted from Yang, Sonmez and Bosworth (2004).

adopting effective labelling to prevent the piracy of a branded product. The strategy is to make the product distinct from its competitors and prevent copying, allowing consumers, distributors, retailers, authorities and owners themselves the security of authentication of genuine products. The strategy is named after Budweiser, which has employed it successfully by using fluted edges to its beer cans to increase the technical barriers to duplication.

We can categorize two types of Budweiser strategy depending on the authentication orientation. One is consumer-oriented authentication, i.e. the technical solutions and labelling are intended to allow consumers to easily differentiate fakes from genuine branded products. The other is manufacturer-oriented authentication, which both firms and government authorities can use for inspection purpose so that actions can be taken against piracy. Thus, MU PLC uses special labelling techniques to verify if their products are authentic. The labels do not look unusual to the naked eye, but include ultra-violet sensitive elements which show up under an appropriate light source, allowing fake and genuine products to be differentiated.

This strategy involves a variety of frequently used methods. Digital security numbers are often used to prevent fakes from being channelled into authentic markets, allowing production details and manufacturers to be traced as all authentic products are individually numbered. Anti-tamper foil labels, intaglio printing (frequently used to prevent counterfeit currency) and holograms (three dimension transposed

Table 11.1 Ten corporate strategies against piracy

	Strategies	Measures	Pros	Cons
Proactive approaches	1. Budweiser strategy	Effective labelling and featured packaging	Prevent pirated goods from entering the official channel, and licensing overrun	Financial backup, human power for checking, and research the capacity of replication
	2. Partnership strategy	Tight quality contract and supervision	Prevent product overrun, and abide by contractual agreement	Lengthy negotiation with partners
	3. Coca Cola strategy	Lower price to allow little space for pirates to compete	Attract consumers to give up fakes and buy authentic products	Not a very attractive strategy for high tech products
	4. Microsoft strategy	Field and virtual monitoring of manufacturing and distribution	Keep fakes checked and take immediate actions with evidence	Costly, and on-line transactions can be difficult to trace when there is a fake address
Defensive weapons	5. Compensation strategy	Strike a financial compensation with pirates	Immediate financial returns, stop piracy, and further action can be taken with a constructed case if this fails	Negotiation can be lengthy, and pirates may be unwilling to pay the sum
	6. Acquiring strategy	Buy piracy firms	Prevent further piracy from certain pirates, cheaper productions with quality control, and prepare relevant evidence for further action if this fails.	Conditional that pirates must have skilled workers and other packages, and financial loss initially

Networking means	7. DuPont strategy	Reapplication of IP with persuasive evidence	Resolve wrong registrations from the authority, and/or early registrations from other companies	Unpredictable, costly, and time consuming
	8. Manchester United strategy	Network with other firms to share the grief and experience, take joint measures to curb piracy, and pressurize authorities to take action	Learning curve for all firms, strengthen pervasive power to government by joint efforts and cost-sharing	Need good organization and coordination
	9. Government lobbying strategy	Cooperate with and seek support from the government	A wide publicity and media attention on piracy, improve relations through working with the government, and brand building in the process	Bureaucratic, and take time to collect evidence and prove the case
	10. Consumer campaign strategy	Advertising, shopping centre display, sponsorship on anti-piracy with firms and organizations	Brand building, educate consumers to give up fakes voluntarily, improve customer relations, and network with firms and organizations	Costly, time consuming, and immeasurable about the effects

Source: Adapted from Yang, Sonmez and Bosworth (2004).

labels) are also frequently adopted methods, and firms tend to combine a number of these methods to protect themselves from becoming victims.

This strategy has its merits and drawbacks. It is an effective strategy in restricting pirated goods from entering official channels, and preventing licensees from overrunning production of the authentic products by supplying only limited amounts of authentic labels. Firms, distributors, retailers, and consumers can now more easily identify the authentication of a product. This strategy is more preventative than curtailing, in that it is better at stopping fakes reaching the market than stopping them being made in the first place. But while such strategies will be effective against less-proficient pirates, they will fail against more sophisticated counterfeiters with the expertise to replicate authentic marks, unless firms can constantly stay ahead of them by raising or replacing technical barriers, with the obvious implications for financial and manpower resources. Visible labelling actually itself provides the information which pirates, given time, can copy to continue to confuse consumers. But less identifiable labels and technical solutions may also create problems, as, since they are hidden, consumers cannot tell the fake from the genuine article. Furthermore, such hidden solutions often need special reading devices or other aids, resulting in additional costs for the IP owner.

11.5.1.2 Contractual surveillance: A partnership strategy

It is vital, at the outset, for collaborative partners to reach a well-specified contract, which includes clauses dealing with IP violations. This prevention strategy is to reduce the likelihood of internal IP violations and stipulate clear responsibilities to resolve disputes when external violations occur. The contractual agreement should also stipulate clearly the penalty for IP violations between partners, and such contractual obligations are particularly important in a new partnership where trust has not yet been fully established, or where partners have diverse views on contractual obligations. As we have seen in earlier chapters, Chinese partners tend to put greater emphasis on flexibility and trust while Western partners stress the importance of a detailed agreement more vigorously. Contractual obligations are important in preventing commercial misdemeanours: by specifying the conditions partners must abide by, a quality contract both sets the parameters for effective contractual surveillance, and allows the penalties for internal violations to be well-understood between them.

11.5.1.3 Narrowing price gaps: The Coca Cola strategy

This strategy involves narrowing the price gap between authentic and fake products, and has been adopted globally by Coca Cola as an important strategy to prevent their products from being copied. The rationale is that the smaller the price gap is between the genuine and fake products, the more likely the consumer is to buy the authentic version, which has the advantages of reliable quality, brand image and the availability of after-sale services. The key to pirates' business success is the ability to target a particular market and exploit the authentic owners' high R&D, advertising and services costs, which are reflected in genuine products' high prices. The availability of cheap replicas certainly attracts non-deceived consumers. Attractive products (such as a Prada handbag), may be technically uncomplicated for pirates to replicate, with labels that confer great prestige on buyers. Customers may feel their only risk is whether such 'symbolic' products, highly visible in society, will appear to be genuine, or whether they will be recognized as cheaper imitations (Nill and Shultz 1996). More sophisticated customers, however, will be under no illusion that their purchase won't be recognized as a fake – they may just enjoy the fun of owning a famous label, if only vicariously!

