

# TECHNOLOGY AND CULTURAL TECTONICS

SHIFTING VALUES AND MEANINGS



F. ALLAN HANSON



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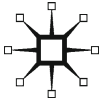
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F. Allan Hanson

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*To Louise,  
who agitated the follicles*

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# Chapter 1

## The Technological Society

Once upon a time sexual relations were necessary for the birth of a child. Back then the gender and state of health of a baby were known only after it emerged from the womb. The movements of a criminal suspect, a wayward spouse, or an errant teenager could be detected only by physically following them. It was even the case that, with the exception of fathers who died during the nine months between impregnation and birth, only living persons could have children.

Today a bewildering array of new technologies has rendered all of this hopelessly obsolete. A variety of assisted reproductive technologies—donor insemination, surrogacy, in vitro fertilization (IVF)—have made sex optional and tens of thousands of babies are born without it. Prenatal testing technologies such as ultrasound, amniocentesis, and chorionic villus sampling routinely report on the gender of a fetus and can identify impairments well before birth. Other tests reveal hidden details about an individual's state of health, the likelihood of contracting a certain disease in the future, and whether the individual has used controlled substances. Devices concealed in automobiles relay information about speed and location to remote computers through the global positioning system. Potential sex offenders are identified by the presence of child pornography on their computers, and are lured toward arrest by computer-mediated communications. Warrants for criminal suspects are issued on the basis of nothing but a string of DNA. Frozen gametes and embryos can be implanted in a surrogate, to be born months or years after the genetic parents have died.

Varied as they are, however, this study of the cultural impact of new technologies is guided and unified by three qualities that they all have in common. First, as applications of scientific knowledge, all of them provide power to do things that previously could not be done.

Second, the increased human control that comes with various technologies leads to disarticulation. The wholeness or integrity of persons and things fades as they come to be known and treated in terms of those particular parts that are revealed and subject to manipulation by technology. And third, the twin features of increased power and disarticulation often set up tensions and clashes within the overall framework of conventional cultural values, meanings, and expectations. Our primary objectives are to understand how these tensions and clashes are generated, and how (or if) they are resolved.

Jacques Ellul, a premier analyst of the social consequences of technology, highlights the advance of human control into regions previously impervious to it, and he views the process with misgivings. It diminishes the ineffable quality—the mystery—in life, leaving our experience of it more clearly delineated but poorer and grayer for that very reason (Ellul 1964:141–142, see also Gendreau 1999).

Although Ellul has an excellent insight, the way he articulates it is not entirely satisfactory. It implies a tipping point, prior to which there is a sufficient level of mystery and after which it is lost. Perhaps more reasonable is to recognize that technology has been advancing ever since our Paleolithic ancestors made the first hand axes, and insofar as it lessens the mysteries of life, that process has been going on through all of human history. Instead of a tipping point there has been a constant evolution of culture as it has accommodated to new technologies that bring events formerly shrouded in mystery into the light of inspection and control. A useful way to think about this is with Jean Baudrillard's concept of pornography. Concealing layers are successively stripped away in a pornographic dance, book, or film, laying the subject increasingly naked and available for direct inspection (Baudrillard 1990:146–148). So it is with the world as it is progressively revealed to us through science and technology.

Baudrillard's simile may be raw, but if we can get beyond its sordid connotations, I think it is closer to the mark than Ellul's formulation. What the latter calls dispelling mystery is a process of cultural change in concepts and values associated with knowledge, trust, hope, and desire. This certainly may involve the loss of something cherished, but not necessarily. Instead, the change may be the emergence of a new optimism and sense of confidence as it becomes possible to do highly desirable things that were previously foreclosed. An outstanding example is IVF, which enables people who are otherwise unable to satisfy their wish to have children.

Baudrillard's concept of pornography also leads directly to the second distinctive feature of technologies highlighted here: the

disarticulation of the person. Individuals taken as wholes are entirely foreign to pornography. The object of pornography is of interest exclusively for the particular anatomical or behavioral qualities that satisfy the consumer's desire. Any elements of larger personhood—temperament, interests, convictions, values—are utterly irrelevant (Baudrillard 1990:150–151).

Technology has a similar fragmenting effect. The drive to maximum efficiency in industrial settings through the systematic use of time and motion studies, known as Taylorism, reduced the laborer to precisely specified movements that were required for the proper completion of any task. Thus the “science of shoveling” mandates the angle and distance of the forward and backward swings. Through meticulous research Taylorism's founder, Frederick Taylor, determined that a laborer could move the greatest amount of material in a day when his loaded shovel weighed 21 pounds. This led to providing an array of different shovels for different tasks depending on what was being shoveled: smaller ones for iron ore and larger ones for ashes (Taylor 1911:65–69).

A similar breaking down of wholes into constituent parts characterizes the technologies to be examined here. The formerly unitary role of mother is split today by assisted reproductive technologies such as surrogacy into distinct roles that may be fulfilled by different women. Prenatal tests transform certain fetuses into nothing more than a case of Down syndrome, cystic fibrosis, or some other impairment. All this contrasts sharply with historical views of the person as fully shaped, be it made in the image of God, a Renaissance man with infinite potential, a free citizen, or a self-made entrepreneur.

As science and technology advance they replace sectors of ignorance or the ineffable with knowledge. A particularly clear example is prenatal tests, which provide information about the condition of a fetus that was previously unavailable. It must be recognized, however, this is much more complex than just adding to our supply of objective facts. As Foucault (1980) has demonstrated, knowledge is intimately associated with power in the sense that new forms of knowledge commonly bring with them new expectations for how people should behave, how they should be evaluated, or what might be done about them. One example of such power is that when prenatal tests reveal the presence of an abnormality, people often feel compelled to terminate the pregnancy.

Of greatest interest here is how the increased power and personal disarticulation produced by technology influences the overall framework of values, symbols, meanings, and customs that constitute culture. The most prescient contribution here is Marshall McLuhan's

famous aphorism “the medium is the message” (1964). This means that the outstanding effect of a technology is not its specific content, but how it transforms the context for the conveyance of any content. The message of the telegraph is not that grandma has died or niece Jennie is planning to marry, but that those and any number of other communications can be conveyed over great distances instantaneously. Electricity, perhaps McLuhan’s favorite example of a technological medium, has no specific content at all (other than perhaps a name or phrase written in neon lights). But its message is an overwhelming array of previously impossible functions such as illuminating nighttime stadium events, enabling cars to drive at night, powering computers, cell phones, air conditioning units, and that list barely scratches the surface.

The messages of new technologies present a challenge to culture. Sometimes they clash and collide with deeply established values and assumptions, setting off cultural shockwaves analogous to the earthquakes produced by collisions between the tectonic plates that form the earth’s crust. The culture adjusts, but before that is achieved the technologies in question may provoke bewilderment, anxiety, opposition, and turmoil. The technologically enabled situations listed at the outset are presently at different stages in the adjustment process. Probably IVF has been most fully incorporated while the possibility of dead people having children has farthest to go. To understand how the messages of new technologies confront established cultural assumptions and expectations, and how that confrontation is resolved, is the primary objective of this book.

### **How Culture Works**

As with any system of interdependent parts, change in some of the parts in a culture generates change in other parts, especially those most closely related to them. This study aims to identify how particular technologies bring about changes in certain cultural institutions, and to trace the rippling effects of those changes on other institutions in the larger culture. As an abbreviated illustration, the technology of IVF makes reproduction possible without sexual intercourse. That changes the meaning of reproduction, which in turn changes the meanings associated with cultural institutions such as conjugal male-female relationships and marriage. The chapters that follow trace this and other ramifying changes in cultural institutions brought about by new technologies to demonstrate how this impacts some of the most important elements of our way of life.

An ordered social life requires predictability. To get along successfully together, people must share some consensus about the meaning of events and objects. If I think the thing before us is a hammer, to be used for driving in nails, and you think it is a scissor, to be used for cutting, there is no common ground upon which we can agree about what to do with it. Equally essential is predictability of the behavior of others. If someone can be trusted to hew reasonably closely to the rules of expected behavior, we have sufficient confidence to proceed with the interaction. But if someone's behavior is entirely erratic, as is the case with some psychotics, no fruitful or sustained interaction with that person is possible.

The basis for a workable level of predictability is culture: the shared set of assumptions about the nature of reality, the kind of human relationships that exist, the proper behavior to adopt in them, and so on. Predictability requires sufficient cultural consensus about these matters to maintain an adequate degree of stability over time. That is to say, at bottom, culture is conservative.

So far as technology is concerned, cultural conservatism is visible in at least two ways. For one, no technological innovation will be accepted unless it makes some kind of sense in terms of the understandings and possibilities of existing culture. This is the familiar notion that the time must be right for a new invention. If there is no fit, innovations will not be adopted until long after they were originally proposed. Leonardo da Vinci famously drew designs for a helicopter, an automobile, and other machines that could not be realized in his time. Charles E. Fritts filed a patent in 1890 for sound on film, but it had no application for 30 years. In 1926 J. E. Lilianfeld patented a kind of transistor that had no commercial application until the development of silicon technology decades later (Hook 2002:12). On the other hand, when the time is right, an invention is often produced almost simultaneously by different people working independently. The anthropologist A. L. Kroeber cites, among other examples, more than five candidates for the invention of the steamboat, four for anesthetics, and two for the telegraph (1917:200).

The other and more important conservative quality of new technologies is found in the reasons people have for using them. Far from novel, their motivations are to achieve ends that are well established by their culture. The automobile enabled more rapid realization of the preexisting goal of movement from one place to another. The telephone is based on the familiar experience of verbal communication; it just extends it over great distances. Similarly, the more recent technologies we will study achieve widely held and approved objectives more



efficiently, or overcome impediments to achieving them, such as diagnosing disease, having healthy children, and identifying criminals.

But if the goals are familiar, the means for achieving them are not. As a result, technological innovations represent the greatest threat that exists to cultural conservatism. The novel ways they introduce for achieving familiar goals often bring unintended consequences that are perplexing and upsetting. The above example of the consequences of assisted reproductive technologies for sexual relations and the institution of marriage is one case in point. We will seek to determine just what the disturbing implications of these technologies are, what resistance they foment, and how they become accommodated through mutual adjustments in the technology and in cultural understandings and values.

Given the basically conservative nature of both people and culture, the standard response when new, technologically induced circumstances arise is to try to assimilate them to existing cultural patterns. In some cases, however, the divergence from the familiar may be so great that such accommodation is virtually impossible. One example to be discussed in chapter 3 is how to conceptualize the relationship of an anonymous sperm donor with the women who have become pregnant with his sperm and with their children. The understandings and expectations built into the notion of “husband” or “partner” or “father” are so remote from this situation that some other concept must be invented. Just what that concept should be, however, is by no means clear. Again and again we will encounter situations where people attempt to assimilate new relationships and arrangements spawned by technological developments to familiar ones. An important part of the analysis will be to explore what models or templates they attempt to use, how well they work, and what happens when they hardly work at all.

### **A Place for the Law**

An important source of information in many of the case studies to follow will be the law. Here the cultural values challenged by new technologies are unusually explicit, being recorded in statutes, the Bill of Rights, or the common law’s precedent of previous cases. Cases brought before the courts cannot be left unresolved and, again, that resolution is thoroughly and explicitly set out in legal briefs and judicial opinions. Thus the social and cultural issues raised by these technologies, and the degree to which they can be assimilated to existing understandings, are sharply framed in the efforts of the law to grapple with them.

Because it is a clearly delineated slice of culture and one with procedures that are unusually explicit, the law also provides an especially clear view of how culture accommodates to new technologies. When the law is faced with something new and unfamiliar it seeks to assimilate it within the context of existing rules and conventions by applying statutes and precedent from previous court cases. That is to say, as with culture in general, the law is fundamentally conservative. Here too the law provides a particularly clear lens for viewing how technological change impacts culture in general, for the law, with its meticulous procedures and the possibility of review of decisions by higher courts, is that part of culture that has developed the most explicit procedures for changing itself to accommodate new realities. But some of the technologically induced situations we will examine are so novel and unprecedented that the established principles and practices of the law cannot cope with them. This produces different decisions by different courts, a high rate of reversal by higher courts, or simply the courts' refusal to hear such cases. Mirroring a differently expressed paralysis in other sectors of culture, this is the law's way of saying that it is at a loss for what to do.

### **A Conceptual Apparatus**

The chapters that follow trace how contemporary technologies are media with messages that transform cultural understandings and values regarding birth and death, sickness and health, the possibilities and responsibilities of social life, conceptions of time and space, and many others. These transformations affect culture much as moving tectonic plates affect the surface of the earth, separating and joining continents of meaning, producing seismic and volcanic conflicts of values. The ultimate goal is to chart these movements, to reach generalizations about how, taken together, they impact the overall topography of culture, and to examine how all this affects the behavior and lives of real people.

The specific analytical approach to be taken in this book applies a distinction I drew years ago between individual and institutional questions (Hanson 1975:1–15). Both rest on identifying the meanings associated with human behavior, but each looks at a special kind of meaning. The one is intentional and the other is implicational. To explain the difference by means of a concrete example, people on the French Polynesian island of Rapa, where I did my doctoral fieldwork, usually avoid sexual intercourse for three or four days immediately following a woman's menstrual period (Hanson 1970a). The question is why.

The answer to the individual question of why Rapans avoid sexual intercourse during that time is framed in terms of their personal intentions, and that answer is that they do not want to become pregnant. Individual questions, that is to say, are concerned with *people*, and why they behave as they do. Institutional questions, on the other hand, focus on the relations among beliefs and other cultural institutions taken in their own right. Institutions form the context in which people behave. In our example the answer to the institutional question of why Rapans avoid intercourse for a few days immediately after menstruation is based on their understanding of the physiology of the uterus. They hold that the uterus is a mechanical organ that periodically opens and closes. It is closed most of the time, but opens monthly to allow stale blood to run out and does not close again until a few days after menstruation ceases. The logic here, the implicational meaning, is that just as blood cannot escape a sealed uterus, so semen cannot enter it, and thus pregnancy can occur only when it is open. One wants, as I in fact did, to engage them in a discussion about the anatomical and physiological facts of the matter. But here I want simply to make the point that the concepts, values, customs, and other institutions of culture are coherently related to each other, and that institutional questions aim to understand those relationships.

Institutions—shared beliefs, concepts, symbols, customs—combine to form the overall structure of culture. They are like tectonic plates, the ground upon which people build their behavior and their lives. And again like tectonic plates, institutions are never static. With the introduction of new conditions and the passage of time they move. They slide against each other, over and under each other, drift apart from each other, or bump against each other. This produces changes in the relations between institutions, and thus in the overall structure of culture.

Throughout history technology has been perhaps the most powerful factor for producing changes in institutions and how they relate to each other. Technology introduces new ideas, new understandings about the nature of things, new possibilities for action, new social relationships, and new forms of organization. It also forecloses certain previous understandings and relationships as obsolete. How these changing institutions relate to each other in an overall system of flux is the subject matter of institutional questions.

The process of institutional change brings about new conditions within which people conduct their lives. What they do in these conditions is the province of individual questions. Sometimes they accommodate quickly and easily, especially when the technology in question enables them to do what they have already been doing only faster and

more efficiently, or when it enables them to fulfill desires that were previously closed to them. At the other extreme, as in an earthquake, people may be overtaken by anxiety and unable to find secure footing in the face of circumstances so alien from received practices and beliefs that they seem to threaten the very foundations of predictable and ordered social life. For still other technologies people eventually manage to adjust to them, often in unexpected and ingenious ways, overcoming culture's conservative inertia and transforming its institutional structure in the process. This book asks both institutional and individual questions in an exploration of technological challenges to culture of all three kinds.

### **An Overview**

The following chapters represent a series of case studies of messages (in McLuhan's sense) of recent technologies and their impacts on the lives of people and, especially, the institutions of culture. The next four chapters are concerned with the far-ranging messages of reproductive technologies ranging from artificial insemination through surrogacy, IVF, and the storage of frozen embryos to prenatal testing. Although not concerned with reproduction, life-sustaining technologies are also considered. We will find that these technologies put many fundamental cultural values and assumptions into question, such as the meaning of "mother" and "father," the organization of the family, and the distinctions between life and death, and between existence and nonexistence.

The final four chapters treat a wider range of technologies: the use of DNA for identification and for diagnosis of disease, the global positioning system as a means of keeping track of the whereabouts of criminal suspects, parolees, and possibly wayward spouses and children, and automated information technology. Beyond issues of privacy, which are so well-known and thoroughly studied that we will not deal with them, our analysis will examine how these technologies provoke changes in concepts of time, space, and habitual patterns of thought. These diverse threads will be drawn together in a concluding discussion of how technology is transforming what it is to be human: how individuals as doers of deeds and as selves are reconfigured in new relationships with human and nonhuman others.

## Chapter 2

### Honor Thy Father(s) and Thy Mother(s)

No biological function has been more deeply scrutinized than sex. The reason is surely that, unlike respiration or elimination, sex is a matter of relationships among different people. Sex expresses ties between the sexual partners ranging from love and tenderness to domination and violence. And sex is the avenue to the creation of new life in the children that result from it, and the relationships that the parents establish with them. Thus it is entirely understandable why anthropologist David Schneider wrote that sexual intercourse is the central symbol of kinship in American culture. Not, however, sexual intercourse all by itself, but as legitimated by culture when it occurs between married opposite sex partners (Schneider 1968:37–38). Schneider’s claim is that marriage, parenthood, the nuclear, and extended families all revolve around the central symbol of sexual relations. He stresses the significance of this for interpersonal relations in the conclusion to his book:

What better model than sexual intercourse and its attendant psychological elements? These biological facts are transformed by the attribution of meaning into cultural constructs and they then constitute a model for *commitment*, for the passionate attachment which is one side of trust, and for the unreasoning and unreasonable set of conditions which alone make “solidarity” really solidary, and make it both enduring and diffuse. (1968:117, italics in the original)

The “diffuse” or open-ended and unconditional kind of commitment to which Schneider refers is conveyed by the marriage vows “for richer or for poorer, in sickness and in health, as long as we both shall live.”

And yet, the special significance of sex has been steadily whittled down, and the reason is technology. It is debatable whether the

cultural significance of sexual relations as a sign of enduring commitment and reproduction was as critical as Schneider avers even in 1968, when more effective means of contraception had already rendered sexual relations more casual and separated them from reproduction. Since then the ties between marriage, sex, and reproduction have loosened much further. In the United States married couples with children now form a minority of households and 32 percent of births in 1995–1996 occurred outside of marriage (Difonzo and Stern 2011:376, Hirczy de Mino 2000:232). The Uniform Parentage Act of 1973 eliminated the distinction between legitimate and illegitimate children on the basis of the marital status of the parents, conveying legitimacy on children of unmarried couples. Changing social values are opening the way for lesbian or male gay couples to marry and have children. Assisted reproductive technologies (ARTs) have now made sex, as the means of having children, optional.

### **What God Hath Joined Together, Let No Man Put Asunder**

Man's technology has put asunder virtually everything that God (and/or nature) joined together in the realm of reproduction. Sex is separated from reproduction for many people who for one reason or another do not succeed in reproducing in the ordinary way and who utilize an array of ARTs to have children without sexual intercourse. Louise Brown, the world's first test tube baby, was born from IVF in 1978. Surrogacy, and using eggs or sperm from donors (who are often anonymous) are common procedures. It is estimated that 4 percent of births worldwide now result from one or another of these ARTs (Difonzo and Stern 2011:353), and that percentage can only be growing.

ARTs do not only remove the necessity of sex from reproduction. Some of them may even curtail it or otherwise dampen the sex drive. Surrogates are required to refrain from sexual relations during certain periods of their pregnancies. During the period of ovary stimulation in preparation for egg extraction and IVF sexual relations are discouraged, and a woman is so tired and sore from her daily injections that she has little interest in sex anyway (Haelyon 2006:184–185). She is preoccupied with becoming pregnant and, almost paradoxically, that very effort turns her not toward but away from sex.<sup>1</sup> Despite dire warnings from pundits and pulpits about the ills of sex without marriage, ARTs conspire with Schneider's claim concerning the centrality of sexual intercourse in the American kinship system to suggest that the symbolic foundation of the family may face a greater

threat from marriage without sex. Thus Leon Kass, speaking specifically of cloning, maintains that sexual relations are indispensable to our understanding of ourselves as full human—and mortal—beings (Kass 1997).

ARTs separate the singularity of the roles of mother or father into genetic mother or father, gestational mother, and intending mother or father, all of whom may be different people. Some of them may never have seen each other. In all these ways, ARTs represent an encroachment of human culture into the traditional realm of nature—they put asunder what God (and/or nature) hath joined together.

The potential of science and technology to take control of human reproduction has sparked enthusiasm in some quarters for a shining future. Consider the ideas of a quartet of Nobel Prize laureates. William Shockley shared the 1956 Nobel Prize for Physics for his innovative work on transistors. He stirred controversy in his later years by raising the alarm that mentally inferior blacks were producing children at a faster rate than whites. His proposal was that all people with an IQ below 100 be voluntarily sterilized (McGrath 1989, Manier 2007).

Linus Pauling, who won the Nobel Prize for Chemistry in 1954, recommended that all carriers of the sickle cell gene be tattooed with a distinctive mark on their foreheads so that they might immediately recognize each other and avoid falling in love, marrying, and propagating their deleterious gene. He also said it would be in the interest of avoiding human suffering to abort all fetuses from two carriers of the recessive gene for phenylketonuria (a disease which can cause mental retardation, brain damage, and seizures) to avoid the 25 percent chance that a child would be born with the disorder (Pauling 1968).<sup>2</sup>

Hermann J. Muller, Nobel laureate in Physiology or Medicine for 1946, was concerned that increasingly effective medical treatment allowed people to live and reproduce who otherwise would have died of genetic disorders, thus increasing the “load of mutations” in the gene pool. He worried too that natural selection for traits such as aggressiveness and xenophobia, however useful at an earlier stage of human evolution, had become counterproductive in the circumstances of contemporary life. He urged the use of our rationality and developing technology to take control of reproduction for the betterment of the human species. Less endowed men should voluntarily refrain from reproducing with their own sperm, building their families with donor sperm from superior individuals instead. Genetically inferior persons could also contribute by raising the excess children of the better endowed, who would be encouraged to apply themselves

ardently to prodigious reproduction. He looked forward to a time when parthenogenesis (i.e., cloning) would allow numerous “versions” of the most estimable among us to be recapitulated in a variety of different times and circumstances (Muller 1959).

Francis Crick shared the 1962 Nobel Prize for Physiology or Medicine with James Watson<sup>3</sup> and Maurice Wilkins for the discovery of the structure of the DNA molecule. He held that from the standpoint of a “humanist ethics” there is no right to have children. A contraceptive chemical should be put in the water, with a second chemical that counteracts its effects made available to those who are deemed worthy to reproduce. Recognizing that proposal as “a bit extreme,” he proposed the more practical measure of a tax on children. This would have the salutary effect of tilting the numbers of children in favor of the well-off. Although not exact, Crick discerned a fairly positive correlation between wealth and social desirability. Finally, it would be good social policy to control who can have children, as we currently control who can drive a car, by licensing. Only certain men would be licensed to produce sperm for donor insemination, and licenses would stipulate the number of children a woman could have—although he did admit that his proposal about licensing was made “somewhat playfully” (Welstenholme 1963:275–276, 284).