Nonetheless, the effectiveness of this strategy is limited by a number of variables depending on the company concerned. First, this strategy may have little influence on those price-conscious consumers who believe that cheap is beautiful and that authentic firms are exploiting them. Therefore, this strategy should be combined with other corporate tactics, such as education campaigns, in order to have the best effects on a wider range of consumers. Second, this strategy may not work well in high R&D firms. Taking Coca Cola and Microsoft as examples, the difference between Coca Cola drinks and Microsoft software is the input of Microsoft R&D in software, which needs to be recouped through sales. In comparison, the Cola drinks are based on their inherited 'secret ingredients' and the long established brand, and its R&D costs are likely to be comparatively tiny. (Its marketing costs may still be high, however, although they will tend to boost sales further – and, to an extent, of counterfeit products as well!) Even if Microsoft lowered its price to a minimum, its need to fund future R&D and marketing costs will still give pirates an exploitable market opportunity.

11.5.1.4 Monitoring markets: The Microsoft strategy

Companies monitor the piracy of relevant products in three different ways: First, they can follow up tip-offs from local traders, licensors, and

work closely with customs to maintain checks and controls on pirated products to prevent fakes from entering the country. Second, companies may hire employees specifically for anti-piracy tasks, who can survey the market to see if there are fakes in the distribution channel, as well as regularly inspecting licensee manufacturing bases to prevent fake production and overruns. Finally, they can use 'virtual monitoring' to respond to the increasing prevalence of on-line piracy, which can take the form of fake products appearing alongside genuine products on major auction sites, such as e-Bay, and of consumers posting music and DVD files for free sharing with others.

Microsoft is a pioneer in adopting and upgrading this strategy: It has adopted a round-the-clock on-line monitoring policy to detect piracy offence from both buyers and sellers. Buyers of fakes are warned that they are purchasing a fake product, and sellers notified to cease their illegal trading activities within 24 hours, or face further action. In combination with this virtual monitoring, private detectives are hired to watch the software marketplace, collect evidence of piracy in the market and investigate undercover piracy cases for further action by Microsoft. While the profession of private detectives working for governments and companies is growing fast in the US, where numbers are estimated at 39,000 (Hopkins, Kontnik and Turnage 2004), there appears to be no such popular profession to deal with piracy in most countries. Piracy investigation in China, for example, tends to be undertaken by IP agents and small-scale firms as an affiliated responsibility, or by retired police officers (op. cit.).

This strategy also has its strengths and weaknesses. While it does protect the legitimate interests of firms and consumers of authentic products, it can be very expensive, depending on the scale of monitoring. Such a strategy is tied to a company's financial capacity to deal with the problem's geographical spread, which can vary significantly with the intensity of a company's business in a particular country and the size of that country. This means that such firms may be able to adopt this strategy only within a concentrated area, perhaps to prevent fakes from penetrating into a particular distribution channel.

11.5.2 There is no panacea, but a cure is necessary – defensive weapons

11.5.2.1 Commercial settlement: A compensation strategy

In addition to adopting preventive measures, firms also need to deal with piracy problems as and when they occur, and seeking financial compensation directly from the offenders may be a quick solution. This

strategy may work effectively in South, South-East and East Asia where their cultures emphasize the value of saving face. A private settlement between the injured party and the offenders may be a shortcut for satisfactory solution. For example, some Chinese offenders would opt for financial compensation and cessation of piracy instead of a public apology in the media. In this way, they avoid being disgraced in public. This is often thought a better strategy than the lengthy, costly and unpredictable procedure of litigation. An aggrieved party may find it more efficient and effective to resolve a piracy issue directly between the two parties and recoup some of the losses incurred. Such a settlement allows firms to take proactive action by approaching offenders directly or via a third party. However, negotiations oriented towards such a financial settlement may also be very lengthy, and may fail in the end if the two parties cannot agree on the amount of payment. When this occurs, the aggrieved party can at least use the results of investigations to construct a legal case, which can be useful evidence to persuade the government for authoritative actions to curb piracy.

11.5.2.2 Legitimizing counterfeiting business: An acquiring strategy

Acquiring counterfeiters' production may sound unrealistic, but it is considered an effective solution in reality. In other words, when counterfeiting is detected, the aggrieved party will investigate the counterfeiter's production. In this process, it will be able to assess whether the counterfeiter has the necessary quality to be part of the firm, such as the availability of the required procurement and marketing channels, and the skilled workers. If the preliminary investigation shows that the counterfeiter could fit in with the authentic firm's production, a negotiation can be initiated. According to a multinational manager (who cannot be named), counterfeiters tend to have a very mixed reaction to such an approach. They tend to be surprised by the discovery of their counterfeiting production by the original owner and their direct approach towards them. They also tend to be overwhelmed by the acquisition offer because of the prestige of belonging to a branded company, the financial benefit and the future of doing legitimate business. Such reactions can contribute a lot towards smooth acquisition negotiations.

There are both costs and benefits to adopt this strategy. Substantial benefits can be gained from stopping counterfeiting production, and acquiring it to be part of the authentic firm, where it can produce cheaper products to the market using the quality standards of the authentic firm. The presence of products in the market which are both cheap and authentic will tend to deter other similar fakes from emerging. (For example,

Honda acquired a Chinese counterfeiting company and has used its plant to manufacture a model that is much cheaper than Honda's other motorbikes. The product has both killed the fake substitutes and generated income for the company.) Even if the original firm does not succeed in the end with its negotiations, as with the compensation strategy, it will have already prepared evidence to persuade government for authoritative actions in the future. Government organizations may organize a raid accordingly to stop the counterfeiting act. This is a win-win strategy for the original firm – whatever the eventual outcome, the original firm will benefit. On the other hand, clearly, this strategy is subject to certain conditions for success, namely, the counterfeiters must have skilled workers, a strong market network, or a good sourcing channel for supply and the original firm must have the financial resources to deal with the special expansion.