In the light of proposals such as these, it is reassuring to know that the great majority of those who use ARTs are not motivated by hubris to defy nature or to play God. Instead, they hold the same values and aspirations as other people. They see these technologies as means—in their particular circumstances of being single, and/or homosexual, and/or infertile—to realize hopes and dreams of having families and children that were otherwise closed to them. When it comes to matters as basic as these, those who use ARTs are like most human beings in craving what is familiar from their own experience of having grown up in and internalized the values of their society and culture. They attempt to actualize those values in their own lives, and they welcome the technologies that enable them to do so (see Ragone 1996:362, Hanson 2001).

Parents who use ARTs are at least as warm and loving toward their children as other parents, and their children seem to be as well-adjusted and happy as others (Difonzo and Stern 2011: 367–368). However, using ARTs to do what most people have for ages done naturally involves procedures and relationships that, for the time being at least, are entirely novel and unnatural. In the vein of Marshall McLuhan’s adage that “the medium is the message,” the message of these technologies is to separate previously unified roles and activities



into distinct parts. What follows is an exploration of how these separations bring about far-reaching changes in the organizational structures and symbolic meanings associated with marriage, reproduction, and the family.

### **What Is a Father, or a Mother?**

The genitor of a sexually conceived child is considered to be its father. He may desert the child, voluntarily relinquish his legal rights in adoption, or have them taken away by the state, but the biological tie remains unbroken and he is, in that sense if in no other, the child's father. Not the only father, of course, because in adoption the child acquires a new and more important father, but he continues to be considered the biological father.

With ARTs, biological fatherhood remains as it has always been, the father being the source of the sperm that fertilizes the mother's egg. The difference is the delivery system. The sperm is produced by masturbation, to be joined later with an egg in a petri dish or to be injected into a woman by nonsexual means. For over a century now the anything-but-high-tech procedure of artificial insemination has achieved pregnancies using nothing more complicated than a syringe or turkey baster. If the source of the sperm is an anonymous donor, he and the mother are unknown to each other.

Donor insemination makes it possible for several categories of women to conceive without having recourse to sexual relations that they may find impracticable or undesirable. One consists of women in married or otherwise stable relationships who want to have a child but whose husbands or partners are impotent naturally or because of an irreversible vasectomy. Lesbian couples form a second. Finally are single women who have not met Mr. Right, but who are concerned that their biological clocks are ticking. They want to have children when they can, even in the absence of a husband and father. The common term for such women, related to a popular book and website by Jane Mattes, is "single mothers by choice" (Mattes 1994, [www.singlemothersbychoice.org](http://www.singlemothersbychoice.org)).

Unlike sexual genitors, the use of the term "father" for sperm donors is questionable, particularly anonymous ones. Having had no sexual contact with the mother and being utterly unknown to her and the child, some are willing to think of him as a "father" and others are not. One single woman said, "I only wish his father [the anonymous donor] could know how wonderful he [their son] is," while another said, "My son doesn't have a father, a donor is all he is" (Hanson

2001:303, 305). These ambiguities make room for legal disputes about whether a sperm donor is or is not the father, as we shall see.

Motherhood is different. ARTs do not just remove sexual relations from reproduction. They also separate biological motherhood itself into two distinct roles. Traditionally genetic and gestational motherhood are concentrated in the same woman, whose egg is fertilized inside her and who carries and bears the child. This remains the case in *traditional surrogacy*. A woman who has agreed to have a child for someone else is artificially inseminated with the man's sperm. Nine months later she gives birth, being both the child's genetic and gestational mother. Although there has been no sexual impregnation, she is the mother in the full sense of the term. She relinquishes the child to the contracting couple. The husband is already the father, and his wife becomes the child's mother through adoption.

More recently the technology of IVF has made it possible to extract eggs from women, to be fertilized in a petri dish, and the resulting embryos to be implanted for gestation. If the egg comes from a donor, especially an anonymous one, it is possible that the term "mother" applies even less to her than "father" does to a sperm donor. At least the sperm donor has filled the entire role of biological father, albeit by an indirect route. But the egg donor fills only part of the role of biological mother, because another woman carries the child and gives birth to it.

If the embryo is implanted in a woman's own womb, then she is carrying her own genetic child, whom she intends to raise as such. The in vitro technology is more complex than artificial insemination, but she is still the only mother. If the genetic mother is unable to carry the child, a surrogate may be used. This is the increasingly popular *gestational surrogacy*, when sperm and egg from a woman other than the surrogate are joined in vitro and the embryo is implanted in the surrogate's womb.<sup>4</sup> In that event, the genetic mother and the gestational mother are different women. A gestational mother more fully merits the appellation "mother" than an anonymous egg donor, by virtue of her intimate association with the child during pregnancy. However, if the egg comes from the woman who intends to raise the child, her claim to motherhood, as both genetic and intending mother, outweighs that of the gestational mother.

This brief review demonstrates how it is now possible for a child to have three biological parents: the genetic father (source of the sperm), the genetic mother (source of the egg), and the gestational mother.<sup>5</sup> Moreover, none of them may ever be known to the child if the purchases and contracts for such an arrangement are orchestrated by still

another individual or couple who receives the infant upon birth and intends to be its social (and legal) mother and/or father. If it is a couple, that brings the total number of parents to five. A possible sixth is the husband of the gestational (surrogate) mother, who is normally party to the surrogacy agreement. And, if the original plans somehow go awry (for example, if the intending social parents divorce), the child may actually be raised by still other rearing parents.<sup>6</sup>

All this may work fine biologically, but the social consequences are a different matter. In addition to removing sex from the equation, a further separating function of ARTs is that they may sever the close ties between people who are conventionally linked in the reproductive process. The traditional ideal is that mother and father know each other, love each other, and live together. They have a close relationship with the children that result from their sexual intimacy, and they raise them to maturity. Depending on the particular circumstances, with ARTs any or all of these relationships may be greatly attenuated or never come into being. Intimacy between parents is replaced by fleeting encounters and monetary payments, and one's "sexual" partner may be nothing more than a vial of frozen sperm or eggs acquired from an unknown stranger. Surrogates usually have only a temporary relationship with the child and the people for whom she gestates it.

### **Providers, Receivers, and the Marketplace**

The whole point of sperm or egg donation and surrogacy is to produce a child for someone else. This introduces a separation of different roles between participants in reproduction that was previously entirely absent. That is the distinction between providers and receivers. The people who use ARTs to bring a child into their families are the recipients, while the donors, surrogates, and medical technicians involved in the process are on the providing end.

Receivers and providers have a very different perspective on what is going on. The receivers want to have a child, to build a family, and they gladly welcome the long-term obligations and rewards that entails. ARTs make it possible for them to realize these traditional values associated with children and family in their own lives. The matter is entirely different for the providers. They have no intention to raise the child and most see their participation as purely temporary, ending with the birth of the child, or even the moment of gamete donation. Some of them, often relatives of the recipients, participate out of a sincere desire to help someone else have children. This is especially true of some surrogates, who insist that they carry someone else's

child because they enjoy being pregnant and desire to give someone else the most precious gift one can give—the gift of life. It may also be true of some egg donors, even anonymous ones. Egg agencies use the idea of enabling an infertile couple to have a child as a recruiting device. However, the considerable monetary compensation to egg donors significantly dilutes the credibility of the altruistic motivation. Sperm donors, for their part, are more explicitly in it for the money or, in some cases, a desire to spread their genes as widely as possible (Bindley 2011, Dokoupil 2011).

This suggests that the term “donor” for those who provide reproductive services is often a misnomer, because for the great majority of them it is a business transaction. Sex of course has always been a commodity that prostitutes had for sale, and its reproductive corollary in that circumstance was a risk of doing business. But now market forces have invaded the realm of reproduction. Providers have sperm or eggs for sale, wombs for rent, and the professionals in the industry make their living by brokering gametes and embryos or presiding over technically complex procedures such as IVF. In our capitalist economy, the emergence of that human, all-too-human feature of the marketplace is a sure and inevitable sign of the transformation of reproduction from a sublime mystery shrouded in nature or the gift of God to a commercial transaction.

Different authors report widely different ranges of payments, which may vary because of the time the information was collected. Typical surrogacy payments range from \$20,000 to \$25,000 (Difonzo and Stern 2011:363). The motives of surrogates vary but tend to fall within the standard aspirations encouraged by the marketplace: to remodel their house, help with a child’s educational expenses, and buy a new car. A disturbing factor is that some women do it to avoid poverty, which implies the exploitation of poor people in a very intimate way by wealthy people who can afford to pay them, or perhaps just by the system in general. The exploitation of surrogates is a grave concern for Gina Corea, who underlines her attitude toward the process by referring to surrogates as “breeders” who are treated essentially like animals. She points out how, with gestational surrogacy, the surrogate makes no genetic contribution to the child but is just an incubator for it. In that case “clients will find the breeder’s IQ and skin color immaterial” and they will look to poverty-stricken parts of the United States and the Third World for very cheap surrogates (Corea 1985:215, see also Corea 1992).

As for sperm donors, the Sperm Bank of California pays \$100 per ejaculate, \$100 for a childhood photo, and an additional \$500

upon completion of the exit blood test, required six months after leaving the program (to ensure the donor has no sexually transmitted disease). On the other end of the transaction, buyers of sperm are charged a \$100 registration fee and then, depending on whether the sperm is unwashed or washed, they pay \$415 or \$485 per vial if the donor is anonymous and \$100 more for identity-release donors. A 25–30 page “long profile” of the donor costs \$15 and a childhood photo \$35, although a combo profile and photo is available at the reduced price of only \$40. Clients who purchase six vials or more at one time receive a 5 percent discount.<sup>7</sup>

Donor insemination can be a big business. California Cryobank reports that they are the second largest user of UPS in Southern California (Rothwell 2010). Things are more laid back up the coast in Seattle. Reminiscent of the Oscar Meyer Weinermobile, local deliveries of sperm from the Seattle Sperm Bank are made with a bicycle in the form of a sperm cell, with bulbous head and a long tail behind. A compartment in the head holds the frozen sperm in a liquid nitrogen canister.<sup>8</sup> The bike attracts considerable attention from passersby. One of them said it was “awesome,” and is making him think about becoming a sperm donor. Quite different is the reaction of Gretchen Sewall, a counselor from the Seattle Reproductive Medicine fertility clinic. “It is so disrespectful,” she said. “It’s hard enough for a couple to depend on a sperm donor—without having it arrive so flamboyantly” (Seinfeld 2011).

There are, however, some men to whom the term “donor” more appropriately applies, because they provide their product free of charge (Dokoupil 2011). Beyond the financial benefit to recipients, this enables donors and recipients to establish direct contact with each other rather than the impersonal experience of buying and selling through a sperm bank. One such donor is Trent Arsenaault of the San Francisco Bay area, who has fathered more than ten children while claiming to be a virgin. His webpage, [www.trentdonor.org](http://www.trentdonor.org), provides a great deal of information about him and the procedures he uses for meeting recipients and arranging for donation. Private donation may involve some curious transactions, such as one case where the donor (not Arsenaault), the recipient, and her lesbian partner met at Starbucks. He masturbated in the men’s room, passed the container of sperm to the recipient who immediately inserted it in the women’s room, and then the three had a cup of coffee together (Dokoupil 2011). One drawback for the recipient is that private donors may not have been tested for sexually transmitted disease.

Some encounters involve “natural insemination” (i.e., sexual intercourse). Such is the most common method used by Ed Houben, a

42-year-old single Dutch man who claims, as of April 2012, to have fathered 92 children. The oldest is nine, and ten others are in the womb. They live in several countries, including the Netherlands, Belgium, Germany, Spain, Italy, and New Zealand. Women desiring children contact him through the website [www.spermaspender.de](http://www.spermaspender.de). They may come to him in Maastricht, or he may go to them. He charges nothing but travel expenses. Most of the mothers remain in contact with him and send him pictures of the children, which cycle through his digital photo frame at the rate of one every two seconds. Once a year he rents a restaurant in Maastricht and invites all of the children and their parents. Fifteen children came to the most recent such event. Ed runs the risk of liability for child support should any of the mothers or children demand it (Hardinghaus 2012). Presumably, as in the United States, he would also have legal standing if he claimed paternal rights for any of the children.

Egg donation is more complex than sperm donation, requiring ovarian stimulation to produce more eggs and invasive extraction procedures. It is also more risky: 30 percent of egg donors suffer from ovarian hyperstimulation syndrome, 26.4 percent reported new infertility or menstrual problems, among whom 11.6 percent needed medical treatment and/or hospitalization. Usually payments to egg donors run from \$8,000 to \$15,000, although prices as high as \$100,000 have been reported (Difonzo and Stern 2011:363–364).<sup>9</sup> As with sperm purchases, these costs must be borne by the intending parents, for medical insurance rarely covers them (Cohen 2008:1166).

Although it does not bother those engaged in the business as providers or brokers, the idea of selling eggs or sperm or acting as a surrogate for money raises serious issues about the standing of the human body. Exactly what is the relation of the person to the body is vexed when one stops to think about it. To say I *am* my body is not quite right, because there are many aspects of me (my ideas, my aesthetic preferences, my moral principles) that are not part of my body. But to say my body is something I *have* is not quite right either, because that implies that my body is a commodity. But certainly it is not like a house or a car or a bottle of beer, that can be bought or sold. Such a view of the human body went out with the prohibition against slavery. To complicate matters further, we in fact do voluntarily part with some body parts, such as giving blood or donating a kidney or (after death) one's heart, and that meets with more approbation than criticism. Other parts—cut hair, fingernail clippings—we throw away without giving it a second thought.<sup>10</sup>

This whole issue is thrown into bright light by the sale of sperm and eggs. Without delving into the differences between them, in one sense both are clearly more like blood, or even fingernail clippings, than like kidneys. We can part with them with no lasting impact on our own being. But there is also a sense in which gametes are more fundamentally important to the human condition than any other body part, including kidneys and even hearts. After all, the latter are pertinent to only one life, while the former have the potential to perpetuate life through the generations.

Maria Michela Marzano (1999), thinking more about kidneys than fingernails, suggests that the body is a special kind of property that she describes under the term of *dominium*. It, or at least parts of it, can be given away voluntarily, but not sold. This is the view of those who believe that eggs or sperm may be freely donated for altruistic purposes and that women may act as unpaid surrogates for the same reason, but who oppose the idea of selling or renting parts of themselves in the market. We have seen that a few people do in fact give of themselves in this way—although the notion of freely donating sperm in order to spread one's genes as widely as possible may not appear entirely altruistic.

This is one of those situations where technology raises questions about basic cultural and moral issues on which no consensus has been reached. Commercial traffic in sperm and eggs challenges the idea that children should not be bought or sold (Developments in the Law IV 2003:2069), but in the absence of clear principles regarding how and why assisted reproductive technologies should be regulated, they proceed with much less legal oversight than adoption. One example of regulatory confusion is the famous scandal that rocked the Center for Reproductive Health at the University of California at Irvine in the mid-1990s (Havins and Delessio 1999:862–865). Three physicians there knowingly implanted embryos from some clients into other clients. The former were not asked for their permission, and the latter thought they were being implanted with embryos from their own eggs and their husbands' sperm. A great hue and cry ensued when the practice became known. Had it become a criminal case it could have raised existentially charged issues, such as whether the embryos were stolen personal property, or kidnapped human beings. Felony theft charges were not brought, however, because that requires the conversion of at least \$400 in property, and the District Attorney refused to put a monetary price on human embryos. Although the defrauded clients did ultimately receive monetary compensation, the

absence of more decisive action demonstrates how the extension of market principles to include reproduction has not yet been reconciled with cultural ideas regarding the sanctity of human life.

Meanwhile, the sale of gametes and rental wombs as market commodities is a flourishing business. For those constrained by poverty to do so, moral questions akin to those about slavery do in fact arise. But whether they do it because they see no other option or because they want some extra cash, the commercial transactions in sperm, eggs, and surrogacy raise serious questions that remain unresolved about the relation between the body and the person, about the commodification of the body, and perhaps even of the entire human being.

Florida tries to avoid the issue by stipulating that payments to surrogates must be limited to expenses directly related to gestation (Alexander 2003:426). A number of states refuse to recognize surrogacy contracts if payment is involved (Havins and Delessio 1999:858–862). But in the vast majority of cases, where all parties fulfill their stated obligations, the contracts never come before the courts and the transactions continue, unregulated and unhindered.

### **Disputations**

When sex is decoupled from parenthood, and when the categories of both father and mother may be broken down into separate roles, more people participate and have interests in the process. The possibilities of changed minds and disagreements therefore increase. The difficulty may come from the side of the provider, as when a surrogate wishes to renege on her agreement to surrender the child she bears or a sperm donor tries to exercise parental rights. Or it may come from the side of the recipients, as when a couple who have or have begun the process to have a child by one form or another of ART divorce or split up, leading to disputes over parental rights, custody, and child support. These disagreements may come before the courts for adjudication. It is here that the existential questions evoked by reproductive technologies—having to do with the value of human life, the definition of a father or a mother, the responsibilities parenthood entails, and the relation between parents and children—appear in their starkest and most convoluted form.

They do not, however, necessarily receive satisfactory answers there. The law has not kept pace with the changes produced by new technologies. Legislatures have done little to regulate them, and what statutes there are vary from state to state. This leaves the courts with scant guidance when forced to deal with disputes stemming from



ARTs in the form of lawsuits (Havins and Delessio 1999:865; Spivak 2010:103, 114; *Developments in the Law IV* 2003:2065–2068, 2074). American law has traditionally been committed to the nuclear family, the benefits and responsibilities of parenthood, and the sanctity of life. However, these matters are not as straightforward as they were before the advent of ARTs. Decisions are made on a case-by-case basis, resulting in judgments that are often inconsistent and particularly prone to reversal by higher courts.

The thread that unifies the following review of litigation is that new technologies are bringing about a shift in the criteria for determining legal parenthood. Traditionally the dominant consideration was biological ties, but recently the intent to have and raise the child is becoming more prominent. After marshalling evidence for that generalization by examining several cases, we will explore what it means for contemporary culture.

### **Muddled Motherhood**

The most common situation that leads to disputes about legal motherhood is surrogacy. This occurs because the traditionally unified status of mother is separated among two or more women by the technologically enabled fact that, in all surrogacy arrangements, the intending mother (who plans to raise the child as her own) is not the gestational mother. Usually a contract is drawn up which provides for payment to the surrogate from the people who are to receive the baby. If, however, the surrogate insists on keeping the baby, lawsuits may arise over who are the legal parents and who should have custody of the child.

Explicitly basing litigation on the contract is often unworkable because many states do not recognize the legitimacy of these contracts. The difficulty is that they can be interpreted as agreements to sell a child (especially in traditional surrogacy, where the surrogate is both the genetic and the gestational mother), and that is both repugnant to public policy and prohibited by the constitution. Nevertheless, the courts are left with a living child whose status is in dispute, and they must resolve the situation somehow.

For the determination of motherhood the two criteria of biology and intent actually become three, because the biological tie divides into genetic and gestational components. Typically when any two of these rest in one woman, she is declared to be the legal mother. In traditional surrogacy the gestational mother is also the genetic mother, her egg being the one that is fertilized. Should conflict arise with the

intending parents, she is recognized as the legal mother. In gestational surrogacy the genetic mother is a different woman from the gestational mother. If the genetic mother is also the intending mother, her intent breaks the biological tie and she is declared to be the legal mother (*Johnson v. Calvert*, 5 Cal. 4th 84, 1993, Monarch 1998:10–11). If the intending mother is neither the genetic nor the gestational mother the situation gets more complicated, as we shall see below.

Usually in these cases the courts must decide not only legal parenthood, but also who should have custody of the child. This is a separate question. In deciding it, the primary consideration is generally the best interests of the child. When the legal mother is the intending mother (the usual case in gestational surrogacy), custody is usually awarded to her because, unlike the gestational surrogate, her desires and plans led to the surrogacy arrangement and the birth of the child in the first place. Custody is more problematic with traditional surrogacy. It was dramatically played out in *In re Baby M* (109 NJ. 396, 1986), one of the earliest and most famous surrogacy lawsuits. This pitted a genetic father against a woman who was both the genetic and gestational mother.

Mary Beth Whitehead, a married woman, was artificially inseminated with the sperm of William Stern. Their contract stipulated that, upon birth, she would turn the baby over to him and relinquish any parental claim, opening the way for William's wife Elizabeth, the intending mother, to adopt the child. As delivery approached, in 1986, Mrs. Whitehead became distraught by the idea of relinquishing her child. She did give the baby girl to the Sterns three days after it was born, but the next day she arrived at their door expressing extreme distress and asking that she be allowed to have it for a week. The Sterns complied out of anxiety that otherwise she might commit suicide. But subsequently she refused to return the baby, and threatened to flee from New Jersey in order to avoid having to give it up. The Sterns acquired a court order, which was served on Mrs. Whitehead by the police with the Sterns in attendance. Upon arrival they were delayed by a dispute over the child's name (the Sterns and the Whiteheads had given her different names), during which time the baby was passed out of a window at the back of the house to Mr. Whitehead. He and his wife took her to Florida, where they lived for some four months in a succession of motels and, ultimately, the house of Mrs. Whitehead's parents. From there the baby was taken by the police and placed in the Sterns' custody.

Mary Beth then sued for the child on the grounds that the surrogacy contract was invalid. The trial court disagreed and ruled on

the basis of the contract that Mary Beth was not the legal mother of the child. Custody was given to the Sterns. Mary Beth appealed to the New Jersey Supreme Court. In 1988 they reversed the trial court on the validity of the contract, partly on the grounds that any contract that stipulates payment for a woman's baby reeks of child selling. They restored Mary Beth Whitehead as the child's legal mother. This exemplifies the principle that when two of the three criteria are concentrated in one woman (in this case, both genetics and gestation), she is declared to be the legal mother. However, Mary Beth was not given primary custody of the child. She was granted visitation rights, but due largely to her erratic behavior, custody remained with William Stern as being in the best interests of the child.

Courts tend to find it in the best interests of children who have lived in stable families for several years to remain where they are, regardless of legal parenthood. For infants such as baby M., they evaluate the stability of the contending families to predict which is likely to provide the best environment for the growing child. Capitalist values tend to tip the balance to the intending parents. The contending parties are usually of different socioeconomic classes and conditions. The surrogate agrees to the arrangement because she needs the money, and the intending parents are in a position to pay it. The danger is to value one class and level of affluence more favorably than another when it comes to the probability of a stable and happy childhood, and this of course is by no means necessarily true (Spivak 2010:106–107). The danger is perhaps exacerbated by the fact that those sitting in judgment are more likely to be of similar socioeconomic status to the intending parents than to the surrogate.

Disputes over legal motherhood usually involve surrogates but not necessarily. *K.M. v E.G.* (37 Cal. 4th 130, 2005), pitted a gestational mother against a genetic mother, with no surrogate involved. A lesbian couple used donor sperm to fertilize the egg of one of them (the genetic mother) in vitro. It was implanted in the other partner (the gestational mother), who bore twin girls. Five years later the couple split up. The gestational mother contended that the genetic mother was not a parent of the twins; the genetic mother contended that she was. The trial court agreed with the gestational mother, as did an appeals court, partly because the genetic mother had signed a contract prior to her ova extraction promising that she would make no claims of parenthood for any resulting child. The genetic mother protested that it was not clear to her what she was signing, that she would not have provided the eggs if she had known she would not be considered their mother, and, perhaps most important, the couple

raised the girls in their home for five years, both acting as parents to them. They both were intending, social mothers. Thus, with the biological tie of genetics on the side of one woman, that of gestation on the other, and intent shared between them, the California Supreme Court reversed the lower courts' ruling and held that both women were the twins' mothers. This case is another example of the tendency of ARTs to separate what was traditionally unified by splitting the supposedly singular status of "mother." The court confined itself to the question of parenthood and was silent on custody of the twins.