11.5.3 External backing and unremitting acts – networking means

11.5.3.1 Reapplication or re-registration: The DuPont strategy

This strategy involves the original firms reapplying or re-registering their inventions or marks with the relevant authorities. This is an indirect approach using government support to stop or prevent counterfeiting. E. I. Du Point de Nemours adopted this strategy in successfully registering its trademark Freon in China in 1983 (Zheng et al. 1995). In 1983, the Trademark Office in China had refused DuPont's registration application on the grounds that consumers and manufacturers in China had already widely adopted the phonemic translation of this foreign word for refrigerants. The trademark was not registered also because the Trademark Office was unfamiliar with all the well-known trademarks in the world – a mark may be well known in one country, but generic in another. In the reapplication, the firm adopted a very persuasive tactic with convincing evidence to demonstrate that DuPont was the originator of 'Freon', and had been using the mark since 1931. The mark had been registered in 91 countries, and Freon had even been listed in the Collin's Dictionary as a well-known trademark. As a result, the Chinese government not only re-examined and approved the trademark, but also urgently notified the firms concerned and the general public in China to stop using Freon as a generic name, and adopt the substitute 'Fluorine refrigerant' for relevant products.

This strategy also has its pros and cons. On the positive side, it is an effective strategy to protect a firm's IP rights from being pirated. This includes combating early registration or applications from unscrupulous

firms and correcting previously inaccurate registrations. IP owners' proof of use is most crucial for the government to make its final decision. However, this strategy is a 'Hobson's Choice' because incorrect registrations granted by government organizations leave firms no choice but to re-apply to correct any inaccuracy, but such reapplication is unpredictable as firms have no control of the eventual outcome. Their ultimate task is to provide as much relevant evidence as possible to the government on the true ownership of the IP. However, the outcome is also costly and time-consuming because re-application can be long drawn and extra costs can skyrocket if court proceedings are involved.

11.5.3.2 Networking with other firms: The Manchester United strategy

This strategy is to establish a network of communications at the firm level and take collective measures against piracy or to exert joint efforts to pressurize governments to take authoritative actions. MU is a model firm of this strategy, and meets other brand firms (such as Puma, Levis and Lacoste) on a regular basis to share their experiences against counterfeiting, including the problems encountered and measures taken to solve them. This is an effective strategy in a sense that it allows firms to intensify learning and save costs by sharing, and joint actions multiply their anti-counterfeiting strength and persuasive powers on government. Such joint actions also include liaison with non-governmental organizations, such as the International Anti-counterfeiting Coalition and industrial associations. Another advantage of this strategy over many others is that it can be functional for companies regardless of their size. Nonetheless, it takes much time and efforts to coordinate firm level communications for collective measures.

11.5.3.3 Cooperating with governments: A lobbying strategy

This strategy is based on cooperating with government organizations, such as administration and enforcement agencies, and seeking their support. Getting swift government decisions on acting against piracy, whether by raids or injunctions, depends on the aggrieved parties providing sufficient evidence of wrongdoing. Microsoft has been successful in adopting this strategy in China. Driven as a top corporate objective, it has offered training to government officials against IP violations and established training institutes to increase IP awareness in China. This strategy takes time to bear fruit, but it does exert long-term external pressure on government to tighten its IPP against piracy. Governments taking actions against piracy attract wide media attention and alert the general public. From the corporate perspective, government action represents

free brand promotion for the aggrieved party. The bureaucratic route can be productive when firms provide detailed evidence to persuade government to take action, and is preferable to immediately instigating legal proceedings. Although decisions lie with government as to whether actions should be taken, firms play a crucial role in persuading them with sufficient evidence. Realistically, governments are inhibited from investigating each individual case because of resources constraints, budgets and also perhaps the geographical spread involved. They will be far more likely to pursue the case and take action if explicit evidence is available.

11.5.3.4 Enhancing consumer awareness and relationships: A consumer campaign strategy

Consumers should be the focus of a firm's long-term strategy against piracy, including raising consumer awareness and improving business–consumer relations. To raise consumer awareness, advertising contents should incorporate texts and images about the dangers of piracy, emphasizing the value of authenticity, and telling consumers how they can verify genuine products. This is particularly relevant when a company introduces a new technological product. According to Yang and Fryxell (2007), the introduction of innovative technology must go hand in hand with advertising campaigns against piracy to become effective. Frequent technological changes may confuse consumers if they are not fully informed that these are new and authentic products, rather than fakes. With advertising in place, consumer awareness increases. Consumer campaigns aimed at increasing awareness of piracy at commercial spots is a more direct way to educate consumers. For example, firms send representatives to shopping centres to demonstrate real and fake products, and how to authenticate a genuine product. Firms may organize a large-scale exhibition. Such campaigns increase the publicity about the dangers of piracy and attract media countering counterfeiting. (In effect, such campaigns are part public education, part advertising. Education about the dangers of fake drugs clearly has a public benefit – warnings against software piracy are more likely to benefit the corporate bottom line!) The campaigns would encourage some consumers to give up buying fakes, and the occasion also allows firms to explore consumer product needs, thereby enhancing consumer–business relations and brand image. In the meantime, joint campaigns also create opportunities for business–government, business–business and business–NGO communications, and enhance corporate relations with these actors.

Closer: Starbucks: Infusing bliss and brewing agony[15]

The purpose of this case is to demonstrate that despite the key role companies play in fighting piracy, the reliance on governments' administrative and judicial mechanisms can never be ignored. This closer looks at the case of Starbucks' global 'brewing bliss and agony', and focuses on its trademark battles in China, Korea and Japan.

Starbucks is a symbol of globalization. Since its establishment in 1971, the coffee company has grown into an empire with nearly 13,000 coffee houses either company operated, under joint ventures or franchised in 37 countries. Its grand plan is to have 20,000 stores in the world, a joint venture for market expansion is under way in India and there are future ambitions to open operations in Brazil, Egypt, India and Russia. Starbucks' success is in the strength of its brand and the public recognition of the quality of its coffee. The brand has gained consistent public recognition: in 2006 alone, Starbucks was awarded the 4th 'World Most Influential Brands' by *Brand Channels*, one of the '100 Most Valuable Brands' by *Business Week*, and one of the 'Ten Most Impactful Brands' by *Brand Channels*.