### Fractured Fatherhood

The biological function is not divided with men as it is with women, so there are just two criteria for legal fatherhood: genetics and intent. When sexual intercourse is involved, genetics trumps intent for both fathers and mothers. Francine Todd, an Indiana woman, wanted to have a child but did not want to be married. She asked her boyfriend Edward Straub to impregnate her through sexual intercourse. Divorced and with five children already, he was reluctant to go along with the scheme. However, she signed an agreement that she would not seek child support from him, and they proceeded. When the baby was born she did seek child support, and he sought to have the agreement enforced. The Indiana Supreme Court affirmed her claim because the sexual impregnation made him the legal father and no agreement that removes a child's right of support from a parent is valid (*Straub v. B.M.T. by Todd*, 645 N.E.2d 597).

Legal fatherhood is more complicated when insemination is artificial rather than sexual. In most surrogacy cases the genetic father is the same as the intending father (his sperm was used to inseminate the surrogate or the embryo that the surrogate carries), and he is recognized as the legal father. There was never any question, for example, that William Stern was the legal father of Baby M. The legal father, however, is not invariably the genetic father. The general presumption is that when a woman bears a child, her husband of at least nine months is the father—a presumption that, of course, may not be factually accurate. Even when the husband is indisputably not the genetic father he may still be the legal father. This is common with donor insemination, when the legal father is a man who consents to his wife's using the sperm of another man to conceive a child whom he intends to raise with his wife. To summarize, sexual intercourse by itself is sufficient to establish fatherhood, while in its absence intent becomes the determining factor. Edward Traub's genetic tie made

him the legal father even if he did not intend it; the consenting husband of a woman artificially inseminated by another man is the legal father even if he did not sire it.

Intent prevails even when the “husband” is not a man. Karin T. and Michael T. married in 1977. Michael was really a woman (originally known as Marlene) posing as a man. In 1980 and in 1983 Karin bore children through donor insemination, both Karin and Michael officially agreeing to the procedure. Later in 1983 Karin and Michael separated, and Michael claimed she was not the parent of the children and had no obligations toward them. The New York Family Court disagreed, holding that her position was the same as a male husband who had agreed to his wife’s artificial insemination, and therefore she is a “parent” liable for support of the children (*Karin T. v. Michael T.*, 127 Misc. 2d 14, 19, the quotation marks being used by the court). Insofar as Michael is recognized as a woman, meaning that her parental status would be that of mother, this decision concurs with the California court in *K.M v E.G.*, discussed above, that a child can have two legal mothers.

The genetic tie between father and child is reduced to insignificance in cases of donor insemination. It is well established in law that sperm donors are not fathers to children engendered with their sperm, and have no obligations to them. One woman in Massachusetts did try to force a sperm bank to reveal the name of her anonymous sperm donor so that she might demand child support from him, but her application was denied (*Doe v. XYZ Co.*, 75 Mass. App. Ct. 311, 2009).

Even if the mother and the sperm donor are known to each other, artificial insemination is nearly always a sufficient reason to exempt him from legal fatherhood. As with Francine Todd and Edward Straub, Ivonne Ferguson wished to become pregnant with Joel McKiernan’s sperm. She also assured him (orally this time) that he would not be the father of any baby that resulted, and she would not seek any form of child support. The difference between the two cases, however, is that Ivonne was impregnated with Joel’s sperm artificially rather than by sexual intercourse. Twins were born, and five years later she filed for child support. The trial court sustained her claim and a superior court affirmed the trial court’s ruling. However, the Pennsylvania Supreme Court reversed, upholding the principle that in cases of artificial insemination the donor is not the father and not liable for child support in the absence of a specific agreement to the contrary, even if the donor is known to the recipient, (*Ferguson v. McKiernan*, 596 Pa. 78).

If that case involves a woman seeking to establish a sperm donor’s fatherly obligation and he aimed to avoid it, the 2007 Kansas case *In*

*the Interest of K.M.H.* (285 Kan. 53) addressed the opposite. Here too a man and a woman reached an agreement that she would be impregnated with his sperm, but he would not be the legal father. After birth the sperm donor wished to have paternity rights and the mother wanted to deny them. Affirming the same principle as the Pennsylvania court—that a man is not the father of a child artificially conceived with his sperm—the Kansas Supreme Court found in favor of the mother (see Adamson 2009).

But it doesn't always work that way, as is seen in two remarkably similar California cases concerning the paternity of sperm donors: *Jhordan C. v. Mary K.* (179 Cal. App. 3d 386, 1986) and *Steven S. v. Deborah D.* (25 Cal. Rptr. 3d 482, 2005). In both cases the sperm donors were known to the women, behaved as fathers after the children were born, and wished to be certified as the legal fathers. And in both cases the mothers sought to deny their paternal status. Yet, despite the similarities, they had opposite outcomes. Reading these cases one gets the sense that the courts felt a sense of relief that, for once in reproductive matters, they had unequivocal (although not transparently reasonable) direction from the legislature. California's statute regarding artificial insemination stipulates, as is true elsewhere, that sperm providers have no parental rights or duties. That particular statute conditions this, however, on the sperm having been provided to the mother through a licensed physician. Steven did that, while Jhordan give his sperm directly to Mary. Entirely on the basis of the statute's wording, which appears to some as a mere technicality, Jhordan's claim to paternity was affirmed while Steven's was denied. The message is that, in California, sperm delivered on the sly leaves open the possibility that the donor may be recognized as the legal father. And not only in California; In Kansas, William Marotta provided sperm to a lesbian couple in 2009 in response to an online ad they had placed on Craigslist. The donation was done privately and now, because a clinic or doctor was not involved, the Kansas Department for Children and Families is seeking to hold him responsible for child support payments (Hrenchir 2012). The rationale, if there is one, may be that the state wishes to avoid assuming expenses for child support if there are citizens who can be held responsible, and the only way the state knows for sure that it is a case of donor insemination rather than sexual intercourse is if a professional intermediary participates in the arrangement.

Very little litigation or legal discussion exists as to the maternal rights and obligations of an egg donor who is neither the gestational nor the intending mother. Probably the matter would parallel the

situation with reference to sperm donors: that she would not be considered a legal mother (See Schiff 1995:284–286).

### **The Curious Case of Jaycee Buzzanca**

It remains to consider perhaps the most convoluted ARTs case of all: *In re marriage of Buzzanca* (61 Cal. App. 4th 1410, 1998). John and Luanne Buzzanca went all the way with assisted reproductive technology. They acquired an egg from an anonymous donor and arranged for it to be fertilized in vitro with the sperm from another anonymous donor. The resulting embryo was implanted in a surrogate, who agreed to give the baby to the Buzzancas when it was born. The baby, a girl named Jaycee, therefore had the maximum number of parents currently possible: two genetic ones (the anonymous egg and sperm donors), a gestational one (the surrogate), and two intending ones (John and Luanne). A sixth might be the surrogate's husband, who participated in the surrogacy agreement. For another turn of the screw, shortly before the Jaycee's birth, John and Luanne divorced. Luanne claimed that she and John were Jaycee's parents, and sought child support from John. For his part, John wanted nothing more to do with the matter, holding that in the absence of any biological tie, neither he nor Luanne were Jaycee's parents.

The trial court agreed with John and ruled that, with the genetic parents unknown and the surrogate having relinquished any claim, Jaycee, who at the start had five or six parents, ended up with none at all. If Luanne wished to be her mother, she would have to initiate formal adoption proceedings. Jaycee's status in limbo proved to be temporary, however, for the Court of Appeal reversed the trial court. It named John and Luanne the legal parents on the grounds of intent, because their actions had initiated the entire affair (see also Monarch 1998). Jaycee was placed in Luanne's custody, with child support to be paid by John.

### **Responsibility: From Biology to Intent**

Natural or artificial, what has not changed is the assumption that parents are those who bear responsibility for bringing a child into the world. The problem is to determine where that responsibility lies. With children produced through sexual relations, it is with the two biological parents regardless of their intention to have or not to have the child. As American culture has construed matters, people can shed their status as parents of sexually conceived children only by

formally relinquishing them to adoption or if the state takes them away because parental negligence threatens the well-being of a child. Even if a man and woman sign a contract that one of them will have no parental rights or obligations relative to a sexually engendered child, should the matter come before the courts he or she cannot escape them.

ARTs enable reproduction without sex, and that has changed the balance dramatically. The significance of the biological connection diminishes. Sperm donors, egg donors, and surrogates are all biological parents but they are not social or legal parents. A sperm donor is generally neither constrained nor allowed to take on the position of the legal father. When a single woman conceives by donor insemination, except for the California technicality in *Jhordan C. v Mary K.*, discussed above, the child has no legal father at all.

The issue still turns on who has responsibility for bringing a child into the world, but ARTs displace that responsibility from sexual relations to intent. A married man has long been considered to be the legal father of the child resulting from the artificial insemination of his wife with the sperm of another man, because his agreement to the procedure indicates his intent to be the father. If the biological maternal link to a child is split between a genetic mother and a gestational surrogate, the one whose intention to engender and raise the child (virtually always the genetic mother) is the legal mother.

The formal way to express intent is by means of contracts. Often courts do not accept contracts pertaining to reproduction as valid. One reason for this is reluctance to put something as natural and intimate as having babies on the same footing with agreements regarding the buying and selling of commodities. And yet this reservation is ultimately meaningless because even if the signed contract is deemed to be invalid, the initiative taken by the intending parents to put the process in motion, the tacit agreement of anonymous donors, and the explicit agreement of known donors and surrogates, constitute at the very least a kind of de facto contract that has come to be enforced by the courts. The fact that this is happening indicates that the once uniquely natural process of reproduction is coming to be understood as a cultural transaction involving negotiation and agreement. An indication that legislatures may finally be coming to terms with this as the new reality, “in 2004, the Illinois legislature passed the Gestational Surrogacy Act (GSA), providing for the enforcement of gestational surrogacy contracts and declaring that the intended parents automatically become the child’s legal parents at birth” (Difonzo and Stern 2011:404).



### A Wider View

The evacuation of sex and marriage from the definition of parenthood introduces much novelty and unfamiliarity. This has often been seen as a threat to established institutions. A few decades ago, when donor insemination was the only available technology to assist reproduction, it hewed closely to the traditional model of the family as a married couple with their biological children. It was administered by private physicians, who limited it to those married women who were unable to achieve pregnancy due to their husbands' infertility. Indeed, those who used donor insemination often "passed" for conventional families because they kept the matter secret from outsiders and often from the children themselves, all of whom assumed that the mother's husbands were the biological fathers.

All this changed when donor insemination was commercialized by sperm banks and expanded to include single women and lesbian couples, and with the expansion of surrogacy. More than in the United States, ARTs in a number of countries are subject to controls that work to keep reproduction and family formation from straying too far from established norms. Aiming to remove the commercial taint, Canada prohibits payment to gamete or embryo donors or surrogates. Germany and Italy limit fertility treatments to heterosexual couples who live together, and France adds that they must have been together for two years (Wardle 2006:425).

Both Islam and Judaism are strongly pronatalist cultures that place a high premium on having children, the more the better. As a result, they are both receptive to technologies that help people who have difficulty with ordinary reproduction to have children. But, especially in Islam, parenthood remains confined to traditional values and understandings. Sunni Islam achieves this by strictly limiting assisted reproduction to IVF. The genetic material must come only from the married couple, and the wife must carry the child. Legitimacy is limited to children of the couple, and recourse to any third party donor or surrogate is considered to be adultery (Inhorn 2005:299–303). By accepting ARTs but only to this extent, Sunni Islam enables otherwise challenged couples to procreate while maintaining the traditional conviction that legitimate parenthood requires marriage and a genetic and gestational tie between parents and their children.

Shi'a Islam is more liberal than Sunni in these matters, but less of one mind. ARTs are not allowed to disrupt the traditional family form because the child must be born into and raised by a married couple. Some clerics approve sperm and egg donation and surrogacy,

and others do not. For those who do, an important issue is whether a woman who is fertilized with donor sperm, or a man whose sperm fertilizes a surrogate's egg, is adulterous. This can be avoided for husbands by taking the surrogate as a temporary wife, but not for wives since a woman may not be married to more than one man at the same time (Inhorn 2005:306–309, Bundren 2007:736).

Matters are quite different in Israel, where the divine injunction to be fruitful and multiply takes on special urgency as Jews regard the faster population growth of their hostile Arab neighbors. Women who do not reproduce naturally are considered deviant if they do not utilize IVF and other ARTs. Israel has by far the highest frequency of IVFs in the world (Shalev and Gooldin 2006:151, 154). Its societal encouragement is clear from the fact that, while in the United States medical insurance does not cover them, “every Israeli woman, regardless of marital status, is eligible for unlimited rounds of IVF treatments free of charge, up to the birth of two live children” (Haelyon 2006:181).

The unusual openness to ARTs in both Israel and the United States is probably why there is greater confusion issues of parenthood and kinship in these two countries than elsewhere, such as the Islamic societies we have just discussed. As for Israel, much disagreement exists among Jewish scholars regarding the nature of parenthood in situations where ARTs are involved. So far as motherhood is concerned, the most salient issues are that children born of Jewish mothers are Jewish, and that the fetus is considered to be part of its mother. Although the matter is subject to much dispute, especially in Conservative Judaism, gestation is the defining criterion of motherhood regardless of whether the egg she is gestating is her own or comes from another woman, and a surrogate continues to be a child's mother even after she has given it up (Povarsky 1998: 457, 482).

The legal father in Judaism is the source of the sperm. In a complete reversal of the situation in the United States, this means that in cases of donor insemination the legal father is the donor. Still, by merit of his agreement to the procedure, the husband of a woman who has given birth through donor insemination, while not the legal father, is responsible to support and raise the child (Povarsky 1998:444–446). Jewish law stipulates that a child born from incest or a married woman's adultery is illegitimate. Hence the key question becomes whether donor insemination of a married woman is adultery. Some authorities claim that it is, but the bulk of opinion holds that it is not, and therefore children of donor insemination are legitimate offspring of the donor. One precedent for this view is a centuries-old

ruling that a man who leaves his sperm in a bath is the legal father of a child born of a woman who next used the bath and was impregnated by the sperm, and the child is legitimate (Povarsky 1998:430–434). Finally, an impediment to donor insemination is the biblical injunction against masturbation (“spilling one’s seed”). Those concerned to avoid violating this precept may resort to methods of sperm collection such as coitus interruptus or specially designed condoms (Wahrman 2005:128).

### **Shrinking Symbols**

A man and a woman come together in an intimate relationship, and the result is a child. This simple relationship is probably the most fecund source for symbolic meanings that exists. Consider just a few examples. The man and woman are in complementary opposition, each contributing an essential element to the creative process. Symbolic extensions of this extend beyond the purely biological to include creative relationships between humans and animals, humans and machines, mind and matter, and the sacred and the profane. Perhaps the most elaborate application of complementary dualism is found in the Chinese principles of yin and yang. In addition to female and male these principles apply to dark and light, cold and hot, and wet and dry. Expanded into a five-fold system, they encompass the directions of the compass, the seasons of the year, the elements, parts of the body, flavors, colors, emotions, and much else (Veith 1996).

A number of cultures conceptualize the creation of the cosmos on the model of sexual reproduction. In New Zealand Maori mythology the gods were born from the sexual embrace of the sky father Rangi and the earth mother Papa. Subsequently one of those gods, Tane, fathered a daughter through sexual relations with a female he had fashioned from the earth, and he then engendered humankind through sexual relations with his daughter. Interestingly, Maori lore uses sexuality to symbolize death as well as creation. Tane’s daughter, mortified upon learning of her unwitting incest with her father, withdrew to the underworld. She told Tane to look after their human offspring in the world of life, and she would draw them down to her in death. Thus, just as we enter this world through the birth canal of our mothers, so we die as Tane’s daughter/consort, our primordial ancestress, draws us from this world through the passageway of her genitals (see Hanson and Hanson 1983:88–90).

Variations of the sexual relationship between a man and a woman symbolize the full range of human tendencies and feelings: love or

hate, tenderness or violence, cooperation or domination. Active and passive, such as the Chinese yang and yin, are conceptualized on the model of the male fertilization of the female. The dialectical relationship of thesis and antithesis giving rise to a synthesis takes the same form as male and female producing a child that embodies aspects of both of them.

The relationship between parent and child is also a rich source of symbolic meanings. Parents are understood to be the preeminent others who care for us, who have our best interests at heart, and, especially when we are young, who know what is good for us better than we know it ourselves. Hence parents are those in whom we place unqualified trust and to whom we owe obedience. The most obvious symbolic extension of this is the designation of God as father. Many people believe that they live under the watchful eye of God, the father figure to whom they owe complete obedience. Thus Martin Luther could write, in *On Christian Liberty*, that freedom for the Christian is the freedom to submit to the will of God, and Christians pray "not my will, but Thy will be done." Nor is the symbolic extension of parenthood limited to the divinity. It also encompasses other entities that we feel are greater than ourselves, from Mother Nature to the fatherland, Mother Russia, and the linguistically associated concept of patriotism.

These are only a few of the ways that sexual reproduction and parenthood symbolize the belief that we live in a world where much that happens is beyond human understanding and control. That worldview leaves humans vulnerable to dangers that they can neither foresee nor fathom. But it goes on to posit that events are not random or meaningless because the world is governed by an intelligence so comprehensive and great that, as the Bible has it, the very hairs of our heads are numbered and no sparrow falls without its knowledge. As central African Pygmies believe that they are children of a divinity represented by the forest (Turnbull 1961), Christians and Jews consider their god to be like a parent who has established the order of things (even if it is not always intelligible to us), and who lays down expectations and laws for us, its children, to guide our own behavior and to provide a certain predictability for the behavior of others. The further belief that the greater power, again like a parent, loves and cares for us gives people a sense of comfort as they cope with a dangerous world.

Being a parent is no less symbolically significant than being a child. To give birth and to raise children are viewed as perhaps the most supreme experiences human beings can have, a way of overcoming

mortality by living on in one's children and in their children. Achieving parenthood is not within one's own control; it is a miraculous gift granted by a greater power. For some it is nature, for others, God. One version of the Christian marriage ceremony admonishes the couple to have and care for children "if it be God's will." Because having children is considered to be a rewarding experience for parents and a contribution to the perpetuation of the species, those unable to reproduce are thought to be in some sense deficient, not fully realized human beings. The French Polynesian island of Rapa had a subsistence economy based on irrigated taro agriculture and a high value placed on reproduction at the time I did anthropological fieldwork there in the 1960s. People characterized men without children by phrases such as "his irrigation ditch is dry," and one such man told me "those of us without children are worthless" (Hanson 1970b:101-102). This sentiment by no means dwarfed everything else about a man (or woman), either in Rapa or in the contemporary United States, where such individuals are often well liked and are considered to be contributing members to society. However, in both of these societies as well as many others, they have been denied a special quality, even a blessing, that is widely viewed as a valuable component of a full life.

ARTs have a massive impact on the symbolism of sexual reproduction and parenthood. They replace the rich and creative sexual relationship between a man and a woman with the prosaic fusion of sperm and egg. These do not love each other; they do not build a life together; theirs is a relationship neither of symmetrical cooperation nor asymmetrical domination; they do not argue and separate, either painfully or with relief; they do not fancy a romp in the hay. Exactly what they are is not entirely clear. They are routinely bought and sold, but courts are reluctant to honor contracts that treat them as fungible commodities. When they are joined they may be housed in wombs that strangers have for rent. The fecund symbolism of an intimate relationship between two complementary human beings that results in the birth of new life gives way to the anonymous meeting of two microscopic objects, induced with a syringe or conducted in a glass dish in a laboratory, and gestated who knows where. There is no room for symbolic extension in this.

ARTs do not disrupt the meanings of love, nurturance, authority, and reliability associated with parenthood, but they do affect it in other ways. What it means to be a parent changes. It is no longer necessary for there to be two of them, of the opposite sex. With ARTs they can be two women, two men, or a single individual. ARTs also fragment the concept of parents, rendering obsolete the notion of

father and mother as unitary and complementary figures. They both have been split into multiple and contingent meanings: genetic father, genetic mother, gestational mother, intending father, and intending mother. Depending on how many of the options of sperm donor, egg donor, and surrogate an intending couple employs, any number of these may be in play. Pick one and there are three parents, two of them make four, and using all three, as John and Luanne Buzzanca did, makes five. Or, at the other extreme, when a single woman uses an anonymous sperm donor, the man's contribution is so remote and truncated that for all intents and purposes there is only one parent, the child having no father at all.

With ARTs God and nature are relieved of responsibility for determining if certain couples will be parents. That now comes under the aegis of technology, intent, and the ability to pay for it. This has the effect of minimizing the symbolic significance of having children for the sometimes uncertain relationship between human beings and the wider world. Having offspring is no longer a blessing from God, and we are no longer children of God, because God is not necessary to our making. ARTs enable us to do that ourselves.

Of course, the vast majority of children are still born from sexual intercourse, and the traditional form of the family is far from obsolete. Nevertheless, the symbolism associated with sexual reproduction and parenthood has been in slow retreat in the West for centuries, largely because science and technology have extended human knowledge and control into the regions that were previously thought to be closed to us. So far as nature is concerned, the symbolism has actually already been reversed. The metaphor has shifted from nature as our mother to ourselves as the stewards of nature. Humanity is now held responsible for the condition of the natural world—its plant and animal inhabitants, its resources of water and minerals, and its climate.

This exemplifies the thesis of this book that technology drives an expansion of culture at the expense of nature, an incursion of human control into areas that were formerly beyond it. When sex is removed from the equation, the primary definition of a mother and a father shifts from the natural criteria of genetics and gestation to the cultural one of intent. Thus the most interesting aspect of the *Buzzanca* ruling from our perspective is that, with Jaycee facing the prospect of being parentless, the higher court might have turned to biological parenthood. It might have insisted that the sperm and egg donors be identified and that parenthood be vested in them and/or in the one identified person with a known biological tie to Jaycee: the surrogate. It did none of these, leaving the anonymity of the gamete donors

undisturbed and honoring the surrogate's voluntary relinquishment of parental rights and obligations. Instead, it refused to allow John to walk away and ruled that he and Luanne were Jaycee's legal parents. The cultural considerations of intent—as seen in the Buzzancas' inaugurating the whole process and paying for it, as well as in the surrogate's contract—trumped natural and biological ones at every point.<sup>11</sup>

The symbolic significance of this is that, as with ARTs' banishment of sex from reproduction, the turn to intention diminishes the complementary dualism communicated by the difference between father and mother, male and female. That difference is entirely absent when it comes to signing a contract, which is done in the same way by a woman or a man. It is absent too when, as in two of the cases reviewed above, courts in New York and California decreed parents to be two mothers. The increasing recognition of same-sex marriage obviously furthers that process. If difference is the fulcrum on which the rich symbolism associated with sexual reproduction and parenting turns, and if both reproduction and parenting can now routinely be accomplished without that difference, what will happen to the cultural structure of symbolic meanings? Will it be impoverished by the loss of this critical source of symbolism? Will people tenaciously cling to those meanings even as they are revealed to be obsolete? Or, most likely, will something else occur that we cannot presently foresee?