While Starbucks' trademark has been its bliss, it has also been the agony of the firm. In China, the name Starbucks was registered in Chinese translation – Xing Ba Ke (Xing means stars; Ba Ke is the translation based on bucks pronunciation) by a Shanghai-based company in 1999. In Korea, the Coffee Food & Beverages Company Ltd., a local coffee chain has been using a logo under the name 'Starpreya Coffee' with a green background and white circle, but a goddess in the centre instead of the Starbucks' logo's mermaid (Photo 11.1). In Japan, there was also a brewing trademark battle between the Starbucks and its leading Japanese rival chain, Doutor Coffee Co. All these battles produced winners and losers, and we focus on them to demonstrate how companies rely on governments to win and to lose.

The three cases associated with Starbucks in the three locations – China, Korea and Japan – had three different outcomes. In China, Starbucks was a winner. Its mark was registered in 2000, included both the logo and the Chinese translation. The main battleground was Shanghai, where Starbucks owns over 30 coffee houses (of a total of over 80 in China) while Xingbake concentrates on its two shops. Both coffee chains use logos with green background and white circles with two languages and different pictures in the middle (Photo 11.1). Starbucks sued Xingbake for infringement. In December 2006, Shanghai High Court sustained a lower court's ruling and ended the battle that had been brewing

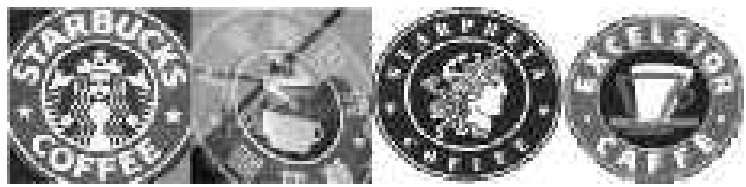

Photo 11.1 Starbucks, Xinbake, Starpreya and Excelsior Caffé
Notes: (1) Starbucks and Xingbake images: by courtesy of Mr. Thomas Moore. (2) Starpreya image: by courtesy of Wooki Kim – the CEO of the Elpreya Co. Ltd. He explains in the letter of authorizing the use of Starpreya logo: "'STARPREYA" is drawn from Norse myths and refers to the "goddess of love and beauty who shines like a star in the night sky."' (3) Excelsior Caffé is part of the Doutor Coffee Co., Ltd, Japan. Excelsior Caffé's green background was changed into blue as a result of the dispute.
Source: (1) Moore, T. (2006) Land Mark Judgment in Chinese IPR Case, at http://www.eastmids-china.co.uk/starucksvxingbake.html, accessed 5 October 2006. (2) www.starpreya.co.kr; (3) www.doutor.co.jp.

since 2003 by ruling Xingbake's trademark was an infringement. While the local company argued that it registered the mark one year before Starbucks, Starbucks had two advantages – it was a well-known trademark and Xingbake was clearly derivative, being a translation of the word Starbucks. As a result, the local firm was ordered to pay US$62,000 to Starbucks and to stop using the Xingbake logo.

Starbucks's bliss in China forms a stark contrast with its agony in South Korea. In 2006, Starbucks started court proceedings against Elpreya – which owned a local coffee house chain called Starpreya – claiming that Starpreya's green and black logo infringed Starbuck's trademark and caused confusion to consumers (Photo 11.1). (Starbucks currently run 180 coffee houses to Starpreya's 40, but coincidently both started their businesses in 1999.) The Supreme Court upheld the ruling of a lower court in favour of Starpreya on the grounds that the two logos were dissimilar except for the use of a star, which is not monopolized, and that Starbucks was not well known in Korea when Elpreya first registered Starpreya and its logo.

In contrast with these two resolutions, the Starbucks–Doutor/Excelsior conflict in Japan was eventually resolved between the companies themselves. The dispute started with Starbucks requesting the Tokyo District Court for a preliminary injunction under the Unfair Competition Prevention Law against Doutor for using a mark similar to theirs to promote its Excelsior coffee houses (Photo 11.1). Since its establishment in 1962, the Japanese coffee chain had expanded to 1,000 stores by 2000.

Under Japanese competition law, such claims tend to be sustained when the marks are identical and the claimant's mark is well known. The dispute was eventually settled outside the court, with Doutor voluntarily changing the Excelsior logo background colour to blue.

This closing case is instructive for companies. First, there is no such thing as bad publicity in IP. Winning or losing games can boost the reputation of those involved. The world would know little about Starpreya, Excelsior or Xingbake, without their disputes with Starbucks. Meanwhile, Starbucks has gone on enhancing its brand reputation in the world. Second, the varied outcomes of similar disputes associated with Starbucks further demonstrate the nation-based nature of IP: no matter how globally harmonized a country is in terms of IPP, when it comes to dispute resolutions, specific procedures in different countries apply. Third, companies should never isolate themselves from a country's government to resolve disputes. The countries' courts decide what is right and wrong, and companies need to collaborate with them by providing evidence and collecting information if disputes are to be resolved smoothly.

Fourth, given the boom in globalized business activities, imitation has become a shortcut to profit. As Samuel Johnson famously said: 'No man was ever great by imitation', but many have become rich by that.[16] But simple replication will never work – instead 'inventing around' for patents, and 'designing around' for trademarks are safe strategies for success. Finally, the three different outcomes of the cases in three different countries also imply that, unless it is absolutely necessary, court proceedings should be a firm's last resort for dispute resolution due to its lengthy procedure and costly implication. It may be wise for firms to seek other resolutions first, such as corporate settlements, arbitration or mediation.

Intellectual property facts: Piracy quantification – an issue for solution[17,18]

The quantification of piracy has been a contentious issue among international organizations, national governments, companies and academia. There is no lack of media exposure about piracy problems across the world, and here are just a few examples:[19] South-East Asia and China topped the piracy countries in the software industry, with Vietnam leading with a piracy rate of 98 per cent. The piracy problem in China has generated a loss of a few billions for the film industry in the US. Eighty per cent of students in the US do not pay for the music and movies they download; one in four children (below 18 years old) downloads music, games and movies without paying. Twelve per cent of

Internet users admit that they have downloaded unlicensed software. Figures as such make people wonder: how were they calculated? Are they based on reliable and valid data? Are they true reflection of the piracy situation?