## Chapter 3

### All in the Family

The previous chapter considered how ARTs separate what has traditionally been unified. They divide the previously unitary statuses of father and mother into several different ones: genetic mother, gestational mother, and so on. By enabling reproduction without sex they separate parenthood from intimate connections between men and women. A major concern in that chapter was to trace the impoverishing effect of all this on the symbolism of contemporary culture. It's also important to recognize that, despite their divisive capacities, or, indeed, precisely because of them, ARTs also introduce opportunities to establish new kinds of relationships with their own meanings and, in some cases, intimacy. This is especially visible in two new kinds of families that are made possible only by the use of ARTs. Describing them will extend the previous chapter's discussion of how ARTs redefine the structure of the family and the wider network of relations among kin in contemporary society.

#### A Wide Open Family

To my knowledge there is only a single instance of the first family form to be reviewed, but the new and unusual relationships it introduces vividly exemplify the potential of ARTs to transform cultural institutions. This is the family that is being built by Melanie Thernstrom and her husband Michael. Melanie described their experience in an article in the *New York Times Magazine* (Thernstrom 2010) and an interview on the MSNBC "Today" show of January 4, 2011. Melanie was over 40 when she began to enlist reproductive technology in the effort to become pregnant. After having gone through six unsuccessful rounds of IVF, with her physician warning her that still more



efforts could endanger her health, and being discouraged about their prospects for adoption, they decided to deploy additional technological assistance.

Their course was to use IVF with Michael's sperm and a donor egg and gestational surrogacy, hardly an unusual decision in twenty-first century America. What was unusual was their decision to use two surrogates. In their previous unsuccessful attempts to induce a pregnancy in Melanie, they had hoped for twins. With two surrogates they might achieve something like that while avoiding the complications of a multiple birth and enhancing their chances to have at least one child. As it happened, both pregnancies were successful and the children, a girl and a boy, were born five days apart. Their relationship to each other is unprecedented. They are brother and sister with the same genetic parents, as are full siblings, but they are not twins because, although born at essentially the same time, it was from different pregnancies in different women. With no word available to describe their relationship, yet following the human custom of explaining something new on the model of something known and familiar, the Thernstroms ultimately cobbled together the term "twiblings."

The Thernstroms carefully interviewed the egg donor and the two surrogates before engaging them: again not an unusual procedure, especially with the surrogates (both of whom had children already). The novel twist is the effort to forge close ties with the surrogates that they hoped to maintain after the twiblings' birth. They kept close contact with them during the pregnancies, and after the births the surrogates regularly delivered milk for the babies. Melanie rejected a ridiculous arrangement involving tubes attached to her breasts that would make it seem like she was nursing the children, and at one point asked one of the surrogates, on a visit to deliver milk, if she would like to nurse their baby. She would, and she did.

Thernstrom explicitly acknowledges the fragmented quality of parenthood in this experience, and resolved to make it an asset. "Once we made the decision to have children this way, and put away regret, I felt happier embracing it than just tolerating it," she wrote. "There was even something I liked about the idea of a family created by many hands, like one of those community quilt projects, *pietra dura*, or a mosaic whose beauty arises from broken shards. If it takes a village to raise a child, why not begin with conception?"

Her hope was that the donor and the two surrogates would remain close indefinitely, as family members of a new and special kind. She referred to the donor, who was 20 years younger than the Thernstroms, as her "Fairy Goddonor." They adopted an almost

parental attitude toward her. Melanie saved the twiblings' outgrown baby clothes to give to the donor when she had children of her own, and she encouraged her to freeze some of her own eggs, with the Thernstrom's paying the costs, so she could use them herself should future circumstances made it impossible for her to conceive naturally. At her age, however, possible future infertility was far from donor's mind and she did not take up the offer.

All parties had agreed that the donor and surrogates could withdraw from the family at any time. The relationship with the donor is the least close. She did not attend the twiblings' first birthday party, she was not present for the television interview, and she is not identified by name in the magazine article or the TV interview. Having the least intimate connection with the twiblings and being of a different generation from the Thernstroms and the surrogates, both of whom were older than the donor, she may have had less in common with the family. Her anonymity may also indicate a disinclination to become publicly known in what became a mass media event.

It is different with the surrogates. The article features a photograph of six of the members of this unique family: Melanie and Michael, the two surrogates, and the babies. Both surrogates, identified by their full names, were present with Melanie at the television interview. Clips in that interview show older children playing with the toddler twiblings, presumably the children of one or both of the surrogates. The surrogates and their families were guests of honor at the twiblings' first birthday party. One wonders how strong the relationships can be and how long they can last. The egg donor and both surrogates have remained in contact with the Thernstroms as late as the summer of 2012, at least two years after the twiblings were born (Melanie Thernstrom, personal communication, July 26, 2012).

The Thernstrom's effort to cement over the separations produced by ARTs by creating the kind of family they did is uncommon. It has parallels with open adoption, where birth parents maintain one degree or another of connection with the child and the adoptive parents for a potentially extended period (Yngvesson 1997, Siegel 2003). In the Thernstroms' family, however, neither the egg donor nor the surrogates have as close a biological relationship with the children as does a birth mother who gives them up for adoption. Nevertheless, both open adoption and the Thernstrom case consist of a mixture of standard family relationships and significant departures from them. For the Thernstroms, the pertinent relationships are those (1) between Melanie and Michael, (2) between them and the twiblings, (3) the twiblings with each other, (4) the twiblings with the

surrogates and donor, (5) the Thernstroms with the surrogates and donor, and (6) among the surrogates and donor themselves. When faced with a new situation people cast about for a familiar model on which they can frame their behavior. These are easy to find for the first three relationships listed, but much less so for the last three.

Michael and Melanie are husband and wife. They used artificial methods to reproduce, and their difficulties in having a family may have put some special strains on their relationship, but none of that is uncommon today. Nothing prevents them from behaving as other married spouses. Nor is there anything unusual in the relationship between the children and Melanie and Michael. It is that of parents and children in every way. Biologically Melanie is like a woman who married a man with children already, but her relationship is closer than that because she was their mother from the start, being there at the time of their birth and intimately involved in its planning and consummation.<sup>1</sup> The twiblings are full siblings, and as with the standard arrangement they are being raised together in the same household. To be sure, they were born of different women and are not twins although only five days different in age. That, however, should not have any particular effect on their relationship as brother and sister. All three of these relationships fit comfortably within the framework of the traditional family.

Not so with the other three relationships. The most obvious model for the relationship between the twiblings on the one hand and the donor and surrogates on the other is that of mother and child, for the donor is their genetic mother and the surrogates are their gestational mothers. But this may not sit easily with the relationship of these women with the husbands and other children that the surrogates already have and that the donor may come to have. Moreover, considering these women to be mothers might dilute the motherhood of Melanie Thernstrom, which could be a problem in itself and one that has the potential to erupt into serious conflict if any of them ever tried to exercise the guidance and authority associated with the role of mother. If “mother” is too freighted, the terms “donor” and “surrogate” are too thin to support the kind of relationship the Thernstroms want to create. An alternative model is aunt. Indeed, in talking with the twiblings Thernstrom refers to the donors as “Auntie Fie” and “Auntie Melissa.” However, it will eventually become clear to the children that these are no ordinary aunts, for Thernstrom goes on to tell them that they “carried them in their tummies.” As for the donor, Thernstrom’s designation of her as the “Fairy Goddonor” removes her from ordinary family relationships entirely.

Completely unmapped are the relationships among the donor and the surrogates. The closest possibility is between wives or sexual partners of the same man, but that does not capture it at all. There is no information as to whether the donor ever met the surrogates. For their part, the surrogates clearly know each other. As noted, they posed for pictures together with the Thernstroms, attended the twiblings' first birthday party, and appeared with Melanie on television. However, they referred to each other only by name, and there is no indication that they have any direct relationship with each other, or, if so, what its nature is. Of all the relationships in this curious family, this is the least precedented and, I would imagine, the least likely to persist.

That leaves the relationship between the Thernstroms on the one hand and the donor and surrogates on the other. In general practice this relationship has the form of a business transaction. Melanie Thernstrom's account is somewhat ambiguous here. She was adamant that they be paid for their services, but she also desires the relationship to be a personal, familial one. Perhaps closer in her mind is the model of the woman who lovingly carries a child for her sister or intimate friend. But essential to the concept of it being done lovingly is that it is a free gift. Thernstrom refers to the whole constellation of relationships as an "extended family," but the payments are incompatible with concept of a family, and that may prove to be a hurdle they ultimately cannot surmount. At the same time, as the relationship that set everything into motion, that between the Thernstroms on the one hand and the donor and surrogates on the other is the fulcrum of the entire enterprise. If it is to continue after the novelty and media attention wears off, it will probably require amnesia about the original payments.

Melanie Thernstrom concludes her article with a description of a fairy tale she tells the twiblings about a Fairy Goddonor who gave magic eggs to a couple who wanted to have babies, but none arrived. The eggs changed into the beginnings of babies and were stowed in the bodies of angel women "where they grew and grew like pumpkins. Do you know who those babies are?" (Thernstrom 2010). The story makes no reference to the man (Michael Thernstrom) who helped change the eggs into beginnings of babies, and the idea of payments to the Fairy Goddonor and the angel women is omitted. The ultimate question is, do fairy tales come true?

### **The Donor Sibling Family**

ARTs not only introduce separations and new opportunities for relationship in parental roles. They also have similar consequences for the

resulting children. The institution of kinship and the family is most dramatically affected by those ARTs that produce children whose genetic fathers or mothers and/or gestational mothers are unknown to them. By far the most common of these situations is children who result from anonymous donor insemination. Although firm figures about what is often a very private affair are notoriously difficult to acquire, it has been estimated that 30 thousand to 60 thousand donor insemination children are born annually in the United States (Mroz 2011). For these children knowledge of or connection with their paternal kin is absent, and they are separated from half of their ancestral heritage. They, and their mothers, often want to fill in the void.

One reason for wishing to know the donor has to do with incest. It is defined socially, in that adopted or ARTs children are subject to the same prohibitions against sexual relations with their legal siblings as are biological siblings. But the biological definition of incest also expands into the unknown for ARTs children. If a donor has fathered numerous children in the same region it is possible that half siblings, unaware of their biological tie, may meet and have sexual relations. Children who know they were fathered by donor insemination are sometimes anxious about this possibility when they are attracted to someone whom they physically resemble (Edwards 1993:47, Hill 1992, Kahn 2006:470, Marquardt, Glenn, and Clark 2010:6). If the donor is known, even if only by an identifying number, the possibility of incestuous relations is mitigated.

Another value of these connections is to trace the source of genetically transmitted disorders. The offspring of one California donor suffer from an unusually high rate of autism. Five children from four different families in Michigan, all fathered by the same sperm donor, were diagnosed with “severe congenital neutropenia, a blood abnormality that highly increases vulnerability to bacterial infections and raises the risk for leukemia” (Bazelon 2008).<sup>2</sup> A young woman told me that she and her donor siblings have an elevated probability of contracting Alzheimer’s disease. Information about the genetic father facilitates diagnosis and indicates preventive steps (if any) that might be taken.

In recent years information about paternity has become easier to obtain. Sweden banned anonymous sperm donation in 1985 (Daniels 1988:381)—a situation which, according to Cooke (1993:26) “resulted in the almost total disappearance of DI [donor insemination] in Sweden.” But after that somewhat rocky start, the ban spread to Britain, Norway, the Netherlands, Austria, Switzerland, New Zealand, and some Australian states (Marquardt, Glenn, and Clark

2010:12). Usually this takes the form of the right of children to learn the identity of their donors when they reach adulthood. In the United States this arrangement is optional. Most donors choose to maintain their anonymity, although it is scarcely surprising that 90 percent of Americans who know that they were conceived with donor insemination want information about their genetic father (Adamson 2009:295). In clinics where it is available, 80 percent of clients opt for donors who agree to provide it (Beeson, Jennings, and Kramer 2011:2416). And, as discussed in the preceding chapter, men who make direct, private arrangements are known to their recipients.

At least as important as matters of incest and genetic history of disease, people seek to identify donors because of curiosity about other children sired by the same sperm donor, sometimes followed by desire, once these previously unknown relatives have been located, to establish some kind of relationship with them (Scheib and Ruby 2008:42, Jadva et al. 2010:524). The result is the formation of a donor sibling family, a new kind of family that consists of the children of the same sperm donor together with their single or lesbian-couple mothers.<sup>3</sup>

The first step in the formation of a donor sibling family is to identify the donor. Identity release donors may be known by name, while anonymous ones have numbers known to clients who have used their sperm. Next one searches for others who have children by the same donor. The initiative is normally taken by parents because the children themselves are often very young, but sometimes it is done by offspring who are teenagers or older. That search is conducted on the Internet: One registers on websites devoted to this purpose—the Donor Sibling Registry, the Donor Offspring/Parent Registry and Free Search Page, or the Donor Sibling Group Registry<sup>4</sup>—and contacts those who have already been listed with the same donor number. If there are none, one hopes that another user of one's donor will consult the website and get in contact.

The one hundred or so letters in the “Success Stories” section of the Donor Sibling Registry contain numerous reports of the excitement people felt when, after perhaps several months' wait, an email arrives from a fellow parent, and then another, and another. Associations begin with the exchange of emails, texts, or telephone calls, and exchanging pictures of the children. It is a novel situation, and one contributor to the Success Stories section speaks of the uncertainty connected with entering “uncharted waters as in building this huge family for our daughter.”

Eventually those who wish to take the next step arrange a face-to-face meeting where the children can play together and the parents

share experiences of raising them. The relationship may deepen from there to regular visits and reunions, shared vacations, and so on. Donor sibling families can get quite large and, if one can get around the sexist language, give new meaning to “the brotherhood of man.” Wendy Kramer, founder of the Donor Sibling Registry, estimated that in 2009 the largest group on the registry contained 120 half siblings from the same donor (Jadva et al. 2010:531), while a 2011 newspaper article reports 150 children from a single donor (Mroz 2011).

Numbers this large, and the very existence of donor sibling families, originate from the commercialization of donor insemination. Previously, when private physicians procured fresh sperm from men they knew personally (often young medical students and residents), the probability of several children stemming from a single donor was small. But today sperm banks cut the sperm from single ejaculates into multiple batches, mark them with the donor number, freeze them and sell them widely.

The donor sibling family differs from other family forms in that it is constructed rather than preexisting. It is based not on a given into which one is born or marries, but on the conscious efforts of people to identify the donor and donor siblings and, then, to establish relationships with them. Those most active in creating donor sibling families are the mothers of donor siblings, especially single mothers by choice and lesbian couples. Of the respondents to a questionnaire circulated to the membership of the Donor Sibling Registry, 43 percent of those searching for donor siblings were single mothers, 38 percent were lesbian couples, and just 19 percent were heterosexual couples (Freeman et al. 2009:507). Another paper based on the same research reports that donor-conceived children living in families headed by heterosexual couples (often called “mom-dad families”) were likely to be told of their origin later than those of lesbian couples and single mothers, they expressed more confusion, and received a lower level of interest and support from their social parents in their curiosity about their donors (Beeson, Jennings, and Kramer 2011:2417–2419). My own communications with six members of donor sibling families indicates that while heterosexual couples may be interested in satisfying curiosity about other children of the same donor, they are much less likely to become active participants in these new families than single mothers and lesbian couples. This is especially true of the fathers in mom-dad families.

Indeed, Beeson and colleagues conclude that the presence of a father in a mom-dad family is the major factor in dampening interest in learning about and making contact with donors and donor siblings.

They attribute this to the long-standing (if significantly diminishing) practice of such families to keep their use of artificial insemination secret, partly because of the stigma associated with male infertility (Beeson, Jennings, and Kramer 2011:2421–2422). It is also likely that involvement with donor siblings may affect the extended family status of heterosexual couples in ways they may not welcome. As I have emphasized, people do not use ARTs in order to chart new territory in family relationships. They use them in an effort to approximate as closely as possible, in their particular circumstances, the traditional family. With both a mother and a father in the home, the only difference between heterosexual couples with donor-conceived children and traditional families is that the man is not the genetic father of one or more of their children. As with adoptive children, it is easy to minimize that fact and to behave with the relatives of both the mother and father as if their family were ordinary in every way. And as with adoptive children establishing ties with their biological parents and siblings, were donor-conceived children to establish relations with the donor and/or donor siblings, their mom-dad family would stand out as different.

The greater participation in donor sibling families by lesbian couples and especially single mothers and can be explained, I think, in the same way. Children in these families differ from other children by lacking a father and a set of paternal relatives. Indeed, one frequently reads of such children asking their parents why they don't have a father. By discovering and establishing contact with donor siblings, this gap is filled to some degree for these children, and their families come to approximate the standard family more closely.

From the institutional perspective that guides the analyses in this book, donor sibling families include five relationships. These are between (1) the donor and the women who have used his sperm, (2) the donor and the children engendered with his sperm, (3) the children with each other, (4) the women who have used the same donor, and (5) the women and the children of other women who have used the donor's sperm. As with open adoption and the Thernstroms' family, most of these relationships within the donor sibling family have precedents in the standard family. I hesitate to call them models in the full sense of the term, however, because they all lack depth and, far from attempts to apply them, many of them are explicitly rejected.

So, first of all, the precedents. For donor and client the model is husband and wife or unmarried procreating partners. For donor and offspring it is father and children. Among the children it is brother



and sister. The relationship between mothers and their children's half siblings is like that between a woman and her co-wives' children in a polygynous marriage or, more familiar to Westerners, between a woman and her stepchildren. The connection among the several women who have used the same sperm donor is the link between co-wives in a polygynous society, or between successive wives of the same man in a society such as our own. From an institutional perspective the first four of these in the donor sibling family are more or less dim approximations of the standard familial relationships on which they are based. The last one is virtually unprecedented.

The individual questions posed by the donor sibling family concern the intentions that lead different people to behave as they do. Donor sibling families have a voluntary quality that is not present in the traditional family. Blood relatives are inescapably kin whether they like it or not. This enduring bond often generates a high level of affection and commitment, but it also makes it difficult to sever relationships marked by sibling rivalry, jealousy, or sharply divergent social and political views. Members of donor sibling families are not so irrevocably tied. Some call upon the half-sibling status of the children as a basis for a close relationship while those who do not feel comfortable together can go their separate ways with no sense that an inescapable tie continues to link them.<sup>5</sup> This is similar to the explicit understanding in the Thernstrom family that the donor and surrogates may terminate their connection whenever they wish. Doubtless it is related to the fact that both the Thernstrom family and the donor sibling family, compared with the traditional family, contain an artificial component that stems from the use of technology to form them. The voluntary, contingent quality of both of these family forms is another example of our general thesis that technology represents an advance of the cultural, the artificial, into the realm of nature. Some people do not participate at all while others warmly embrace the opportunity.

Interestingly, the relationship of "co-mothers" with each other and with each other's children, the least preceded in conventional family structure, is the most important in the actual interactions that take place in donor sibling families. As I have said, these families are usually formed when the children are very young, and it is their mothers who take the initiative to find each other, to share information about their children, to maintain contact, and to arrange face-to-face meetings.

Some co-mothers keep their distance. One lesbian woman told me that she and her partner established contact with other parents of

their child's half siblings out of curiosity about what those children might look like and medical issues they may face. But, because of the unprecedented nature of this form of family, and therefore the reduced predictability regarding what might happen there, they are reluctant to get closer than that. "We just want to keep that door open, but not necessarily 'go through it.' I don't want to bond with them. . . . One member did want to meet, and I declined. It was just too odd for me, it seemed strange, the only thing we have in common is our choice of donors, and I just wasn't ready to explain that to my four year old." The fact that she has a partner may account for her additional statement (which would fit mom-dad families as well) that "we have family and don't feel any need to create a relationship with the people in the group. That being said, they seem like nice people, and when our daughter is older she can make the choice to join and meet her half siblings."

On the other hand, some women feel remarkably close to their co-mothers and their children, sometimes even closer than to their biological kin. Unlike co-wives in a polygynous family or successive wives of the same man, they are not rivals for the affection of their shared mate, especially when in most cases they do not even know who he is. The main motive co-mothers have for establishing contact is the opportunity to share stories about why they chose this particular donor and to explore and speculate about characteristics that their children seem to have in common. The most effusive sentiment that I have encountered is this mother's statement: "I felt very maternal toward my son's brother and sister. . . . What really surprised me was just how strongly I felt towards them. It changed my concept of 'family.' I know that genetically, I have no relationship to any of them but they are my family, they are a part of me. . . . I could not love this child more even if she was my biological child. In every way, I feel that she is my daughter. I love her completely and am so grateful and feel so blessed that it is she who came into our lives" (Freeman et al. 2009:512–513).

As for the children themselves, information as to the effects of having been conceived with donor sperm is conflicting. One study reports that such children are as well-adjusted as other children (DiFonzo and Stern 2011:367–368), while another states that, compared with adopted children or those raised by biological parents, they are more confused, feel more isolated from their families, are more prone to depression (Marquardt, Glenn, and Clark 2010).<sup>6</sup>

The children, sharing the same donor, are as closely related biologically as are the children of a parent who has divorced or been widowed

and has had offspring with another partner. Socially speaking, however, donor siblings do not live together. Hence the rivalries, loyalties, and other sentiments that may develop among half siblings who have shared the same household are less likely to be found between donor siblings. When they are young the siblings, brought together as playmates, have an uncomplicated relationship. Their mothers may have told them that they are playmates of a special kind, new brothers or sisters, but at that young age their understanding of what this means is far from complete. In the moving documentary film *Sperm Donor* (Lazin 2011), a single mother living in Seattle told her seven-year-old daughter Abby that her father was a sperm donor. The little girl explained to the camera that her family consisted of her mother Sharon, her brother Aiden, her maternal grandparents, and 72 other brothers and sisters. She thought that was “kind of cool,” but did not appear to have the capacity to process the information.

More complex are the relationships that develop between donor siblings in their teens and older. The website Donor Sibling Registry contains a brief film recording the joyous first meeting between a brother and sister in their twenties who had exchanged emails and gifts for some time. Another story line in the documentary *Sperm Donor* depicts a young woman named Adrienne from Lawrence, Kansas who traveled to Phoenix, Arizona to help her donor sister (who was a couple of years younger) get ready for her high school prom. (As it happens, Adrienne is a student at the University of Kansas, where I teach, and I have had an opportunity to discuss her experiences and feelings with her.) She and her half sister Karis had been in frequent contact but had never met personally. Adrienne, knowing that Karis’s mother had died and concerned that she might not have sufficient support for the big moment, flew to Phoenix to surprise her. Their meeting was exciting, happy, and warm. Such donor siblings are curious to know, among other things, if they look alike and if they have common preferences and mannerisms.

Adrienne comes from a mom-dad family and has known for as long as she can remember than her biological father might be a donor. A DNA test when she was 18 proved that was the case and at that point she registered on the Donor Sibling Registry with the hope of locating half siblings. Thus far she has located seven, all of whom come from single mother families, and has established relationships with three of them. She is aware that she might have scores of half siblings, but says that she would be “angry” if that turned out to be the case. She has no interest in making connections with that many donor siblings. “It would be impossible.”

Whether they are small children who meet occasionally and play together without pondering their relationship, or individuals in their teens or older who do comprehend it, the association among donor siblings tends to be positive. Complications are relatively few, for their relationship is easily accommodated within the standard cultural model of siblingship. One mother whose small son had met and played with his half brother told me that she hoped that their relationship would be a lasting one, and that they might even eventually become college roommates. Virtually all available accounts, however, are limited to their excitement in locating, establishing contact, and meeting each other for the first time. Much less is known about what happens to their relationship over several years.

Adrienne's impression is that her half siblings, all from single mother families, registered on the Donor Sibling Registry mainly to find their donor. In a television interview featuring the two young women, her half sister Karis said that was indeed her objective and that at the start she did not even think about the possibility of locating siblings.<sup>7</sup> Statistics indicate, however, that efforts to discover donor siblings are nearly twice as common as those to discover donors themselves (Freeman et al. 2009:507). Going well beyond that, Wendy Kramer, founder and manager of the Donor Sibling Registry, reports that "around 9500 people have connected on the DSR. About one tenth of those are donor to child matches, the rest are half sibling matches" (personal communication, June 2010). This indicates that, although the donor is the focal point of the donor sibling family, its whole reason for being, there is often relatively little interest—even reticence—in establishing a relationship with him. Probably this is because the prospect of a woman or her child meeting her sperm donor is somewhat daunting: He may not wish to be found, he may show no interest in the children he has conceived so casually, or, the other side of the coin, he may seek to intrude into their lives more than they would welcome. Potential relations between sperm donors and fathers in mom-dad families are particularly fraught with discomfort.

I have claimed that the donor sibling family is a novel kind of family in the American kinship system, and this points to one of the things that is novel about it. As with other forms of the family, it is grounded in common ancestry. In this case it is centered on the donor who conceived all the siblings. If the donor is the center of the family, however, that center is often empty, an anonymous figure known only by a number. Even if his identity has been revealed he seldom plays an active role in the family of his artificially conceived

offspring. In some ways he is like the founding ancestor of traditional clans or families: a semi-mythical figure about whom no one knows very much.

However, it is unlikely that the center can remain empty indefinitely, because more and more countries are requiring the identity of sperm donors be released to their offspring when they reach maturity. While this is not (yet?) mandatory in the United States, practice is shifting in that direction. It will be interesting to learn whether some existing form of relationship will be redefined to cover those between donors and their recipients, and donors and the children they have sired. As for the latter, the model available from the conventional family is that between father and children. In some cases where contact has been established between children and donors the relationship does approximate that. This seems to be true of a 13-year-old boy from a mom-dad family who said that his donor is one of the most important people in his life. He is in contact with him at least every other day.

More common, however, is a tentative relationship tinged with doubt. Adrienne is very close to her social father, and said that she had much less interest in locating the donor than in finding siblings because “I have a dad already.” She would like to know what the donor looks like and learn more about any health issues that she might inherit from him, but that is the extent of her curiosity. A 19-year-old daughter from a lesbian family originally idolized her donor as a superman, but came down to earth when, upon finally meeting him, she realized that he was an ordinary person. A 40-year-old daughter was dejected by the shame her donor expressed about having participated in her conception (Jadva et al. 2010:530). Others speak of meetings that were brief and uncomfortable. A frequent concern of the children is that donors will be embarrassed by the contact, or that they may rebuff the offspring as an invasion of privacy.<sup>8</sup> Overall the situation is similar to grown adopted children who meet their biological parents.

The very emptiness of the center generates a good deal of curiosity about the donor. One practical reason is to acquire information about what genetic diseases or disorders he might carry. His offspring and their mothers also express a good deal of curiosity about the kind of person he is—what he looks like, his personality. Clues of similar appearance and mannerisms in the children fuel speculation about this.

The documentary film *Donor Unknown* (Rothwell 2010) describes how 15-year-old JoEllen Marsh from Erie, Pennsylvania registered on the Donor Sibling Registry in the hope of finding donor siblings who

shared her California Cryobank Donor 150. She found and established contact with more than ten siblings. A discarded copy of the newspaper featuring her quest caught the eye of Jeffrey Harrison, a single man who lived with four dogs and a pigeon in an old recreational vehicle in the Venice section of Los Angeles. He was donor 150, and he decided to make himself known to his offspring (Harmon 2007). When JoEllen was 20 she and two of her siblings traveled to California to meet him. He and they were nervous, but it turned out to be a generally positive experience. Their curiosity satisfied, some of the siblings thought they would remain in contact with him, and others not. When they reflected on the experience over pizza, the young man Fletcher, son of a lesbian couple in Colorado, summed it up: "I've met my dad. It's, like, a hippie who lives in an RV, in LA, in a parking lot."

I have already mentioned Abby, the seven-year-old donor-conceived daughter of a single mother, depicted in the documentary film *Sperm Donor*, who thought it was "kind of cool" that she had 72 brothers and sisters. She went on to say that she felt different because she was the only one in her class who didn't know anything about her father. The donor, a young lawyer named Ben, revealed his identity to the women who had used his sperm when he learned that some 70 children had been conceived with it. Abby's mother Sharon and Ben made plans to meet in Boston, where he lived. Although Sharon was anxious that her children not come to think of Ben as a father figure, when Sharon told Abby about the upcoming meeting, she fantasized that the donor and her mother would fall in love and they would all live together, just like princesses do. Her mother said that would not happen because Ben was engaged to be married to someone else. Abby replied, "Are you breaking up with him?" Recounting this to her mother, Sharon wondered "Where do you think she's comin' up with this all of a sudden?" The mother said it must be Abby's wild imagination.

Sharon and her children (and Sharon's parents) did meet Ben, at a park in Boston. He brought gifts for the children and played miniature golf and soccer with them. Abby had prepared a list of questions for Ben, such as "What's your favorite color?" She was glad when he said "blue," her favorite color as well. When it was time to part she clung to him, saying "I don't want Ben to leave." Afterward Sharon discussed outcome of the meeting with her mother, and said "God, I'm so glad I made that decision." Still, the degree to which seven-year-old Abby was able to distinguish between a merely biological father and a father figure, as her mother had hoped, seems very much in doubt.

Perhaps the most intriguing relationship in the donor sibling family is that between the donor and the women who have used his sperm. Insofar as it is modeled on any conventional relationship, it is that between husband and wife or sexual lovers. The insertion of donor sperm bears some distant resemblance to a sexual act, which may be why some women create a romantic atmosphere with candles and music when it is being done. But, of course, the sexual relationship is entirely lacking, as is any possibility of the donor (especially if anonymous) to act in the capacity of husband, partner, or father. Some women who have used donor insemination clearly convey this vast difference in what they say about donors. A married woman said, "I look at donors only slightly different than I perceive blood or tissue donors, they are giving the chance for life, no more, no less." And the single mother, quoted in the preceding chapter, who insisted that her child has no father, would certainly reject any implication of the donor as her lover (Hanson 2001:303).

Some mothers are interested in fleshing out their donors as real persons, and they imagine a deeper connection with them than the transaction suggests. The self-descriptions in the fertility center's catalogue are sometimes the determining factor in the selection, as when the sense of humor expressed by one donor was enough for a lesbian couple to choose him. These accounts give women the sense that there is a real human being there to whom they could relate as a friend or even, as sometimes occurs with single women, as the sort of person they might have married. One woman continued to use the sperm of a particular donor after several unsuccessful attempts out of a sense of loyalty to him. Another regretted that her donor's parents would never know what a wonderful person their grandchild is, and a single mother (proving that such sentiments are not limited to children such as Abby) fantasized that one day she would meet her donor personally and that they would fall in love and raise their son together (Hanson 2001). One mother wrote, in the Success Stories section on the Donor Sibling Registry, of how, having met her sperm donor once, she was devastated upon learning that he had been killed in a motorcycle accident. As mother of one of the 55 or more children that he sired, she was depressed upon thinking how the money she paid contributed to the purchase of the motorcycle, and angry that she had to learn of the tragedy on Facebook rather than having been contacted directly.

Women in donor sibling families sometimes want to keep the center empty because that allows them to speculate with each other on the kind of person he might be without the intrusion of inconvenient facts.

One woman told me that she and her co-mothers refer to their donor by the nickname of Tad, because their only connection with him is as a metaphorical tadpole. One of the most active of the 20 groups on the Donor Sibling Group Registry is Donor 1476 Families. Donor 1476 has fathered more than 35 children, and the website states, “Through the help of Fairfax [Virginia] Cryobank Donor #1476 we have created a family of beautiful children, most of which with blonde hair and those trademark blue eyes! Though we are all different in our backgrounds, whether it be where we come from, our reasons for using an anonymous sperm donor, or anything else, we all share something in common more important than [*sic*] most could ever say . . . our children, all of whom are the product of Donor #1476.”<sup>9</sup>

Other persons who figure in the donor sibling family are the donor’s legal children, whom he raises, and his wife, female partner or fiancée. None of the five mothers who used donor insemination with whom I discussed this had any knowledge of relations between the donor siblings and the donor’s “own” children. Typically those latter children would be younger than the donor siblings because men who act as donors usually do so before they have children in the ordinary way. I anticipate that a relationship among these children would be difficult because of the marked asymmetry between the donor children and the ones who are raised by the donor as his own.

Another conflicted figure in documentary film *Sperm Donor* is Ben’s fiancée Lauren. Although it is not unusual for people who marry to have children by previous spouses, this was very different because Lauren was planning to marry a man who has scores of children he had never met, by women he had never met. Lauren’s primary concern was whether Ben would maintain a relationship with the women who had used his sperm and their children, and how this might impact the family that she planned to build with him. Our culture contains no guidelines for how to behave in a situation such as this. She repeatedly told Ben that she did not want to share him, and that would require blocking out the results of his sperm donor past. It was some comfort when, to her question about what he would do if Sharon and her children wanted to have a continuing relationship with him, he assured her that he would not do that; this was a onetime event. (That, however, may be easier said than done. Sharon, in the conversation with her mother after the meeting, wondered when the children would ask to go to Boston again, and she hoped he would not cut them off completely.) But later Ben told Lauren that while his primary concern was with her and the family they would build, he added, “When you marry someone, you marry the whole



package.” He did not have a ready answer to Lauren’s question as to how he would feel about meeting more, perhaps a great many more, of his 70 offspring. But he did seem open to responding to their or their mothers’ requests should they make them.

Ben was correct about marrying the whole package, because marriage in our society is ideally a completely open-ended commitment, an intention to remain together no matter what should come: sickness or health, want or plenty. But it had never been imagined that the package might contain women who had purchased his sperm and their children. How can this peculiar situation be conceptualized? I have stressed that when faced with something new, people try to construe it on the cultural precedent of something familiar. But in this case such precedent is entirely lacking. In that event the most common course is not to think about the situation at all, to repress it, perhaps even to deny its existence. This strategy would have suited Lauren, but Ben seems unready to follow it. If Ben were to open this part of his “whole package” in the months and years to come, it could well have a seriously negative impact on his life with Lauren.

Some of the above information comes from documentary films. One wonders to what degree these are staged rather than actual depictions of how people behave. I raised this question with Adrienne, who was featured in the documentary *Sperm Donor*. She said that the filmmakers do indicate the general direction they would like things to go, but are not more specifically directive than that. She soon got used to the camera and sound crew and found herself acting as if they were not there. In her case there was a strong interest in filming her first face-to-face meeting with her half sister Karis. Adrienne flew from Kansas to Arizona to help Karis get ready for her high school prom. That idea, together with the expenses for the trip, came from the filmmakers. Adrienne said that there was no prompting as to what they should say or how they should behave with each other. A statement that I found especially interesting is when Adrienne, speaking to her mother on her cell phone immediately before meeting Karis and responding to her mother’s question as to what she planned to do, said, “There’s no guidebook on how to handle this.” That, she said, was spontaneous.

## Conclusion

ARTs introduce several changes in the institutions of contemporary culture. Most important among these are the implications of the possibility to reproduce without sexual intercourse and the splitting of

the previously unified statuses of father and mother into several different roles that may be filled by different people: genetic mother, gestational mother, social mother, and so on. These institutional changes introduce a variety of possibilities for the formation or dissolution of social relationships and family forms. Just what people do with these possibilities is an individual question, to be answered according to their particular interests, motivations, and intentions.

Faced with the splitting of parental roles in their family, the Thernstroms chose to fill each of them to the maximum. They wanted the genetic mother and the two gestational mothers to remain close to them and the twiblings for as long as possible. From the selection of those individuals through the entire process of fertilization, gestation, birth, and as the twiblings grow up, the Thernstroms strove to maintain the deeply engaged involvement of everyone. Melanie Thernstrom did reserve a central position for herself, correcting people who called the surrogates "biological mother" or "birth mother" by saying "I'm the only mother." The two gestational mothers, as stated above, were assigned the roles of "auntie." The genetic mother, less interested in maintaining close ties, was given the semi-mythical role of "Fairy Goddonor." Although this novel family form finds some precedent in open adoption, it must be remembered that the Thernstroms' family is one of a kind. Unless and until other families appear on the same model, generalizations about the effect on familial structure cannot be made.

It is different with the donor sibling family, of which many examples exist. If the hallmark of the Thernstrom's family is fullness, that of the donor sibling family is thinness, a stripped-down, minimal echo of the conventional family form. It is genealogically narrow, limited to the donor siblings. No one seems interested in tracking down the brothers and sisters or cousins of the donor and their children. As a relatively new form of the family, it is too soon to know whether the donor sibling family will develop generational depth. Excitement may be generated as a group of unrelated mothers learn something of other children produced by the same donor, or as teenagers discover their half siblings. But will these partial relationships have sufficient substance to endure, even for a few years much less through more than one generation? It does not follow, however, from its genealogical narrowness and probable shallowness that the donor sibling family is necessarily small. One of its most intriguing aspects, setting it most clearly apart from the traditional family, is that it may contain many women and scores of their children who stem from a single donor.

Finally, the donor sibling family is thin in the sense that all of the relationships in it, compared with those of the conventional family, are partial. The relationship between the donor and the mother has something in common with the sexual one between spouses or lovers, but very little. The children may think of him as father, but not completely. He may think of them as his children, but not really. They do think of each other as brothers and sisters, but the fullness of the relationship between siblings who have been raised together is absent. These partialities generate feelings and interactions that seem a bit strange to an outside observer and often to the participants themselves.

Only a bit strange, however, because while the issues discussed in this chapter and the last do reflect technology's tendency to separate whole persons into particular components and to focus on the selected components, they represent only a short remove from the standard human scale. That is why it has been possible to identify traditional models (parent, child, sibling, and spouse) that are approximated to one degree or another in the relationships that make up surrogacy, artificial insemination, the Thernstroms', or the donor sibling family. Such models will become less available for most the technologies to be discussed in subsequent chapters because they depart more radically from the human scales of time, space, and ways of behaving.

## Chapter 4

### Prenatal Testing and Its Discontents

When my daughter was pregnant I did not want to know the gender of the baby until it was born. Everyone else in the family knew because it had been ascertained by ultrasound, and for a while they had to be careful not to reveal it by something they said in my hearing. After their expression of mild impatience with my old fashioned ways, I capitulated and dutifully received the information that she was carrying a boy.

Ultrasound is one of innumerable prenatal tests that dominate the contemporary practice of medicine. Tests of all descriptions are among the most important items in any toolkit of biomedical technology, Western or non-Western, contemporary or ancient. These range from throwing a suspect into a pond to ascertain if he or she is a witch (yes if the person floats, no if the suspect sinks) to high-tech laboratory tests for any number of genetic or other health-related conditions. The distinctive feature of the tests discussed in this chapter is that they are performed on those who have not yet been born.

Prenatal tests have made it possible to answer a question that could not even be meaningfully asked before: What is the condition of a fetus, or an embryo? In that regard they fulfill the capacity of all technologies to extend the domain of culture into that of nature, of human knowledge into regions previously closed to it. Ultrasound is the most benign and the most popular of prenatal tests. It provides a visual image of the fetus that expecting mothers and others can recognize, that they email to relatives and preserve in family albums. The image establishes the fetus as a distinct person rather than just a part of the mother, and it promotes the mother's bonding with it (Zechmeister 2001:389–393).

If ultrasound images convey the notion of the baby as incipient person, other prenatal tests instantiate technology's general penchant

to disarticulate, concentrating on parts rather than the whole. Beyond confirming heartbeat, identifying gender, and detecting twins, the parts of greatest interest are any abnormalities or impairments. Ultrasound reveals ectopic pregnancies and the possibility of Down syndrome and certain malformations. Other, more precise and more intrusive prenatal tests such as chorionic villus sampling and amniocentesis reveal a wide array of deleterious conditions: Tay-Sachs disease, Down syndrome, neural tubal defects, cystic fibrosis, Huntington disease, muscular dystrophy, sickle cell anemia, certain kinds of blindness and deafness, and genes that indicate increased probability of contracting breast cancer and Alzheimer's disease. These tests share none of the human immediacy of ultrasound, being conducted out of the sight of prospective parents and producing results intelligible only to specialists. But they all provide a great deal of information about the particular traits of an unborn child that previously were something to be revealed, appreciated, molded, or endured only as he or she grew up (Suter 2007:957, 961, Asch and Wasserman 2005).

Knowledge transforms to power when people think that because information is available, it should lead to action. As a human genome researcher told Merryn Ekberg (2007:78), "Until only recently, having children was some kind of mysterious experience and people hoped for the best and they accepted what came . . . it was left up to nature or to God or fate. Now there is a sense of responsibility of needing to do something about it. A feeling that I ought to check and make a decision." As a report of the Genetics and Public Policy Center put it (2004:6), "Rather than the currently prevailing view of reproduction as a mysterious process that results in the miraculous gift of a child, human reproduction could come to be seen more as the province of technology and children the end result of a series of meticulous, technology-driven choices." These are outstanding examples of technology's tendency to extend the reach of human control, and the effects of exercising that control.

The manner of exercising it, however, takes us back to the distinction between parts and wholes. Impairments are fragments of the unborn baby: They can be separated and identified one by one. Before birth nothing is known of the child beyond the parts detected by the tests, they usually dominate the perception of the baby. If some disorder is found, in the minds of the physicians and, sometimes, parents the fetus becomes nothing but a case of Down syndrome or whatever problem the test has identified. However, action intended to address the part must be exercised on the whole. Unlike the parts identified by the tests, the life of the fetus is indivisible. It is either there or it is

not.<sup>1</sup> It hangs in the balance, for the only way to prevent the appearance of the particular disorder is by abortion, to foreclose the totality of life. This is the prevalent choice. One study conducted at the end of the twentieth century revealed termination rates of 92 percent for fetuses with Down syndrome, 84 percent for anencephaly, 72 percent for Turner syndrome, 64 percent for spina bifida, and 58 percent for Klinefelter syndrome (Mansfield, Hopfer, and Marteau 1999:810).

However, if prenatal knowledge of the fetus is dominated by test results regarding its parts, after birth the opposite is true. It can be only after a child is born, of course, that one develops an overall understanding of him or her as a unique individual. Often that experience overshadows the particular deleterious traits that were or might have been revealed by prenatal tests. Thus Hubbard reports that only a minority of parents of children with cystic fibrosis would consider aborting a younger sibling with the same condition (Hubbard 1993:1210–1217).

Mention of abortion brings us to how prenatal tests necessitate agonizing choices parents make between denying life to their unborn children and bringing them into the world in an impaired state. These tests also provoke other, less recognized but no less seismic challenges to established cultural order of values, meanings, and symbols, such as the nature of causality, standards of justice and fairness, and the conceptualization of nonexistence. The bulk of our attention will be concentrated on them.

Prenatal testing is obviously implicated in the question of just who is unfit enough to be denied life before they are born, and what are the consequences of doing that? <sup>2</sup> This constitutes eugenics, for selective abortions on the basis of prenatal tests have the effect (and the purpose) of weeding the “unfit” out of the population (Stein 2010:1168). As the tests become more sensitive and possible to conduct earlier in pregnancy, the range of detectable impairments becomes broader and termination easier. This may represent further descent on the slippery slope of eugenics, for what permanent standard is there for determining what constitutes a fetal defect, or for deciding when that defect is serious enough to justify abortion (Koch 2004:713)? As one example, the prospect of a new, noninvasive test for Down syndrome during the first trimester of pregnancy is of concern to medical ethicists because it could have the effect of dramatically reducing the Down syndrome population. It is by no means universally accepted that this would improve the species, for some say that these individuals make a uniquely positive contribution to society (Hurley 2011:36).

It is not difficult to reach consensus that children destined to suffer from truly devastating disorders that drastically shorten life should

not come into being. One example is Tay-Sachs disease, where infantile development stops after a few months, the child becomes blind, deaf, paralyzed, subject to seizures, and usually dies by the age of four. But what of children who will be born deaf? Or those who will suffer from Huntington disease, where, although it is incurable and lethal, symptoms seldom appear before the age of 35? Or when prenatal tests identify genes that have a higher probability of the individual developing breast or colon cancer, or Alzheimer's disease late in life?

This is not, however, simply a matter of personal choice. Some people believe that the unusually high need of disabled persons for extraordinary medical expenses and other kinds of care constitutes a drain on society's resources. A general desire to contain the costs of public health could nudge the use of prenatal tests and abortion of defective fetuses from an option toward an expectation, together with resentment against parents who refuse to follow this course. Such social pressure could translate into a cost-benefit analysis of the worth of an unborn child, tantamount to a commodification of human life (Ekberg 2007:70, see also Reuter 2007).<sup>3</sup>

On the other hand, if people have to bear a large part of the costs of prenatal testing and abortion themselves, these procedures will be out of the reach of the less affluent. If the wealthy terminate impaired fetuses at a greater rate than the poor, congenital disabilities would become increasingly concentrated in the lower class (see Ekberg 2007:78, Mehlman 2000, DauBach 1997).

### **When Things Go Wrong**

Prenatal testing inevitably brings with it the possibility of its misuse. The most common problem arises when, in situations of possible birth defects, physicians do not prescribe the appropriate prenatal tests or misinterpret their results. They assure the prospective parents that their baby is normal, only to find upon birth that the infant has an impairment that should have been detected by the test. These situations often lead to malpractice lawsuits. These suits deserve extended consideration because they provide a particularly clear and detailed view of the impact of the technology of prenatal testing on contemporary culture. One reason for this is that each party makes strenuous efforts to present its case as convincingly as possible, and the courts meticulously strive to consider all sides and come to a just decision. This means that the issues are debated more thoroughly and explicitly here than in any other arena. Again, the impact is most powerful here because the actions of the courts are binding on the participants.

Finally, and most interestingly, some of these lawsuits raise issues that are so alien to conventional ways of thinking that most courts refuse to hear them. Identifying where the perplexities lie advances understanding of just how the implications of prenatal testing clash with traditional cultural meanings and values.