The existing studies quantifying piracy tend to come mainly from four different sources: academia, companies, industrial associations and governments, and each have their own strengths. Academic sources tend to provide survey and interview data and use existing secondary data from other sources to conduct further analysis of piracy impact, reasons, and solutions. For example, they may investigate the consumer attitude, awareness, behaviour and consumption of pirated goods. Piracy data often come from companies that are closely associated with a particular business. They can be producer surveys revealing infringement problems and estimating the profit loss and damage caused by piracy. Some industrial associations have also undertaken data collection and they tend to become the sources most often used by academics, governments, media and practitioners. For example, Business Software Alliance (BSA) has probably the most systematic data collection so far on software piracy rates and values on a yearly basis since 1994. The International Trademark Association has also conducted a survey about the textiles and clothing industries focusing on the examination of trademark violations.

Finally, many national government organizations also provide piracy data. These data are compiled from, for example, numbers and product values in raids and seizures, and numbers of criminal convictions. Some of the data from these sources may come from self-reporting. For example, a drug user reports the detection of a fake drug to the original manufacturer; a company reports to its industrial association about the prevalence of piracy for its corporate products; or several companies or an association liaise to investigate a piracy incident and report to the relevant government organizations. All these data have the common merits of being original, raw, up to date, and some of them are even systematic and longitudinal, with reasonable industrial and geographical coverage.

The controversy surrounding IP quantifications is reflected in the problems of data sources and collection, calculations and data analysis. As for the data sources and collection, the concerns arise as to the representation of the data. This can be data under-representation, that is, the providers of information may not be representative of the study population. Such under-representation is often caused by the difficulties of collecting representative sample and size. Many surveys on piracy tend to be associated with students and shoppers, and survey sizes tend to

be small. On the other hand, over-representation, that is, where those who feel most strongly about piracy tend to respond to the survey, while those who feel indifferent are less represented, may also undermine the validity of the data. In addition, there is no standard of data collection: therefore, difficulties emerge in relying on any data to make country comparisons in a comprehensive manner.

Debates centring on how the piracy figures are calculated in turn engender arguments about research outcomes based on the data. Figures are usually estimates, and often guesstimates. Take the most systematic software piracy data for example: BSA examines 26 different types of business applications software to estimate the demand (installed software) and supply (legal shipment of software) and therefore the piracy rate. But there are three significant concerns with the calculations. First, market demand is driven by several factors, including price, life cycle of a product, economic well-being, and computer software knowledge in addition to software installation. Second, the information providers are non-independent – the software companies who provide BSA's piracy data are not independent parties and may report biased views. Finally, this way to calculate data can become more problematic with the boom of open-source solutions, where many software programmes are downloaded and installed directly from the Internet, thus making the calculation of piracy rate more blurred. This questionable argument is also relevant to the music and film industries. In terms of analysis, due to lack of data, we tend to over-rely on some systematic data (such as the BSA data), missing data can make analysis difficult and there is not a standard way to variable selection. Therefore, the studies tend to be patchy, sporadic and unfocused.

In summary, the impact, reasons and solutions of piracy have been quantified in a debatable manner. The surveys, interviews, manufacturers' reports, self reporting and customs seizure carried out by academics, companies, industrial associations and government organizations all have a different focus, and were collected for different reasons, so it is impossible to combine them to get a coherent overall picture for making comparisons. Thus, collected data tend to be underrepresented, overrepresented, non-independent, and having no standard way of collecting data makes comparison difficult. The situation is further exacerbated due to guesstimating data with exaggeration and non-independent sources. In consequence, the analysis based on such data tends to produce invalid results. The concerns on the quantification of piracy have attracted the attention of the United Nations, for example, the OECD and WIPO. This may be a starting point to adopting a standard approach. In turn, the

data collected by a uniform and credible approach may lead to more reliable and valid analysis of piracy problems. Strategic directions can be sought accordingly for manufacturers, users, and government policy makers.

Summary

This chapter addresses the impact of, the causes of and some possible corporate solutions to piracy. Piracy – illegal imitation in breach of the ownership rights of others – covers counterfeiting (replication, forgery and licensing overrun), distribution piracy (public and private distribution piracy), Internet piracy (auctions and on-line sales, and peer sharing) and end-user piracy. It is a 'victim game' that affects consumers (as users of fakes), government (through enforcement costs, lost tax revenues, and unemployment) and manufacturers (with damage to the corporate reputation and profits). Piracy is everywhere and its prevalence appears to be closely related to three factors: IP environment, supply and demand, and corporate factors.

A country's IP environment impacts on the perception of IP attitude and its citizens' purchasing behaviour. The economic conditions, cultural perceptions on IP, legal stipulations, severe penalty and criminal acts have combinative effect on the formation of IP attitude, thereby the piracy behaviours. The supply of fake products creates a price gap between them and authentic products which keeps demand for fakes going. Moreover, corporate monopoly pricing, limited corporate control exerted from a distance in international operations and the ease with which some products can be copied, can all serve to increase the severity of piracy. In response, companies tend to take various actions to handle the inevitability of piracy. Strategies can be proactive where companies use their technical protection, low prices, tightened contracts and monitoring to keep piracy at bay. In the meantime, companies may also approach offenders to negotiate a private settlement of commercial compensation or acquisition. However, these defensive and offensive actions must be supported by external forces, such as IP offices to register IP rights, government support in handling disputes, collective efforts joined by other firms and consumer campaigns to increase the IP knowledge of the general public.

The two cases and IP facts provide implications associated with piracy. Both cases reveal the difficulties of defining infringements under the influence of many factors. The Da Vinci Code case addresses a dispute centred on a claim against the author's copying of an early work,

and reaffirms that copyright protects the expressions of ideas instead of the ideas themselves. The Starbucks infringements, which occurred in China, Korea and Japan, focus on whether local coffee shops violated Starbucks trademark ownership rights. Starbucks won in China and lost in Korea, while the Japanese match ended in a 'winning draw'. The other similarity of these two cases is the demonstration that there is no such thing as bad publicity. The parties involved in both cases in the end gained on two grounds: boosted sales and publicized reputation. The Starbucks case also demonstrates that the nation-based nature of IP tends to exacerbate the unpredictability of court rulings. Therefore, it is probably wise to seek other means to resolve disputes before considering this protracted process for solution. The IP facts address some piracy quantification issues and suggests that some standardized methods should aid research reliability and validity. As a result strategic implications can be provided to serve practice.