Two sorts of lawsuits may be filed in these cases, distinguished by the identity of the plaintiffs. In suits for *wrongful birth* plaintiffs are the parents of the impaired child. They claim that not properly informing them of the state of their fetus is a form of medical malpractice that has subjected them to extraordinary expenses as they raise a child they otherwise would have aborted. They may hold further that they undergo emotional stress from seeing the child suffer from its impairments. In *wrongful life* suits the plaintiff is the impaired child itself. (Of course, such a claim is made on behalf of the child, who is too young and/or too impaired to take the initiative.) The child claims that its innate impairment has caused it pain and suffering and to require extraordinary medical expenses. None of that would have occurred had the physician properly reported on the status of the fetus, for then the fetus would have been aborted. Therefore wrongful life plaintiffs claim that they were injured by the sheer fact of having been born.

Often the cases overlap, with parents suing for wrongful birth and their child simultaneously suing for wrongful life. One practical reason for filing both is that any settlement awarded to the parents in the wrongful birth case may cease when the child reaches the age of majority, while damages awarded to the child in a wrongful life suit could extend beyond that time.

Suits for wrongful birth and wrongful life exist only because of the technologies of prenatal diagnosis—or, more precisely, the misapplication of those technologies. These suits raise a variety of issues that make them a rich source for the analysis of the social and cultural consequences of technology. Some of these issues are comprehensible within the conventional structure of cultural meanings, while others challenge that structure itself in perplexing ways. We will deal with the more comprehensible ones first.

Birth impairments can range from mild to extremely severe. If they are to be considered an injury, to the parents and/or to the child itself, just how severe do they have to be to justify legal action? The question of whether not having been born is preferable to living is probably most applicable to those children born with impairments so severe and painful that, for them, life is truly not worth living (see, for example, Dawe 1990:495). In these circumstances,



however, monetary compensation for wrongful life is scarcely what these children need. John Harris suggests that in these extreme cases it would be more appropriate to legalize euthanasia and assist them to die (1992:96).

A necessary element in suits both for wrongful birth and wrongful life is the mother's claim that she would have aborted the fetus had she known of the defect. This can have a demoralizing effect on the family and demeans the disabled (Hensel 2005:163–164, 171–172). In *Turpin v Sortini* (643 P.2d 954, 1982), the governing case in California, a little girl named Joy Turpin prevailed in a wrongful life claim because she was born deaf. Her claim that she was injured by being born in that condition can be seen as a grave insult to the deaf community, many of whom insist that deafness is no disability, and some of whom even take steps to ensure that their children will be born deaf (see Corvino 2002:25, Levy 2002).

The most egregious claim for wrongful life was in fact the first suit of this type to be filed, *Zepeda v Zepeda* (190 N.E.2d 849, Ill. 1963). A healthy young man sued his father for allowing him to be born illegitimate. (In a reversal of the commonly heard threat by people who consider themselves to have been wronged to “sue the bastard,” in *Zepeda* it was the bastard who sued.) It was to no avail, however, because the court disallowed recovery on the grounds that otherwise it would be “flooded with suits for wrongful life brought by everyone born under conditions he or she regarded as adverse” (Steinbock 1986:15–16). However, in an early California case involving a child born with Tay-Sachs disease, *Curlender v. Bio-Science Laboratories* (165 Cal.Rptr. 477, 1980), the opinion stated that in the event parents were informed that their infant would be born seriously impaired, but persisted with the pregnancy, “We see no sound public policy which should protect those parents from being answerable for the pain, suffering and misery which they have wrought upon their offspring” (488). This of course raises serious issues about the relation between parents and their children, particularly those parents who are opposed to abortion under any circumstances. Following the *Curlender* decision the California legislature hastily passed a law exempting parents from any such liability (Hensel 2005:160).

The possibility of suits for wrongful birth and wrongful life increases the rate of abortion as physicians practice defensive medicine (Stein 2010:1168, Suter 2007:927–28). In cases where there is a slim possibility of impairment, physicians would be more likely to encourage abortion in order to avoid malpractice suits (Ekberg 2007:77). If the abortion is performed, there is no child and thus no

danger of a lawsuit. If parents decline to abort and the child is born healthy there is no problem, whereas if the child is born impaired physicians could point out that they had recommended abortion. An Israeli pediatrician and genetic counselor told Hashiloni-Dolev, "The legal question no doubt affects our practice. If there is a doubt, why take a chance? No embryo that has been aborted has ever sued us. But born children can sue. So why should we get into this trouble?" (2007:125). As Neumayr put it, "The combination of doctors seeking to avoid lawsuits and parents seeking burden-free children means that once prenatal screening identifies a problem in a child the temptation to eugenic abortion becomes unstoppable. . . . The right to abort a disabled child, in other words, is approaching the status of a duty to abort a disabled child." (Neumayr 2005:25).

In addition to fueling physicians' anxiety about getting sued, greater prevalence of these suits could have a detrimental economic effect on the medical system. Medical malpractice insurance premiums would mount as health care providers are vulnerable to lawsuits, and those costs would be passed on to the general public in the form of higher doctor and hospital fees, higher health insurance premiums, and higher taxes.

If heavy damages are awarded to impaired children and their parents for physical and emotional pain and suffering, these suits might generate windfalls for the plaintiffs (Mitrovich 2007:634). Efforts to cash in on the opportunity could raise insurance premiums and clog the courts with lawsuits. Plaintiffs might claim that they would have terminated a pregnancy had they known of the impairment in advance, but, especially when contemplating a potentially handsome monetary settlement, what people in hindsight say they would have done is less than a reliable indicator of what they actually would have done. On the other hand, some claim that warnings such as these are simply ploys to protect physicians and insurance companies (Mitrovich 2007:639).

And finally, of course, is the impact on the status of the disabled in society. If prenatal testing leads to increased abortion of impaired fetuses, the other side of the coin is a decline in the proportion of disabled individuals in the population. Moreover, the very idea that a fetal impairment is sufficient reason to deny life signifies a low social esteem for disabled persons. It might even be construed as a violation of the Americans with Disabilities Act (Sheth 2006). This does not comport well with attitudes regarding increased accommodations to allow disabled persons to participate more fully in community life and the notion that they have a unique, positive contribution to make to society.

### The Paradox of Wrongful Life

None of the above matters represents a fundamental challenge to traditional cultural meanings and values. Defensive medicine, rising insurance premiums, suits stimulated by plaintiff greed, the difference between more and less severe impairments, the social value of the disabled, and familial deliberations as to whether they can financially and emotionally afford the birth of an impaired child all fall well within established ways of thinking and behaving. All that pertains especially to suits for wrongful birth, and we will not discuss them further. Suits for wrongful life, on the other hand, raise legal and existential questions that threaten conventional cultural meanings and values in elemental ways. It is not exactly true that these suits force the law to come to grips with baffling issues raised by the technology of prenatal testing because the fact of the matter is that the courts *refuse* to come to grips with them. Precisely because the questions they raise are usually judged to be unanswerable, nearly all states do not allow suits for wrongful life.

Just what those questions are, and how the courts maneuver to evade them, is visible in *Walker v. Mart* (790 P.2d 735, Arizona 1990). Laura Walker's obstetricians negligently failed to perform appropriate laboratory tests that would have revealed that she had contracted German measles during the first trimester of her pregnancy. Hence they failed to warn her of the potential damage to the fetus. Had the tests been conducted she would have been aware of these matters and she would have terminated the pregnancy. But, ignorant of the danger, she bore a daughter, Christy, who suffered from severe birth defects stemming from rubella syndrome. Suit for wrongful life was brought on Christy's behalf, charging that the obstetricians' negligence deprived her mother of the opportunity to terminate the pregnancy. Christy claimed that her birth in a severely impaired state constituted an injury to her.

The Arizona Supreme Court dismissed her suit for two main reasons. First, to prevail in a personal injury suit the plaintiff must prove that the defendant caused the plaintiff's injury. The obstetricians may have failed to discover Christy's prenatal condition, but they did not cause it. The cause was the German measles that Christy's mother had contracted early in her pregnancy, and that was not the defendants' doing.

Second, the court went on to hold that Christy was not injured by being born with rubella syndrome. Courts assess injury by the "counterfactual" test, comparing the plaintiff's actual condition with the

condition he or she would have been in had the injury not occurred. The only options for Christy were to be born with rubella syndrome or to have been aborted, that is, not to have been born at all. Thus the counterfactual test in this case amounts to comparing Christy's actual condition with nonexistence, comparing something with nothing. The Arizona court held that this comparison cannot meaningfully be made, and joined nearly all other jurisdictions in holding that the sheer fact of being born cannot constitute an injury.

This is where the technologies of prenatal testing and selective abortion, as represented in suits for wrongful life, raise unprecedented conflicts among cultural values and assumptions that cannot be resolved. On the one hand the logic of common sense rejects these suits. On the other, the denial of any consideration for Christy Walker, when the negligence of the physicians was clearly involved in her having been born in an impaired state, flies in the face of values of fairness and justice. This becomes uncomfortably evident when Christy Walker's case is compared with that of Kristy Sylvia (*Sylvia v. Bobeille*, 220 A.2d 222, Rhode Island, 1966). She too was born with multiple birth defects from congenital rubella syndrome. In her case, the complaint was that her mother's physician negligently failed to prescribe gamma globulin during her pregnancy, notwithstanding his knowledge that she had been exposed to German measles. Kristy sued, not for wrongful life, but for prenatal injury. The Rhode Island Supreme Court held that Kristy had a right of action against the negligent physician for an injury she suffered before she was born.

The difference between the two cases is that for Kristy Sylvia a course of action (prescription of gamma globulin) was available that would have counteracted the effects of her mother's exposure to German measles before the fetus was damaged. Here it is possible to apply the counterfactual test: but for the physicians' negligence Kristy would have been born healthy, and her actual state can be compared with that. Hence it is reasonable to conclude that she had suffered an injury, and to determine that the physicians' negligence was a cause of her injury. In Christy Walker's case, the physicians' alleged misconduct occurred after her mother's German measles had already damaged the fetus, and the only options for Christy were therefore being born with defects (that were not caused by the defendants) or not being born at all.

This juxtaposition of cases highlights the question of fairness in the widespread refusal to recognize actions for wrongful life. Christy Walker actually exists, no less than Kristy Sylvia. She suffers no less, and from precisely the same kind of defects, that originated at the

same point in prenatal development, and for the same reason. Christy Walker is in no less need of special care, and she faces a life equally filled with extraordinary expenses, special challenges, and obstacles. Her obstetricians acted at least as negligently as Kristy Silvia's. And yet a remedy is available to Kristy Sylvia but not to Christy Walker. This hardly seems fair.<sup>4</sup>

Wrongful life suits challenge traditional cultural assumptions in two areas. One has to do with causality and responsibility; the other questions the meaning of birth and human existence. As for the first, although the defendant physicians did not directly cause Christy Walker's rubella syndrome, do they not bear some responsibility for their negligent failure to detect it? The Arizona Supreme Court answered in the negative. In current circumstances, however, when prenatal testing makes it possible to know the condition of a child before birth, that answer seems insufficient. As the old hymn has it, "New occasions teach new duties." But how to fulfill these new duties is far from self-evident.

It could be argued that today's medical technology expands the duty that health care providers owe to both the expecting parents and their unborn offspring to include providing the parents with accurate information about the fetus (Kennedy 2002:114, 121–122). To take that step in the light of current realities regarding knowledge of injuries and impairments entails rethinking cultural assumptions about the relation between direct causality and responsibility. In some ways steps in this direction have already been taken. A physician can be held liable for incompetently misdiagnosing an illness that causes the patient pain and suffering, even though that illness was not directly caused by the physician. This even applies to injuries suffered before birth, as in the case of Kristy Sylvia. It could be argued that this is not materially different from the responsibility of defendants in wrongful life suits who fail to inform patients of a fetal disorder.

It should also be recognized that the notion of responsibility applies to the beneficial things people do as well as the detrimental ones. In the former case, the standard response is positive recognition such as gratitude or praise. Prenatal testing can evoke gratitude, perhaps especially from those with a high risk of passing on deleterious genetic conditions such as Tay-Sachs or Huntington's disease or a high probability of breast cancer. Some people in those circumstances would not have taken the risk to have children, but now that risk is minimized because preimplantation genetic diagnosis or prenatal tests make it possible to know that an embryo they implant or a fetus brought to term does not suffer from the disorder. Gratitude is very

likely to be expressed to the medical practitioners who conducted the tests and who thereby identified but did not directly cause the disorder-free nature of the embryo or fetus. Presumably, if they reap praise for doing their work successfully, they are also subject to blame for doing it incompetently.

In the present case, expanded responsibility might be articulated in an argument that although the physicians did not directly cause the impairments of Christy Walker or those of children with other deleterious genetic conditions, their negligence did lead to the appearance of those impairments in the world. If they are held liable for that, then the ones who suffer from those impairments, the disabled children, should be entitled to relief through suits for wrongful life (Hanson 1996, Pollard 2004, Lotz 2011:118, Tucker 1989 at note 81).

Something like this reasoning seems to guide the courts of New Jersey, Washington, and California, the only American jurisdictions to recognize wrongful life claims.<sup>5</sup> They stress that wrongful life plaintiffs exist in an impaired condition that occasions considerable expenses for medical and other care, and responsibility for that condition is attributable to the negligence of the defendants. A similar view was developed by two of the justices in *Zaitsov v. Katz* (C.A. 540/82, 1986), the Israeli Supreme Court case that established the recognition of wrongful life suits in that country. They wrote that it is conceptually possible to separate the child's life from the impairment. Doing that allows a comparison between the impaired plaintiff and his or her hypothetical condition as an unimpaired child. While the defendants cannot be held responsible for the plaintiff's life or non-life, they were found liable for the impaired condition because their negligence caused the appearance of the impairment in the world (Hashiloni-Dolev 2006:138).<sup>6</sup>

However, compensation in all three of the American jurisdictions is restricted to extraordinary medical and other expenses actually incurred, which can easily be calculated by adding up the bills. Damages for pain and suffering are not allowed. Limiting damages in this way provides relief for the hardships that wrongful life plaintiffs suffer because they are alive, but sidesteps the other, more momentous issue posed by wrongful life suits: the nonexistence paradox. In concert with the Israeli Supreme Court's refusal to hold defendants liable for the plaintiff's life or nonlife, no American court has been willing to face the question of whether a plaintiff was injured by the sheer fact of having been born. Here the technologies of prenatal testing and selective abortion raise a fundamental existential question. It is not the distinction between life and death, for if Christy Walker

had never been born she would not be dead. She simply would not exist. Hence the question becomes how to compare existence with nonexistence, something with nothing. Common sense dictates that this cannot be done.

Having no way to frame the issue, the courts simply avoid it. Thus in *Procanik v. Cillo* (478 A.2d 755, N.J. 1984) the New Jersey Supreme Court endorsed a wrongful life claim pertaining to rubella syndrome, awarding compensation for actual medical expenses. But it denied general damages for pain and suffering on the grounds that the nonexistence paradox admits of no rational solution: "Tragically, his only choice was a life burdened with his handicaps or no life at all. . . . The crux of the problem is that there is no rational way to measure non-existence or to compare non-existence with the pain and suffering of his impaired existence" (p. 763).

Avoidance of the nonexistence paradox in this way comes at the price of judicial consistency. This was pointed out by Justice Mosk in his acid dissent to *Turpin v. Sortini* (643 P.2d 954, Cal. 1982), which, like *Procanik*, denied general damages:

An order is internally inconsistent which permits a child to recover special damages for a so-called wrongful life action, but denies all general damages for the very same tort. While the modest compassion of the majority may be commendable, they suggest no principle of law that justifies so neatly circumscribing the nature of damages suffered as a result of a defendant's negligence. (p. 966)

The legal inconsistencies and perplexities spawned by prenatal technologies are brought into sharper focus if we look briefly at yet another kind of lawsuit: for *wrongful pregnancy*. These are filed by parents against health care providers when a supposedly infallible sterilization procedure such as tubal ligation was unsuccessful and the woman became pregnant. These suits are accommodated quite easily by the courts because the idea that the woman suffered an injury caused by the negligence of the defendant does not strain conventional logic (Mitrovich 2007:625).

Usually the children of wrongful pregnancies are born healthy. If we compare the gravity of harm involved in these suits with that for wrongful birth and wrongful life, it is obvious that the most severely injured parties are impaired children, who file wrongful life suits, followed by the parents of those children, who sue for wrongful birth. The injury to those who become pregnant with an unplanned but healthy child is far less. But the capacity of the law to address these

injuries is a very different story. *Wrongful pregnancy* suits are unexceptional and routinely allowed,<sup>7</sup> wrongful birth suits are viewed with misgivings by many courts and disallowed in some jurisdictions (Weil 2006:51), while wrongful life suits are rejected in all but three states. Conventional legal reasoning stands the reality of the human predicament on its head.

The refusal of the courts deal with the challenges posed by wrongful life suits is a form of trying to make them go away.<sup>8</sup> This may paper over but does not avoid the tectonic collision between deeply entrenched cultural values triggered by these suits. They create a space where values of fairness and compassion conflict with those of logic and common sense. On the one hand is the plight of children like Christy Walker and the recourse available to them as compared with that available in the equally tragic condition of children like Kristy Sylvia. As John Hernandez insisted, “It defies any concept of justice to allow a physician or laboratory to escape liability for failing to detect the agent causing the disability of a child” (1994:405). On the other is the uncompromising insistence of the New Hampshire Supreme Court, with reference to both the nonexistence paradox and the causality puzzle, that “we will not recognize a right not to be born, and we will not permit a person to recover damages from one who has done him no harm” (*Smith v. Cote*, A2d 341, 355, 1986). The contradiction has not been—and cannot be—resolved without a radical shift in values that very few, at present, can even imagine.

### Behind the Nonexistence Paradox

The nonexistence paradox is an artifact of the technology of prenatal testing. Before such testing was available being born with an impairment was just something that happened. People whose family histories indicated that they were at high risk for transmitting a serious impairment might refrain from having children for that reasons, but there was no way of knowing the condition of a particular child before birth, and once an impaired child was born there was nothing to be done.<sup>9</sup> Prenatal testing changes that, for now it is possible to know whether a fetus suffers from certain impairments before birth. If infanticide is prohibited abortion is not, so now it is possible to do something about it, that is, to terminate the pregnancy.

By itself, this does not bring out the nonexistence paradox in its full-blown form. To be sure, there is no option for such a fetus to be born free of the impairment. However tragic this may be, it does not lead to insoluble conundrums if parents, knowing of the genetic



defect, elect either to have the child or to abort it. If they decide to abort, there is no child. If they decide to have it, they know what to expect, it happens, and they accept it.

But it is different for the child. Its being brought into the world in an impaired state could have been avoided. It had no influence over the circumstances leading to its birth, but once here it is possible that it might decide it would have been better not to have been born. In that event it might hold a grievance against those responsible for its birth. Parents are exempt from any legal action, partly out of respect for the possibility that they oppose abortion in any circumstances. But health care providers, who erroneously informed the parents that the fetus was unimpaired when in fact prenatal testing, if properly conducted, would have revealed that it was, in some jurisdictions are subject to liability.

These circumstances pose the nonexistence paradox in truly mind-boggling form. The claim of a wrongful life plaintiff that he or she would be better-off not having been born generates conflict between fundamental cultural values. Compassion and justice are evoked because the child actually lives and therefore, like anyone else, deserves consideration. But if circumstances were actually as the plaintiff desires—that the misdiagnosis had not occurred and the child had been aborted—then the plaintiff would not exist. The impaired child's claim that she was injured by the sheer fact of being born calls for a comparison between her actual existence and nonexistence, and that stymies logic and common sense. More, to imagine that it could be preferable not to have been born challenges one of the most deeply rooted values of all: that life is a precious gift, a supreme good. Given the fact that all living things must eventually die, there are circumstances in which people believe that it would be better to die than to stay alive. We will consider some of these in the next chapter. But here the choice is not between life and death. It is whether nonexistence might be preferable to existence, whether never having lived is preferable to life. To entertain that is to throw doubt on the whole value and meaning of human existence.

The nonexistence paradox arises because, at present, the only way to prevent impairments brought to light by prenatal tests is by abortion, a procedure that affects the entire fetus. Abortion is a relatively primitive technology in that, unlike other technologies we have discussed, it is worked on the whole rather than concentrating on particular parts. It is a generalized solution to a particular problem, dealing with a specific impairment by terminating the whole fetus. This is why the contrast between existence and nonexistence is evoked.

This may eventually be superseded by another, more advanced technology. In the future gene therapy, also known as genetic engineering, may make it possible, if probably extremely expensive, to treat impairments singly by replacing the faulty allele with a healthy version (Rhinehart 2002:157). Its future is uncertain, for the initial optimism about its potential was dampened by the death of Jesse Gelsinger in a gene therapy trial in 1999, and has yet to be rekindled (Lindee and Mueller 2011:317, Aboody et al. 2011:600). Yet, should gene therapy eventually come into common use it would have the result of literally changing an individual's genetic make-up. It could get rid of deleterious genes, just as today it is possible to expel the foreign, disease-causing bacteria and viruses that people may have. Should this happen, technology will have brought about yet another, even more massive tectonic cultural shift, this time from the understanding of the human individual as a natural given to a being that, at least in part, is artificially made. Actually a shift of that sort is already occurring due to technologies other than gene therapy. That will be one of the issues discussed in chapter 9.

## Chapter 5

# The Frozen and the Dead

### Living and Partly Living

To be alive used to be a fairly straightforward condition. It is defined by its difference from not living, which can be divided into two conditions: being dead (which happens only after one has been alive) or not existing (which could signify either being dead or never having been alive at all). Of course there has long been an interest in blurring the difference between living and not living, such as the Chorus's repetition of the phrase "living and partly living" in T. S. Eliot's *Murder in the Cathedral*. Less subtle are stories about vampires and zombies as the "living dead." More deeply rooted in Western civilization is the concept of overcoming death as seen in Christ's raising of Lazarus, Christ's own resurrection, and the conviction that at the last trumpet all the dead will rise and stand before the throne of judgment.

For all practical purposes, however, being alive is marked by physiological functioning (breathing, having a heartbeat), which is accompanied by other physiological functions: sentience, and the capacity to engage in activities (moving about, talking, expressing love or anger or spite, and so on). None of these characterize a person who is dead or who has never existed (although it is difficult to understand what can be meant by "a person who has never existed").

The relatively simple dichotomy between the living and the not living has been greatly complicated by recent developments in technology. Three in particular will be discussed here. One of them—medical technologies that keep people alive with no hope of recovery—occurs at the end of a normal life. The other two are reproductive technologies and pertain to the beginning of life. One is the storage of sperm or eggs, which enables people to have children

after they have died. The other is the preservation of embryos, which can be said to be alive, but which may never be born.

### **Postponing Death**

The Mbuti Pygmies of Central Africa divide “death” into several categories of increasing finality. A person whom we would call seriously ill is “dead.” Two further steps of increasing gravity are “completely or absolutely dead” and, finally, “dead forever” (Turnbull 1961:42). Only the last of these qualifies as death in the Western sense. A number of other non-Western cultures have a more nuanced view of death. The Berewan of Borneo, the Aleuts, and some native North American groups think of the spirit as maintaining its influence in the world of the fully living until bodily decomposition has reached a certain point (which varies from one group to the next) (Metcalf 1978, Laughlin and Marsh 1951:84, Kroeber 1970:286).

In our own society the notion of death has been complicated by technology. Medical technologies such as ventilators, feeding tubes, and CAT scans have divided the state of death into multiple categories. Cessation of heartbeat and breathing remain an ultimate determination, but “brain-dead” people can be in at least two conditions where their heart and lungs still function and yet they are widely considered to be dead, or at least partly so. One is when the entire brain is no longer active. In most cases such a brain-dead individual can be kept “alive” only with the aid of technology such as a ventilator, because the brain stem no longer regulates the heart and other vital organs. The other is when the cortex is destroyed but the brain stem remains intact. Such an individual is considered to be in a persistent vegetative state, the vital organs continuing to function unaided but there being no consciousness or awareness. Those in a persistent vegetative state are kept “alive” by a feeding tube. It was estimated in 1988 that there were from five thousand to ten thousand patients in persistent vegetative states in the United States. One person in that condition survived for over 37 years (Cranford 1988:31). There is no hope of recovery for patients in either of the brain-dead states (Cranford 1988, Truog 2005, Chiong 2005:21–23).

Without the technologies mentioned above brain-dead people would not exist because cessation of vital functions or starvation would have soon culminated in death in the original cardiopulmonary sense of that term. Bruce Jennings identified it as “a familiar pattern in bioethics: medical technologies create new possibilities for human choice and action, new kinds of decisions have to be made,

and a new vocabulary must be devised with which to articulate what these actions are and what intentions and consequences they involve” (Jennings 1999:113).

The possibilities that have been pursued in these cases are often conflicting and, in some cases, even bizarre. One of these, driven by advances in medical research and technology, is to keep people alive for as long as possible, no matter their state. It boils down to a rejection of death itself, born of a notion of physicians and others that death is morally wrong, “a conviction that death is a kind of grammatical error, a misfit in a world that can be rationally comprehended” (Burt 2005:S10).

On the other side are proponents of palliative care, who hold that one of the highest goals of medicine is to relieve pain and suffering in the face of the inevitability of death (Callahan 2005:SR6). In agreement with them, if for somewhat different reasons, are ethicists who champion death with dignity. They maintain that human flourishing—the capacity to live life fully—is inevitably impeded by life-sustaining technologies, and that death is preferable to merely biological existence without consciousness (Jennings 1999:124). Not surprisingly, adherents of this point of view approve living wills and do not resuscitate orders. These have become popular among medical personnel who want some direction as to how to behave in extreme situations, and some legal protection if they do not take heroic measures to prolong life, as well as among patients who want to avoid a fate like that of Karen Ann Quinlan, Nancy Cruzan, or Terri Schiavo.

Interestingly, however, health care providers often ignore such advance directives, hooking the patient up to tubes and machines and then refusing to remove them without authorization from some higher authority. One reason, already mentioned, is the deeply held imperative in medicine to preserve life. Another is anxiety about being held responsible for the patient’s death, which can range all the way from medical malpractice to murder.

Family members sometimes insist on resuscitation even when the patient had requested it not be done. Or the family may disagree, some championing life preserving measures and others opposing them. Physicians are often more likely to follow the instructions of the family members in preference to those of the patient because the former are in a better position to file lawsuits. They also usually refuse to terminate life support if there is a dispute among family members, and again legal liability is often in play. Indeed, while health care providers are sometimes blamed for allowing someone to die, it is difficult to hold them liable for keeping someone alive. To say that someone should die

is tantamount to saying that they are being injured by remaining alive, and as with the suits for wrongful life discussed in the previous chapter, few courts are willing to consider life itself to be a compensable injury (Peters 1998:674–675). In a case that came before the Ohio Supreme Court in 1996, for example, “Although the court conceded that physicians are legally required to accede to a patient’s refusal of life-extending medical treatment, it nevertheless concluded that the prolongation of life is not a legally cognizable injury. As a result, the physician’s breach of duty was a wrong ‘for which there simply should be no monetary compensation’” (675).

All in all, if they get into the courts, right-to-die issues become truly tragic, involving years in limbo for the patients, destroying the relationships among their family members, becoming fodder for sensation-seeking media, provoking popular outrage, demonstrations and even death threats against principals and judges, and providing an opportunity for politicians to promote themselves. All this and more happened in the Terri Schiavo spectacle. She collapsed from cardiac arrest in 1990 that left her comatose. Approximately one year later physicians diagnosed her to be in a persistent vegetative state. She remained in that condition for another 14 years, which were filled initially with efforts to rehabilitate her and then with contention between her husband and her parents over whether she should be allowed to die by removing her feeding tube. The court directed that to be done, but the action was delayed by years of repeated legal motions and appeals from her parents, intervention by the Florida legislature and Florida governor Jeb Bush, then the United States Congress and President George W. Bush (who flew from Texas to Washington expressly to sign a bill, at 1:00 AM, transferring the case from Florida to federal courts), and a memo from a staffer to the Republican candidate for the US Senate to the effect that championing the cause of keeping her alive would be a great political issue to drain support from the Democratic incumbent. Courts at all levels affirmed the judgment to remove the feeding tube and after the US Supreme Court refused to review the case, this was finally done in 2005, fully 15 years after she was stricken.

This and similar cases are fraught with conflict and uncertainty. Even if there are advance directives, just how they should be weighed against other information may be extremely vexed. Here, for example, is Judge Edward Reibman’s (2011) description of the conundrums from a 2010 case that came before his Court of Common Pleas in Lehigh, Pennsylvania. K. K is a 55-year-old woman who since 2005 has been surviving with a feeding tube, and her doctor said it is not

possible to communicate with her. She has been placed on a ventilator when her organs could not function on their own, then removed from it when they recovered sufficiently, a process that has occurred several times. The physicians predict that her condition will only get worse, and they state that she is in pain.

When she was declared incapacitated in 2005 her daughter was named plenary guardian of her person. The daughter wishes for the life-sustaining measures to be continued. K. K. herself executed a do not resuscitate order in 2004, before she was incapacitated, but the court did not become aware of it until nearly six years later. From earlier conversations with her and with other members of her family, the doctor believes that the advance directive accurately reflects K. K.'s wishes. But her daughter, the guardian, claims that the doctor's highly confident diagnosis of multiple sclerosis is mistaken, and is the result of his involvement in a conspiracy to protect another physician who incompetently treated K. K. Finally, late in the hearing K. K.'s sister, who said she is a speech pathologist trained to communicate with eye blinks, testified that K. K. had unequivocally indicated that she did not want the tube feeding to be stopped.

This demonstrates how difficult it can be, when dealing with actual cases, to reach a clear and reasonable decision. K. K. is not in a persistent vegetative state. She is conscious and presumably can feel pain. Her legal guardian definitely wants the treatment to continue. However, at one point K. K. herself asserted that she did not wish such treatment. But has she changed her mind? Is she sufficiently conscious to have coherent wishes on the matter? One does not envy Judge Reibman as he strives to reach an opinion.

A large project with the acronym-driven title *The Study to Understand Prognosis and Preferences for Outcomes and Risks of Treatment (SUPPORT)* was inaugurated in 1989 to explore attitudes of health care providers and patients with life expectancies of less than six months toward life-sustaining medical treatment. The initial findings of the SUPPORT study revealed an imperfect system. Seventy-nine percent of patients had Do Not Resuscitate orders, but 46 percent of those were executed within two days of death. The impact of advance directives was diminished because less than half of the attending physicians accurately understood them. Over the next few years the SUPPORT project instituted a set of reforms to remedy the failings uncovered in the first phase and assessed to what extent these alleviated the situation. The biggest surprise was that they had no effect at all. Despite much national attention paid to patients' rights, life-support technologies and the proposal of assisted suicide,

there was no change in the quality of doctor-patient communication nor in any of the other problems that had originally been detected (Moskowitz and Nelson 1995:S4–S5).

Several suggestions were advanced to account for the lack of impact of SUPPORT's reforms. For one, the project did not take sufficient account of the medical culture. The study was oriented toward palliative care, but it was done in five large research and teaching hospitals. The physicians in these hospitals have little interest in smoothing the dying pillow; they are oriented toward the most aggressive ways of curing disease and avoiding death. Thus medical ethicist George Annas wrote that for patients who wish to be allowed to die in peace, the first priority should be to keep them out of such hospitals or, if they are already there, to have them discharged as soon as possible. Their desire for palliative care is much more likely to be respected at home or in a hospice (Annas 1995:S13, see also Emanuel 1995:S15). Again, SUPPORT's proposals called for nurses to play an important brokering role in the communication between doctors and patients. However, in the medical culture the degree to which doctors pay attention to the recommendations of nurses is notoriously limited (Marshall 1995:S9, Annas 1995:S12).

Another reason advanced for the unsatisfactory state of dealing with end-of-life issues is that neither patients nor health care providers are comfortable discussing them. "Planning for dying is not one of humankind's well-honed instincts," wrote Linda Emanuel. "We do not intuitively do it well" (1995:S17). As Daniel Callahan put it (Callahan 1995:S34), "By turning death into one more choice issue, we often do little more than deploy a clever way of avoiding the topic of death itself." I would suggest, however, that the problem is not so much the fact of death itself as it is making death a matter of choice. To be sure, some people cannot bear to contemplate death, but I would imagine that most of them have acknowledged that they are eventually going to die. What is new, then, is not that we must face death. Rather, it is that we now have options regarding how and when to die.

As with all technologies considered in this book, life-support mechanisms have the following three characteristics: (1) they enable people to do things that were not previously possible, (2) they disarticulate what was previously unitary into separate parts, and (3) they pose issues and problems so novel that previously existing cultural assumptions and solutions are hard-pressed to deal with them. The first of these is self-evident: Technologies as simple as feeding tubes or as complex as devices that maintain the functioning of heart, lungs, and other vital organs postpone death in the traditional sense of the cessation of heartbeat and



breathing. As for the second, those technologies are concerned only with particular parts or functions of patients: breathing, or nutrition, or functioning of the heart. Again, the conventional notion of being alive includes, in addition to breathing and a beating heart, evidence of consciousness. In persistent vegetative states these are separated, cardio-pulmonary functioning being present but consciousness absent. Hence life and death are conjoined in the same individual, who is living so far as heartbeat and breathing are concerned, but is brain-dead.

This, to move now to the third characteristic, poses problems for the cultural organization of ideas and symbols. Beyond the fanciful figures of zombies and vampires, our culture lacks models for conceptualizing persons who are alive and dead at the same time. (The other example given at the start of this chapter—resurrection from the dead—does not apply here because resurrected individuals are not partly living and partly dead. They were fully dead and then, upon resurrection, become fully alive again.) In this case, as with so many others, the absence of a model or template for dealing with the situation leads to uncertainty, confusion and, most interestingly, paralysis. When there is no familiar guide for how to behave, a common “solution” is avoid thinking about the situation and to do nothing. This, I suggest, is an important reason why many people do not execute end-of-life directives at all, neither to refuse life-sustaining technologies nor to direct that they be used to the fullest extent. And perhaps it is an even more important reason why people experience a paralytic quandary when faced with the prospect of having a loved one removed from life support.

A somewhat similar but much less vexed issue is the donation of organs victims of lethal accidents. It is similar in that people often think of a deceased individual whose organ is transplanted as in some sense living on in the organ recipient. But this case is much less perplexing because there is no question that the accident victims are actually dead. They no longer breathe, have heartbeats or consciousness. Nevertheless, certain of their organs maintain viability that can be of use to someone else. Far from being conflicted, people who sign advance directives regarding donation of their organs, and their relatives who approve of it, take some comfort in the fact that although they will be unequivocally dead, they will benefit the life of someone else.

Thus the capacity to transplant organs, itself a recent technology, threatens the categories of culture far less than life-support machines or even the considerably less complex technology of feeding tubes. Precedents for the former are readily available. We have long been accustomed to the idea that people continue to live through the knowledge, values, and example of a life well lived that they pass on

to their children, students, and others. Organ transplantation is easily understood as an extension of this. The issue of cultural interest, then, is not the sophistication of the technology but its impact on established ways of thinking and understanding. Life-support machines and feeding tubes call into question the distinction between life and death. Organ transplantation does not.

### **From the Freezer to the Cradle... or the Grave**

Cultural assumptions about what constitutes life and death are affected at least as much by freezing technologies that affect the beginning of life as they are by life-support systems at its end. Freezing has given people new options and brought about unforeseen consequences in reproduction. Originally donor insemination used fresh sperm acquired by arrangement with private physicians. Today the standard has become frozen sperm, which is not used for some time after its production. This enables tests to be performed to ensure that the sperm does not carry HIV, and freezing sperm is good business because fertility centers can separate a single contribution into multiple batches that can be sold to many clients. Therefore the possibility of scores of children resulting from the same donor, discussed in chapter 3, is a corollary of using frozen rather than fresh sperm.

The practice of freezing eggs is also on the rise. This is due partly to women who sell their eggs as men sell sperm, but also to busy career women who wish to delay having children until after the age of 40. They may stop the biological clock by having their eggs extracted when they are young and frozen for later use (Dana 2012).

Finally, couples using IVF often freeze excess embryos. As indicated earlier, egg extraction is arduous, and both it and IVF are expensive. Hormone injections to stimulate the production of more eggs are usually self-administered in the stomach region daily for two to three weeks. These are very uncomfortable, they can produce mood swings, cravings, and weight gain, and they cost about \$100 per shot. Extraction must be done professionally at a medical facility, making it both expensive and somewhat time consuming. A potentially dangerous side effect is hyperstimulation of the ovaries, which may cause menstrual and fertility problems and in some cases requires medical treatment and even hospitalization. In the United States, none of the expenses are covered by standard medical insurance. The IVF procedure often dominates the lives of women undergoing it, dictating their behavior and preoccupying their minds (Carsten 2007:413). It is not an ordeal that a woman wants to go through repeatedly.

Success rates vary with age (the younger the better) and number of eggs harvested (the more the better). The maximum rate of achieving pregnancy via IVF for women under 35 who produce more than ten eggs is 65 percent, while only about one-third of women over 40 succeed, and that rate drops to 7 percent if they produce only one or two eggs.<sup>1</sup> Given all these complications and inconveniences, the common practice is to create more embryos than are needed for implantation and to freeze the surplus, so that they will be available for future use should an earlier attempt at pregnancy not be successful or if the couple wants to have another child at some later time. Thus fertility clinics throughout the world hold a massive number of frozen embryos. The exact number is difficult to determine, but it has been estimated that there are 400 thousand to 500 thousand in the United States alone.<sup>2</sup>

Although people use IVF to achieve the conventional goal of building a family, frozen embryos raise other issues that are anything but conventional. Before IVF technology there was no such thing as frozen embryos. Their arrival on the scene raises perplexing questions about their status. As with other novel situations introduced by technology, the first impulse is to deal with them on the model of already existing, familiar categories. Frozen embryos, however, are so without precedent that conventional ideas and strategies are often stymied by them. (In this regard they resemble the question about the relation between the women who have used a donor's sperm or the children who have resulted from it and the donor's wife and legitimate children, as raised in chapter 3.)

It is not even clear what frozen embryos are. The two most common candidates are that they are property, and that they are persons. Obviously any choice between these produces stark differences in what may be done with them. If they are property they can be sold as with any other commodity, which strikes many as unacceptable for potential human life. If they are persons they cannot be sold, but neither could decisions be made to destroy them.

Indeed, if they have the full rights of persons frozen embryos could be heirs of their deceased genetic parents even though they had not been implanted, much less born at the time their parents died. Exactly this question was raised when a California couple died in an airplane crash, leaving an estate of \$8 million, no will, no living children, but several frozen embryos. Do the embryos have inheritance rights? The embryos were in Australia, and a court there decided that no, they could be put up for adoption but with no rights of inheritance from their genetic parents (Havins and Dalessio 1999:841). Campisi, Lowder, and Challa report that frozen embryos are denied inheritance

rights because they cannot survive independently as sentient beings (2010:192). This criterion of viability, which was adopted in *Roe v. Wade* as the point after which the state could regulate abortion, is but one of several moments in the highly charged question of when human life begins. Views here range all the way from the moment of conception through “quickening” or movement in the womb (which the medieval church and early English common law took to be the moment when the fetus was infused with a soul), to birth, or even as much as 30 days after birth, when, as Jewish law has it, the infant acquires the attributes of being made in the image of God (Smith 1985–1986:28, Hashiloni-Dolev 2006:136).

American law is not unanimous about the status of frozen embryos. Louisiana gives them the full rights of persons, while most other jurisdictions consider them to be the joint property of their male and female producers (Upchurch 2007:2120–2123, Havins and Dalessio 1999:838). However, they are generally understood to be “property deserving special consideration,” a far from precise concept that boils down to the stance that they cannot be sold on the market but may be otherwise disposed of by their owners—the man and woman whose genetic material contributed to their formation.

Indeed, what to do with them is the most perplexing question that all people who have frozen embryos face. With the success of previous pregnancies, the passage of time, divorce, or some other eventuality, one or both of their parents may no longer have any intention to implant them with the hope that they will become children of their own. The main options are to deny their possibility to become living human beings either by discarding them or donating them for research, to make them available for adoption by other families, or to keep them in frozen state indefinitely. In Louisiana, where embryos are considered to be persons, if the parents formally relinquish their rights the physician who presided over the IVF becomes their temporary guardian until they are adopted (Havins and Delessio 1999:837–838). Elsewhere the dilemma of what to do with excess frozen embryos is more vexed.

This was the subject of a study conducted in 2006–2007 among over one thousand people with embryos in frozen storage (Lyerly et al. 2010). Although nearly half of the embryos were no longer intended for implantation, the study revealed that their “parents” were largely unprepared to address their eventual disposition. It is the last thing on their minds when they enter the process of IVF. Although the necessary paperwork in most clinics includes references to what might be done with excess embryos, the couple is focused entirely on the live children that they hope will result. When, later, they must decide

what to do about the surplus remaining in frozen storage, they often find that none of the available options is palatable.

Given their human or quasi-human status, the idea of thawing embryos and letting them die was repugnant to many.<sup>3</sup> The most common preference was to donate them for research, although restrictions in place when the study was conducted made this very unlikely to happen. Two other logical possibilities for escaping the dilemma were to implant the embryo in an infertile period when it was unlikely to survive, or to accompany its demise with a respectful ceremony. But only 5 percent of the clinics offer these possibilities and none mentions them in consent documents (Lyerly et al. 2010:507).<sup>4</sup>

A concern about how the child might fare with strangers makes most parents reluctant to donate their frozen embryos to childless couples (Lyerly et al. 2010:507). For those who are willing, the process is facilitated by agencies such as Snowflakes Embryo Adoption (Frith et al. 2011:3328). On the model of standard adoption, these agencies encourage couples who consider relinquishing their embryos for adoption to play an active role in the selection of the adoptive parents, to assure that their child will go to a “good home” (2011:3336).

The use of the term “adoption” for the transfer of frozen embryos to another family again raises the issue of their legal status, with far-reaching implications. The concept of adoption refers to the legal transfer of a human being, so using that term strongly connotes that a frozen embryo is just that. The previously mentioned Louisiana statute affirms this explicitly, specifying that “constructive fulfillment of the statutory provisions for adoption in this state shall occur when a married couple executes a notarial act of adoption of the *in vitro* fertilized ovum and birth occurs” (La Rev. Stat. 9:130, see also Virzera 2009:89–90). The larger and highly controversial implication is that if frozen embryos are human beings, then *all* embryos carried in the womb must be too, and that would mean that abortion would be forbidden. This is one reason why pro-life organizations such as Snowflakes use the term “adoption” abundantly in their promotional literature (Fraker 2009:499, 503).

In most states, however, “adoption” does not legally apply to embryo donation because a child cannot be adopted until after it is born (Virzera 2009:86). Thus, despite the liberal use of the term in their promotional literature, the actual practice of the California-based Snowflakes organization does not involve adoption. Their legal transaction is finalized by a contract that specifies termination of the genetic parents’ “ownership rights” of the embryo. The East coast agency Adoptions from the Heart, which shares the pro-life

orientation of Snowflakes, goes so far as to specify in its legal documents that embryo donation is not adoption and is governed by contract law (Fraker 2009:499–500). Contracts are used in transactions regarding property, so the significance of this is that most states consider the embryo to be property rather than a human being, and that leaves abortion rights undisturbed.

Occasionally disputes arise over the fate of frozen embryos when the producing couple disagrees as to what should be done. Their “resolution” is further evidence of how existing understandings and procedures are woefully unprepared to handle the new circumstances surrounding frozen embryos. The disputes normally result from divorce, when one partner (usually the female) wishes to have the child while the other (usually the male) does not. A landmark case is *Davis v. Davis* (842 S.W.2d 588 Tenn.,1992). When Mary Sue and Junior Davis divorced, Mary Sue wished to use their seven frozen embryos in the attempt to achieve pregnancy, and Junior opposed the idea. The trial court ruled in favor of Mary Sue, but the Court of Appeals reversed. By the time the case reached the Tennessee Supreme Court both Mary Sue and Junior had remarried and Mary Sue’s objective shifted to donating the embryos to another couple. Junior remained opposed. The court found in favor of Junior, upholding the principle that no one should be forced to have a child. Indeed, “no American court has ever upheld the award of disputed embryos to the progenitor seeking to use them for implantation” (Upchurch 2007:2128, see also Clayton 1992, Crockin and Jones 2010:27).

If the prior agreement was to discard the frozen embryos or donate them for research, a number of courts have enforced it even in the face of a change of mind by one of the parties (Crockin and Jones 2010:28). However, the courts are usually disinclined to take any action at all regarding frozen embryos whose disposition is in dispute. The Iowa Supreme Court in *In re Witten* (672 N.W.2d 768) maintained the embryo’s frozen status quo until the parties could agree on a course of action, or until the expiration of the ten years specified as the maximum storage period in the initial agreement that the couple signed with the laboratory (presumably after which the embryos would be discarded). Essentially the court’s “solution” was to do nothing. In the absence of governing principles to which it could appeal, it was neither equipped nor inclined to resolve the issue.

The Israeli Supreme Court treated the situation very differently. Ruth and Danny Nahmani separated and she refused to divorce. She wished to have their frozen embryos implanted (in a surrogate, for she had undergone a hysterectomy), and he objected. The Supreme Court

found in favor of Ruth, holding that having a child is a basic value for both individuals and society, while the absence of parenthood holds no intrinsic value for anyone. The decision was controversial. While recognizing that “the decision gives women autonomy it also advances a conservative national agenda of population growth and forces fatherhood on men” (Crockin and Jones 2010:45).

Returning to the United States, whether there is disagreement between the genetic parents or not, tens of thousands of people regularly face (or, more to the point, cannot bring themselves to face) the same dilemma about what to do with their excess frozen embryos. The result is a kind of paralysis. 70 percent of the over one thousand respondents in the study by Lyerly and associates referenced above had delayed a decision about what to do with their frozen embryos for five years. Of the nearly five hundred respondents who did not want further children, 40 percent had made no decision regarding the disposition of their embryos, and nearly 20 percent said they are likely to keep them frozen indefinitely (Lyerly et al. 2010:506–507).