Notes

1. The author has written this case based on the following information: (1) Anon. (2006) How We Met: Richard Leigh & Michael Baigent, *The Independent*, 16 December; (2) Anon. (2006) A Test of Faith, *The Guardian*, 17 May; (3) Anon. (2004) Da Vinci Code Bestseller is Plagiarism, Authors Claim, *The Telegraph*, 3 Oct; (4) Anon. (2006) Judge Creates own Da Vinci Code, at http://news.bbc.co.uk/1/hi/entertainment/4949488.stm, published and accessed on 27 April 2006; (5) Richard Leigh personal web: http://www.egoetia.com/; (6) Rayner, G. and Quinn (2006) Was the Da Vinci Court Battle just a Conspiracy? Publisher Cashes in as Plagiarism Case Sends Sales of Both Books Soaring, *Daily Mail*, 8 April; (7) Rogak, L. (2006) *The Man behind the Da Vinci Code: An Unauthorised Biography of Dan Brown*, Kansas City: Andrews McMeel; (8) Silverman, J. (2006) No Surprise in Da Vinci Judgement, *BBC*, at http://news.bbc.co.uk/1/hi/entertainment/4888954.stm, on 7 April; (9) Smith, the Hon Mr Justice Peter (2006) *High Court Judgment of the Case between Michael Baigent and Richard Leigh and the Random House Group Limited*, Case no: HC04C03092, London: Royal Courts of Justice; (10) WTO (1995) TRIPS agreement, Geneva: World Trade Organization.
2. An innocent defence lies in the validity of the claim: For example, the copyright claim is not included in the infringed work. Compensation is made to the defendant once the validity of innocence is established based on evidence.
3. Bright Tunes Music Corp. v. Harrisongs Music, 420 F. Supp. 177 (SDNY 1976).
4. Anon. (2004) Jail for Passport Factory Pair, *BBC*, 27 February.
5. *The New Oxford Dictionary of English* (2001), edited by Pearson, J., Oxford: Oxford University Press: 418, 1411.
6. Ibid.

7. See (1) Idris, K. (2007) *Opening Address to the Third Global Congress on Combating Counterfeiting and Piracy*, Geneva, 30–31 January; (2) www.wipo.org; (3) http://www.ccapcongress.net/index.htm.
8. Anon. (1998) *Contribution of the Software Industry to the Chinese Economy*, PricewaterhouseCoopers, Commissioned by the Business Software Alliance, London: PricewaterhouseCoopers.
9. See also Balfour, F. (2005) Fakes, *BusinessWeek*: 44–51.
10. WHO (2006) WHO Goes Online to Fight Fake Drugs, at http://www.wpro.who.int/media_centre/press_releases/pr_20050503.htm, on 4 May, 2007.
11. Anon. (2004) Fake Milk Kills 13 Babies in China, *Managing IP*, 25 April.
12. Anon. (2003) Imitating Property is Theft, *The Economist*, 15 May: 69–71.
13. Holdsworth, N. (2007) Russia Beefs up Penalties for Piracy, *Reuters*, UK, 13 April, at www.reuters.com, on 14 April 2007.
14. Kroeger, A. (2007) MEPS Discuss EU-wide Piracy Law, *BBC*, at www.news.bbc.co.uk, on 27 February 2007.
15. This case was written by the author based on the following information: (1) Anon. (2000) A Grande Storm in a Latte Cup, *Managing IP*, September; (2) Anon. (2006) Starbucks Wins Well-known Status over Chinese Copycat, *Managing IP*, 1 January; (3)) Anon. (2007) Starbucks Wins Copycat Coffee Row, *Managing IP*, 1 January; (4) Anon. (2007) Starbucks Loses to Korean Name Rival, *Managing IP*, 1 January; (5) Anon. (2007) Supreme Court Blow to Starbuck, *Managing IP*, 1 January; (6) Cai, W. (2003). Battle Brews over Coffee Logos, *Shanghai Daily*, 6 August: 5; (7) http://www.doutor.co.jp/; (8) http://www.starpreya.com; (9) Chung-A, P. (2006) Starbucks Loses Trademark Dispute, *Korea Times*, 11 October; (10) SIPO (2007) US Starbucks Triumphs over Shanghai Starbucks in Trademark Dispute, on www.sipo.gov.cn on 21 January 2007; (11) Starbucks (2006) Company Fact Sheets, at http://www.starbucks.com/aboutus/Company_Factsheet.pdf, on 23 January 2007; (12) Starbucks (2006) Recognition, at http://www.starbucks.com/ aboutus/Company_Recognition.pdf, on 23 January 2007; (13) Tong-Hyung, K. (2007) Starbucks Loses Trademark Dispute, *Korea Times*, 12 January 2007.
16. Anon. (2003) In Praise of the Real Thing, *The Economist*, 17 May, 367(8324): 12.
17. The author has written the IP Facts in this section mainly based on the information from two conferences she attended: *WIPO-OECD Expert Meeting on Measurement and Statistical Issues*, Geneva 17–18 October 2005 and Paris, 2–3 February 2006. The meetings drew experts from all professions, in particular from academia, governments and practice to discuss the measurement issues of IP. The author was one of the invited speakers and presented her critique on piracy and counterfeiting measurements. References that the author has found relevant to this part includes presentations by (1) Daudpota, F., Counterfeiting and Infringement on Worldwide Sales of Apparel and Footwear; (2) Ghoneim, A. F., Suggested Methodologies for Estimating Piracy; (3) Hui, K.L. and P'ng, I., Copyright Piracy: Measuring the Extent and Impact; (4) Liang, B.A., Measuring the Impact of Counterfeit Drugs: Applying the Patient Safety Reporting System Approach; (5) Olsen, K.B., Counterfeiting and Piracy: Measurement Issues of Magnitude and Impact; (6) Yang, D., Critique on the Data and Measurements of Piracy and Counterfeiting; (7) INTA's Estimation of the Impact of Trademark.

18. The author has also consulted the following information to write the 'IP Facts'. (1) Balfour, F. (2005) Fakes, *BusinessWeek*: 44–51; (2) The Business Software Alliance at www.bsa.org; (3) OECD (2007).
19. The figures were obtained from the research papers published at www.bsa.gov, accessed 20 October 2007.

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12

Understanding and Profiting from Intellectual Property: New Beginnings

Contents

Focus and structure

This last chapter provides an action framework for understanding and profiting from IP for practitioners and analysts. First, it reviews the fundamental understanding of IP, including basic knowledge about IP and the function of IPS. Second, several countries' IP environments are assessed to help practitioners and analysts establish a critical understanding about which countries could be selected as an international base where IP can be commercialized profitably. Third, the chapter focuses on managerial matters so practitioners and analysts can equip themselves with knowledge about IP assets. Finally, the section on strategizing IP actions allows practitioners and analysts to assess which internationalizing strategies are most appropriate for profiting from IP, in particular, which licensing strategy represents the best option, and what strategies to adopt to best deal with piracy issues.

This book is intended as a framework guide to understanding how IP can generate value in the world business. Obviously, not all the matters it discusses are relevant in all situations – when it comes to specific IP investment activities, cases vary, and specific analysis and assessments must be conducted according to the realities of national environment, industry, company positioning, and product development that pertain in each case.

This chapter discusses the above topics following a route map for actions and challenges shown as Figure 12.1. The map shows a four-stage process of assessing the profitability of IP, including the route to follow, actions to take, and outcomes to anticipate.

12.1 Fundamental understanding for intellectual property protection

Gaining fundamental understanding for IPP is the first action for profiting from IP (Figure 12.1: Stage 1). The understanding should be comprehensive – practitioners and analysts should not restrict their knowledge to a particular type of IP. Once a comprehensive knowledge is gained, a particular IP can be the main focus so that more in-depth analysis can be conducted. Both practitioners and analysts need to be knowledgeable about all the essential concepts, and the typology, commonality and distinctions between different types of IP, as well as the disagreements about IP that stem from the imbalance between the interests of owners and the general public. They should also be clear about the complexity of IP in the IB context. Familiarity with these matters will give practitioners and analysts essential background knowledge to underpin the next action stages.

Having established this essential knowledge about IPP, practitioners and analysts should assess IPS in a comparative manner. This means that they need to assess the IPS both at home and in the countries where they are considering investing, so that system similarities and differences can be identified. Each country has its own IPS, which functions within a framework of legislative guidance, administrative control and judicial enforcement. In terms of legislative guidance, the assessment involves understanding how the legislature enacts IP laws and what legal mechanisms are in place to guide IP activities. The assessments will also provide practitioners and analysts with local administrative knowledge about IP applications and granting, including an awareness of the IP application procedure to follow in the particular target country, the anticipated granting time, the procedure for appealing if the

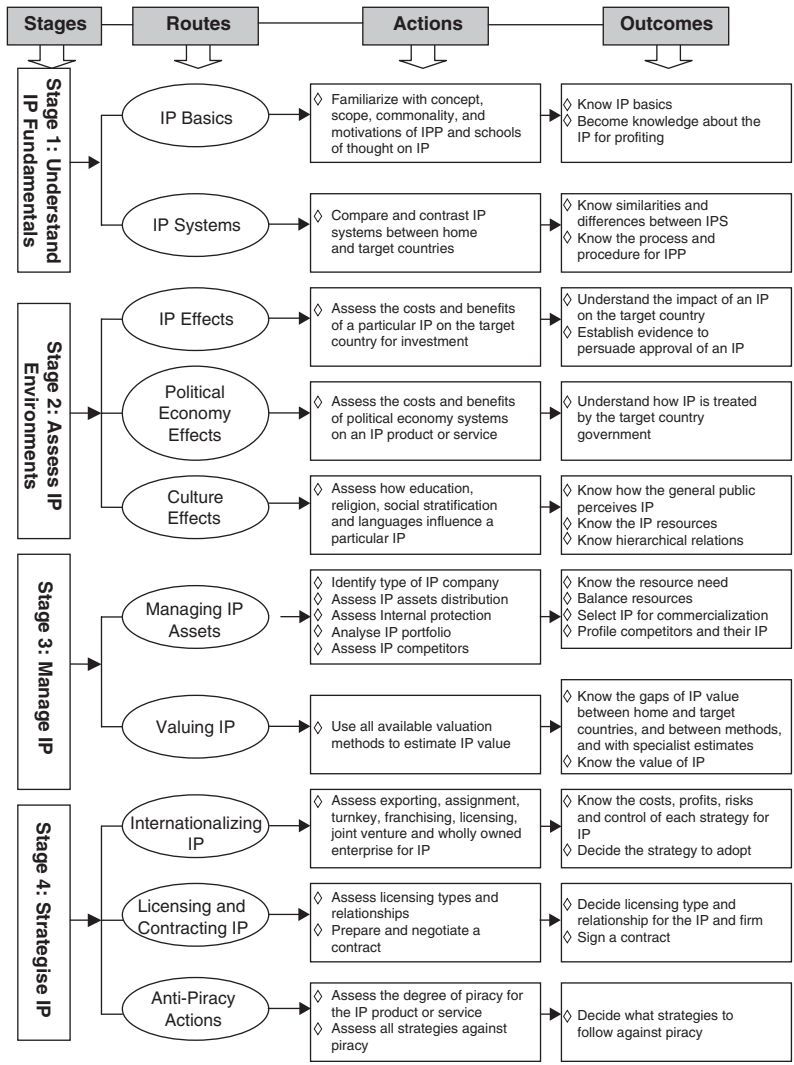

Figure 12.1 A route map for actions and challenges
Source: Created by the author.

IP application is rejected. In addition, they need to be clear about the judicial enforcement of a country, in particular the court structure, and methods for handling disputes. All these assessments will equip practitioners and analysts with vital knowledge about IPP processes and

procedures in a target country. The sequence of such analyses is not rigid – assessments may be simultaneous or sequential, and may focus on one particular area more than others according to corporate need. What matters is that their priority matches the company's situation: where an IP is crucial for a company, they will tend to assess IPS first.

12.2 Intellectual property environment assessment to select profiting base

Practitioners and analysts may already have a few countries in mind as potential locations where they could profit from their IP. However, the country can't be selected by intuitive judgement – a logical analysis must take place, with the home country used as a comparator so that the similarities and differences can be identified and potential issues tackled (Figure 12.1: Stage 2). Countries tend to welcome IP associated investment, but IP can have both positive and negative impacts on a country's political economy, and more specific analysis needs to be conducted to find out how important this particular IP is to the country that is targeted for investment.

Conversely, practitioners and analysts also have to consider the impact of political economy on IP so that they can deduce the implications of the target country's particular political economy on their proposed IP activities. For example, a democratic political system tends to have pressure from both grass roots up and from the top down in making decisions about IP, while totalitarian regimes seem to follow a top-down decision-making process. However, these regimes tend to be pressured horizontally by foreign countries towards tightening their IPP if they intend to trade internationally. In addition, the legal systems and history decide how IP disputes are resolved. In market or planned economies, understandings differ as to whether IP is a natural private right or a communal good in a society. Understanding these factors will allow practitioners and analysts to identify the costs and benefits of political economy on an IP, and how the target country's government will regard their IP.

Practitioners and analysts also have to assess how the general public perceives IP. These perceptions are formulated by people's IP environments, including political economy, education, religion, social stratification and language. People's educational level orients their understanding and judgement about IP, and thus their attitude towards its protection. Education levels can also indicate to the owner the availability of local resources for IP production and distribution, for example, the availability

of engineers and scientists and the skilled workers for the owner's project. In addition, the social stratification in a society also allows practitioners and analysts to identify the employer–employee relationship pattern that can have direct bearing on IP creativity.

Through the above analysis, practitioners and analysts should be able to identify the pros and cons of a number of countries' IP environments. This should lead straightforwardly to them being able to select a country or countries that are suitable for their IP investment. The analysis will also produce vital information about the similarities and differences of IP environments between the home and targeted countries. This identification is a preparatory step to anticipate potential problems associated with IP environment so that they can be tackled in a preventive manner.

12.3 Management preparation to equip intellectual property resources

With an investing country selected, practitioners and analysts can make preparations to equip themselves with resources for IP investment (Figure 12.1: Stage 3). Positioning their company in IP terms (in other words, knowing whether it is a super IP firm or a smaller entrepreneurial company) will provide them with information about what IP resources are needed, including IP people and IP assets. Are these resources distributed in a balanced manner? Are outside resources needed? Has the staff been managed in a manner to ensure that IP information will be protected from within? The understanding about the company's IP portfolio would allow management to decide which IP product should be selected for IP investment in the targeted foreign country. They should also assess the IP competitors in the investing country using a combination of corporate tactics to profile competitors and their IP products and services against the company and its IP portfolio.

With IP management issues resolved, IP management focus should be on the valuation of the selected IP for investment. Given the temporal and spatial variation of IP and the differing methods of valuation, a recommended approach is to conduct IP valuation using all the available methods in the context of both the home and target countries. The results of the comparison would allow practitioners and analysts to assess why there are value gaps using different methods between the two countries compared, and the assessments can then be compared with those conducted by specialized IP valuers. These actions are necessary steps so that IP owners can understand the value of their IP and ensure its profitability in a target country.

12.4 Strategizing actions to profit from intellectual property

With the IP fundamentals understood, a country's IP environments assessed, and internal contexts of IP prepared, the last stage of decision-making and actions involves IP strategies (Figure 12.1: Stage 4). This includes what internationalizing strategies to select, what specific licensing type to choose, and what strategies should be adopted for preventing or curtailing piracy in the target country. With regard to internationalizing strategies, practitioners and analysts need to consider the merits and demerits of exporting, assignment, turnkey, franchising, licensing, joint venture and wholly owned subsidiaries as the best way to establish their IP product profitably. Each strategy needs to be assessed in relation to the costs, profits, risks and the demands on control.

In whatever choice of establishment (except assignment), the IP product will need to be under licence. This means practitioners and analysts need to assess the available licensing strategies to decide what type of licences to negotiate and what licensing relationship to establish with the licensee(s). Once these are in place, a licensing contract needs to be agreed on, and prepared, negotiated, signed and implemented for the mutual benefit of both parties.

Piracy is an unwanted companion of any IP activity and dealing with it should always be a consideration in internationalizing IP. Aside from understanding the impacts of and reasons for piracy, one important step for practitioners and analysts to take is to decide the degree of piracy and the most appropriate corporate strategies to tackle the problem, which could well involve using selected anti-piracy strategies in combination.

New beginnings: A route map for actions and challenges

The author hopes this guide for understanding and profiting from IP can suggest to readers a sense – or rather, two senses – of new beginnings. The first 'beginning' is the chance for practitioners and analysts, by following the approaches recommended in the book, to find how IP can generate new value for them. All the discussions here, including IP fundamentals, IP environments, managing IP and strategizing IP, are interrelated, and will each have a bearing on the profitability of IP activities. Through value generation, IP owners are rewarded for their intellectual creations, and can transform their creations into products and services for society, and are encouraged towards future creativity.

The other 'new beginning' concerns the challenge that faces the world of IP as a whole. This is to go beyond simply understanding IP in order

to increase corporate profits, to seek new ways in which IP can strike a better balance between public and private interests. We have revealed so many balancing issues that need to be tackled: the IPS north–south divide; the demands of monopoly prices to defend R&D costs against the urgent need for wider global access to such products as life saving drugs; the comparative IP development demands of MNEs and SMEs; the balance between stifling competition to defend corporate IP territory and the free interplay of human ingenuity and the pleasure of solving problems together, and so on. There are straws in the wind here that may signal some radical changes in attitudes towards a better public–private interest balance. It is an ever-developing field, with new issues emerging constantly, including some pressing ethical ones, and an increasingly controversial domain for both theory and practice. The challenge for practitioners and analysts is to understand these issues thoroughly, and to take advantage of new developments in a way that will enable human society, through an increased sense of corporate social responsibility to the world, to continue to have the benefit of IP – which stems, after all, from the innate creativity of the human spirit. Achieving a more ethically defensible balance will allow IP to take its part in making the whole of our world a 'richer' place to live in.

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