Frozen embryos represent a totally new status for which our culture has framed no intelligible categorization. Current customs or arrangements that people might use as models for how to proceed in this situation are entirely lacking. This is not like anything we know. Probably adoption is the preexisting scenario most similar to ways of disposing of frozen embryos, but the existence of an already born child whom its parents cannot raise is palpably different. Intentions to keep the embryo frozen indefinitely constitute a decision of a sort, rather like the *Witten* court’s decision to maintain the status quo and not intervene. But many other parents cannot go even that far, simply putting off making any decision at all. They are as frozen in their decision-making as are their embryos in the limbo between nonexistence and life. Michele DeCrane has a two-year-old daughter and six frozen embryos. At 40 she’s leery about having another child and is in a quandary about the embryos. “What do people do?” she asks. “You have all of these embryos in all of these labs. Are people going to keep doing what I’m doing and pay the \$40 a month ad infinitum?” (Beil 2009).<sup>5</sup>

One strategy to avoid the dilemma about frozen embryos is to store frozen sperm and eggs separately, thawing and fertilizing them only when they are to be implanted. This is still quite rare and it adds the laboratory cost of additional IVFs if implantation fails to develop into pregnancy. But this does greatly ease the ethical and religious problems for those who consider a frozen embryo to be life but frozen eggs and sperm as only cells (Bavley 2011, Williams 2012).

Other countries have dealt more decisively with the dilemma than the United States. Germany's Embryo Protection Act limits the production of embryos in a cycle of IVF to three and requires that all the embryos be implanted in the hopeful mother. Hence there are very few frozen embryos in Germany (Virzera 2009:92–93). In Great Britain abandoned embryos come under the control of the state, and in 1996 it was announced that three thousand embryos that had been unclaimed for five years would be destroyed. Despite the Catholic Church's denunciation of it as a "prenatal massacre," the plan was carried out, although the law was subsequently amended to require ten years of abandonment before destruction (Havins and Dalessio 1999:841–842).

Islam holds that neither husband nor wife can utilize frozen embryos if the marriage has ended in divorce or death. In that event, they must be destroyed. This is not considered to be extinguishing a human life, because in Muslim thought life begins about two weeks after conception and uterine implantation (Inhorn 2005:300–301, Serour 2002:45–46, Bundren 2007:736). In Jewish law embryos have no legal status unless their potential for life is implemented by implantation and pregnancy. As noted above, here an infant is not considered to become fully human until 30 days after birth. Therefore the disposition of frozen embryos in Israel is much less conflicted than in the United States, and it is considered entirely appropriate to donate them for use in scientific research (Serour 2002:45).

Occasionally medical facilities take matters into their own hands. The Instituto Marques near Barcelona specializes in fertility treatment for foreign couples. Their solution for excess frozen embryos is to offer them to other couples for implantation, without the consent or even awareness of the genetic parents. Clinic staff explain that they need to do something about the hundreds of leftover embryos that have accumulated when their progenitors find it easier to ignore them than to make a definitive decision (Blackburn-Starza 2010).

### **Birth after Death**

It may or may not be true that dead men tell no tales, but it is definitely possible for dead men (and women) to produce children. Of course, one variant of this has existed since time immemorial. It has often happened that a man conceives a child and then, at some point in the nine months prior to the baby's birth, he dies. Although deceased, he is recognized as the child's father.

But now it's possible for a person to be the parent of a child who was conceived years after that person's death. This is accomplished by



storing sperm or eggs in a frozen state for possible later use. It is more prevalent among men than women, the procedure of egg extraction being, as we have seen, much more arduous and complex. Sperm is sometimes stored as a precautionary measure by men set to undergo major medical treatment that may cause infertility. It is also done by soldiers going off to war, who want to be able to have children if a battlefield injury renders them infertile, or if they do not survive (Lewis 2009:445). The unprecedented circumstances arising from this reproductive technology raise important questions, most notably whether the source of the sperm is the child's legal father, and the inheritance rights of children so conceived. An important dimension to this is that most such cases involve the posthumously conceived child's claims to Social Security survivor benefits (Lewis 2009:437).

As of 2010 only 11 state legislatures had weighed in on that issue. Ohio denies legal paternity and inheritance rights altogether to children conceived after the death of the genetic father. Most of the others allow them only when certain conditions have been met, such as a record of the consent of the decedent, that the mother was married to the decedent at the time of his death, and that the conception takes place within two or three years of the death. Courts in jurisdictions lacking express legislation tend to follow similar guidelines (Lewis 2010:1181–1182). The issue goes beyond the direct father-child link. Martin B. executed trusts for the benefit of his "issue" and "descendants." Martin's son James died, leaving his frozen sperm. His widow Nancy used it to have two sons, one born three years after James died and the other two years later. A Surrogate's Court in New York ruled that the two boys should be included among Martin's grandchildren as his issue and descendants (*In re Martin B.*, 841 N.Y.S.2d 207).

It is also possible to extract sperm from a man who has recently died (it must happen within 36 hours of death), or who is brain-dead. Typically this is done at the request of a close relative, usually his wife or partner, who may then be inseminated with it at some later time as an expression of love for the deceased and to carry on his bloodline. Simone Baker and Andrew Clough were planning to marry in April 2003, and had talked about the children they wished to have together. Tragically Andrew fell to his death over the Roaring Meg Falls in northern Queensland on New Year's Eve, 2002. Simone requested that his sperm be removed so she could have a child with Andrew, but the Brisbane Supreme Court refused on the grounds of a law that makes it illegal to interfere with a deceased person's body (Parker 2004:387).

Dayne Evans's mother was more successful. He died in Texas at the age of 21 of a head injury suffered in an effort to stop a barroom

brawl. He was not in a relationship with a woman at the time, but his mother, Marissa Evans, requested that his sperm be extracted and frozen. She recalled how, shortly before his death, he had told her of his strong desire to have children, and that he had even picked out the names of three sons. She engaged an egg donor and a surrogate (in Mexico, which is less expensive), and, as of the summer of 2011, was taking steps to arrange for the birth of her grandchild, whom she would raise as a living memorial to her son. The public is invited to donate in order to help Marissa with her expenses in this project. The goal is to reach \$8,000 by the expiration of the appeal on November 30, 2011; \$1,374 had been raised as of October 4.<sup>6</sup>

PMSP (postmortem or perimortem sperm procurement) is yet another area where ethics and the law have not kept pace with technological developments. As of 2012, 9 of 24 countries surveyed prohibit the practice (including Canada, France, Germany, and Sweden). The Czech Republic and United Kingdom require the man's express written consent, and the remaining 15 (including Italy, Australia, Japan, and the United States) have no legislation or guidelines. In those last 15 countries a request for PMSP may not reach the courts (as was presumably the case with Dayne Evans), and its fulfillment depends largely on the willingness of doctors to perform it (Kolata 1997).

A survey conducted among 273 assisted reproductive facilities in the United States and Canada gathered information about requests for PMSP. The procedure is not very popular, for the study found a total of only 82 requests between 1980 and 1995, all of them occurring in the United States. Interest in the procedure may be growing, however, for more than half of the requests were made in 1994 and 1995. Twenty-five of the 82 requests were honored (Kerr et al. 1997:2154).

The basic question raised by medical ethicists is whether the man would have consented to the procedure and the idea of his children being born after his death. Men who store their sperm against the possibility of their future infertility or death may indeed want that, and the sheer fact of the storage means that, in the face of a dangerous surgery or going to war, they have thought about it and made provisions for it. Consent cannot necessarily be determined by the hopes and plans for children of men like Andrew Clough or Dayne Evans. They may look forward to being fathers of children they could raise, but that does not necessarily mean that they want children whom they could never interact with or know.

Some argue, however, that a wife or legal partner already has the right to donate the organs of a deceased individual, and so she should

be able to determine the disposition of his gametes as well. Moreover, it seems inconsistent, even unjust, that she can use the sperm of an anonymous donor to become pregnant, but not that of her deceased legal partner (Epker, de Groot, and Kampanje 2012:1072). Presumably responses to these arguments would be that there is a difference between using an organ to preserve an existing life and using sperm to start a new one, and that the anonymous sperm donor has fulfilled the key criterion of having consented to that use of his sperm while the deceased partner has not.

Beneath these careful ethical arguments is a gut feeling in many people that the idea of using the sperm of a dead man to engender a child is repugnant, even blasphemous. This probably has much to do with why the procedure is rare. The repugnance, I suggest, stems from a deep-seated cultural conviction that reproduction is exclusively an activity of the living. Even if the child is the product of a one night stand and the father has disappeared, even if the parent is a sperm or egg donor unknown to either the child or the people who raise it, at least the copulation, masturbation or ovulation are activities limited to living persons. Indeed sexual desire, fantasy, or even just the objective to make some money are themselves all quintessential signs of life. To raid the gonads of dead people to make children is so totally alien to conventional concepts of life and death, reproduction and kinship that it is difficult even to articulate why it is so grotesque, because one is hard-pressed to find a familiar model that bears any similarity to it. This technology, together with frozen embryos and some of the relationships started by donor insemination, introduces possibilities with which conventional cultural values, meanings, and symbols are simply not equipped to deal.

### **Conclusion**

As technology expands the capacity for humans to take control of processes that formerly were the preserve of nature, those processes have become subject to human intentions. We can now do many things we want to do that used to be beyond us. Up to this point this book has focused on the growing capacity of technology to intervene in matters pertaining to reproduction, illness, life, and death. Medical tests and life-support technologies have enabled us to stave off death, at least for a while. Donor sperm and eggs, IVF, surrogacy, freezing technologies, prenatal tests, and selective abortion enable previously infertile people to have children, to determine when children will be conceived, when they will be born, or if, once conceived, they will

be born at all. All of these matters were beyond human control prior to the technologies discussed in this and the preceding chapters.

The intentions with which these technologies are applied are anything but unusual. The goals—to have children, to avoid having impaired children, to make money, to stay alive, to keep a loved one alive—all fit easily within the range of aspirations that are standard for our culture. But the means by which these intentions are realized are unusual indeed. They force changes in the meaning of the cultural categories and institutions they touch, and that requires people to change their ways of thinking and behaving. In some cases accommodations have been made relatively easily, while others pose questions, problems, and dilemmas that culture is ill-equipped to resolve. To conclude this part of the book, we may review the impact of the technologies encountered in chapters 2 through 5 on cultural categories and institutions, the sorts of changes in thinking and behaving that they demand, and how well culture manages to accommodate those changes.

A general feature of technologies is that they fragment or disarticulate unities. Their focus is on separate parts rather than the whole that, when conjoined, those parts form. Technologies replace certain of the natural parts with artificial ones, as when, for example, sexual intercourse is removed from reproduction and replaced with IVF. The process, visible in all of the technologies discussed thus far, may be called “categorical excision.” That happens when technology cuts away formerly essential elements from cultural categories such as reproduction, motherhood, life, the self, and many others. The degree of cultural perturbation occasioned in each case can be understood in terms of how much people are willing and able to accept the transformed, truncated result as the same category. Sometimes extending received cultural values and meanings to accommodate the transformed category is easy, in other cases a good deal of reshuffling is required, and still others are so baffling that no accommodation is in sight.

A category that has come up in several contexts in the last four chapters (and will emerge again in yet other contexts in future chapters) is the individual: the person, or self. Exactly what qualifies as a person has been placed in question by new technologies. For one example, are human embryos persons, or are they something else? IVF technology has brought embryos from their previously secluded place in the womb into full light. Now we can form them by pushing sperm and egg together in glass dishes, look at them, subject them to genetic diagnosis, implant them, freeze and thaw them, put them up for “adoption,” or discard them. This forefronts questions about what embryos are, how they should be treated, particularly when it comes

to what to do with frozen embryos left over from cycles of IVF. As discussed earlier in this chapter, an answer to that question is elusive.

The definition of the self is also placed in question by its relation to vital organs and gametes. Are they intrinsic parts of the person, or objects that the person owns? This issue arises only because the disarticulating tendency of technology makes it possible to separate them from the individual. This must be done surgically in the case of vital organs, and the fact that one cannot live without a heart, at least one kidney, liver, or lungs argues strongly for their status as parts of the self. They can be removed only after the person has died and thus needs them no longer. In contrast, no technology is required to separate semen from a male, and he is none the worse when it is done. It seems clearly to be more like something he has than what he is. What, then, of eggs? They are like sperm in the sense that a woman produces a lot of them and does not require them to live, although it is a good deal more complicated to extract them. And yet, the capacity of sperm and eggs to engender new life puts them in a category more existentially profound than even vital organs. All these considerations provoke a host of questions about the ethical propriety of selling organs and gametes, none of which (save sperm) came up until the separating power of technology came on the scene.

The categorical excision common to all the reproductive technologies we have surveyed is that they cut sexual intercourse out of the reproductive process, replacing it with techniques such as artificial insemination or IVF. This is already disturbing in that it removes the intimacy of mother and father from their reproductive activity. That by itself may be enough for some people and institutions, such as the Roman Catholic Church, officially to reject any and every form of assisted reproductive technology. For others, it is possible to construct a continuum of reproductive technologies ranging from less to more disquieting. The crucial variable is the degree to which the essence of reproduction and associated cultural institutions, such as the structure of the family and its component roles, can be maintained without the natural parts that are discarded and replaced by the technology.

Least problematic is the simplest and most common form of IVF. Here, as in ordinary reproduction, the parents are a man and a woman, usually married. Fertilization results from the joining of his sperm with her egg, and she carries and gives birth to the child. The only parts missing when compared with unassisted reproduction are sexual intercourse and fertilization within her body. Instead, the sperm and egg meet in a petri dish and the resulting embryo is artificially implanted in her womb. The lack of sexual intercourse in

the procedure is mitigated by the fact that presumably the couple enjoys sexual intimacy as much as any other, the only difference being that it has not resulted in pregnancy. After implantation everything—pregnancy, birth, child rearing—proceeds as it does with unassisted reproduction. Hence the changes in the meaning of having children and building a family are minor, and most people view IVF as an entirely acceptable procedure.

A somewhat greater departure from ordinary reproduction is gestational surrogacy. Here the child is still the biological offspring of a conjugal couple, usually married. As with IVF, fertilization still occurs in a petri dish from the joining of his sperm and her egg. Now, however, the mother's pregnancy and childbirth is also excised because the child is carried and borne by another woman, who is the gestational mother. This affects the meaning of the category "mother" more than standard IVF. Still, the woman who is both genetic and rearing mother comes close enough to the previous meaning of "mother" for most people to accept the change without too many qualms. She is likely to prevail should the surrogate claim legal motherhood, on the majoritarian principle that she fills two of the three roles into which motherhood can now be divided.

That rule tilts the other way in the now uncommon traditional surrogacy. There are still two rearing parents, usually married. But the rearing or intending mother is neither the genetic nor the gestational mother. Legitimation of her motherhood is by no means assured. Should the surrogate, who is both genetic and gestational mother, decide to claim that she is the legal mother, as Mary Beth Whitehead did, the two out of three tests would now favor the surrogate. And should she qualify in the court's eyes as a fit and suitable mother, the surrogate could claim joint custody of the child.

The final step in dividing up the previous unity of "mother" is when both an egg donor and a surrogate are used. Then the three roles of, genetic, gestational, and intending or rearing mother are filled by three different women, some of whom may not even know each other. This is what happened in the *Buzzanca* case. What makes it so intriguing is that technology has removed so much from the traditional concept of "mother" that it is highly questionable that any of those three women qualify. Indeed, although later reversed, the trial court ruled that the baby Jaycee had no mother at all. The higher court found Luanne Buzzanca, as the intending mother, to be the legal mother. This is an excellent example of another of our major contentions: how, with technology, natural considerations (here, genetic and gestational motherhood) become subordinated to intentions. In

that particular case, however, neither the surrogate nor the egg donor (who was anonymous) pressed a claim. It would be interesting to see how the courts would decide if two or all three women vied for legal motherhood, but I am aware of no such case.

As egg donation and surrogacy whittle down the role of mother, so does donor insemination for the father, albeit in its own particular ways. It is more common than any of the procedures pertaining to motherhood, largely because IVF is often not needed, gestation is not involved, and harvesting sperm is far simpler, cheaper, and easier on the donor than it is with eggs. The implications of donor insemination for the prevailing meaning of “father” differ according to the particular circumstances of its use.

The longest pedigree of donor insemination, going back to the nineteenth century, is its use by married couples who suffer from husband infertility. This departs from ordinary reproduction in only two ways. For one, sexual intercourse is not part of conception, although this need in no way impede sexual intimacy between husband and wife. For the other, the role of father is split between one man—the sperm donor—who is the genetic father, and another man—the husband in the client couple—who is the intending and rearing father. Usually anonymous, the donor plays no role in the family beyond the provision of sperm. Technology’s removal of the genetic part of fatherhood from the rearing father is essentially inconsequential from a public perspective because the use of donor insemination is normally kept confidential, and the families who have recourse to it are for the most part indistinguishable from other families. Therefore, donor insemination in these circumstances constitutes a minimal challenge to traditional notions of fatherhood and the family.

Within the last few decades, however, donor insemination has come into extensive use by single women and lesbian couples. This has a more powerful impact on conventional expectations and relationships because now the role of father, both genetic and rearing, has been reduced to almost nothing. Anonymous, sexually unengaged, reduced to a vial of sperm, and having nothing to do with raising the child, he qualifies as “father” only in the narrowest possible sense. Indeed, many refuse to consider him a “father” at all. These families certainly lack husbands, and for all intents and purposes they also lack fathers. Feminists are alive to the implications of this, and some of them tout single mother and lesbian families as explicit challenges to the hegemony of men over women and to the patriarchal family (Hanson 2001:301).

The replacement of sexual intercourse with donor sperm has an unintended consequence for the institution of the family. There may

be no (or virtually no) father, but the various children conceived with his sperm are sisters and brothers, and for the most part they and their mothers are willing, indeed, happy, to acknowledge that relationship. Thus commercialized, donor insemination has generated a new kind of family—the donor sibling family—consisting of the (sometimes very numerous) half siblings and their mothers, anchored by the empty center of an anonymous sperm donor. Although this new kind of family often sounds strange—not to say weird—to outsiders, its members welcome it as a way to achieve the culturally desirable objectives of recognizing paternity (even if of a minimal sort) and knowing their relatives. The fact that their mothers were inseminated artificially probably pales in significance from the point of view of the siblings, for their relationship to each other is no less natural than that between half siblings conceived in the ordinary way.

While the status of fathers in these situations is tenuous at best, there is no question that the women who use donor sperm, become pregnant, bear, and raise the children are their mothers. The only part of ordinary motherhood that they lack is sexual impregnation, and that is certainly not enough to disqualify them as mothers. A well-established cultural model for their situation is the single parent families resulting from divorce or death of one of the parents. This is readily extended to cover single women who decide to have children on their own. Moreover, both men and women are conventionally expected to love and care for children, and typically they do. That applies whether they are single or married, homosexual or heterosexual. Thus the parenthood of single individuals (usually but not always women) and homosexual couples (usually but not always lesbian) who raise the children is not in question.

As the biological and rearing functions of parenthood become increasingly separated, the question arises as to which is the more important qualifier for being a parent. Comparison between same-sex couples and posthumous conception constitutes an interesting test of this. In both of these situations technology divides the traditionally unitary status of parenthood into biological and social parts. For same-sex partners who have no biological tie with a child, only the rearing part is realized. It is the reverse with posthumous conception, where the biological tie is present but there can be no possibility of rearing the child. Although I am aware of no research that specifically investigates this question, my sense is that the status of “parent” is more likely to be extended to nonbiologically related members of lesbian or gay couples than it is to genitors in posthumous conception.<sup>7</sup> To be sure, an individual who would have reared the child had



he not died during the nine months before birth, or she in childbirth, are readily called “father” and “mother.” But these terms would apply with much less force if the frozen gametes of either or both of them were joined after they had died.

The conclusion to be drawn from this thought experiment is that rearing has become a more important criterion of parenthood than biology. Remember, in that regard, the twiblings discussed in chapter 3. Melanie Thernstrom, who has no biological relationship to them, but who arranged for their birth and is raising them, reserves the term “mother” for herself. She refers to the two surrogates as “auntie,” and places the less engaged egg donor in the mythical status of “fairy goddonor.” That Luanne Buzzanca was judged to be Jaycee’s legal mother solely because of her intention to rear the child, to whom she had biological connection, is another case in point.

A long-standing precedent for the priority of rearing over biology is found in adoption, where the legal parents are the adoptive and rearing parents. I have repeatedly claimed that, when technology extends the realm of human control, culture increasingly predominates over the processes of nature. Child rearing is cultural, a matter of choice or intention, while the biological tie is natural. The preeminence of rearing over biology for determining the status of “parent,” seen initially in adoption and later in situations enabled by reproductive technologies, is a case in point.

Beyond its significance for the definition of parenthood, post-mortem conception also questions an even more fundamental issue: the line between the living and the dead. Everything having to do with conception and birth has traditionally been firmly bound to life. Embryos are living things, conceived by a living man and a living woman with, if all goes well, the destiny to be born from the living woman and raised by that living couple.<sup>8</sup> Now, freezing technologies that maintain the viability of gametes and embryos indefinitely have rendered immaterial what happens to the man or woman after their gametes have been extracted or the eggs fertilized. The sperm and eggs that join to produce a new life may come from men and women who never knew each other, and who might be long dead. In this way, technology excises the requirement of being alive from the category of parenthood, which is to say, it enables the dead to intrude into the traditional realm of the living.

In contrast, medical technologies that stave off death thrust the living into the realm of the dead. Before life-sustaining technologies a living person was understood, at a minimum, to breathe, to have a heartbeat, and some degree of consciousness and ability to

communicate. In the wake of these technologies that package has been broken into separate parts. Machines and artificial procedures replace natural means of eating and maintaining breathing and heartbeat, thus excising consciousness and communication from the category of life. By preventing people from definitively leaving the realm of the living, life-support technologies place them in the liminal state of partly living: neither fully living nor completely dead. The question becomes whether the part that is maintained is sufficient to represent the whole, to qualify as “life.”

It is not that everyone is hopelessly perplexed by the situation. Many, probably most, people have firm opinions on the matter. Some adamantly contend that life is defined exclusively by cardiopulmonary functions, even if they are perpetuated by a machine and all evidence of brain activity is absent. Others insist that the part of life defined by breathing and heartbeat is not enough, that to be alive means they must be complemented by consciousness and the capacity to communicate. The cultural significance of these technologies is not that they have confused the boundary between life and death in everyone’s mind. It is rather that they have undone the consensus regarding that boundary. No less momentous than the geological collisions of tectonic plates, today competing definitions of life and death collide, creating cultural turmoil such as the law suits and extensive delays that swirled around the final demise of Terri Schiavo.

The core issue in all of the situations we have been considering is whether existing culture provides some apparatus in terms of which people can conceptualize the new, technologically enabled circumstances. Usually the new situation is some mutation of a more familiar one, and the question becomes whether that is sufficient to stand for the original. Sometimes the answer is an unequivocal yes, as when an infertile man who has agreed with his wife to use donor insemination definitely qualifies as the father of the resulting children. Other situations generate sharp disagreements, such as whether an individual is truly alive when there no brain activity and physiological functions are maintained by machines. This results from different interpretations of the conventional definition of life. Still other cases, however, arouse genuine perplexity because traditional culture provides no way of thinking about them at all. So it is with frozen embryos, post-mortem conception, and the wrongful life suits that may result from bungled prenatal testing.

One perspective from which the condition of frozen embryos is not at all perplexing is that which holds that human life begins at conception. Any embryo—frozen or fresh, in the womb or outside it—is

fully a human being. To discard it (better, him or her) or to donate it to research is, no less than the abortions that people of this opinion so adamantly oppose, murder. If the genetic mother is not in a position to implant it, the embryo should be made available to another family to carry, bear, and raise. As with any child, embryonic or already born, that process is properly called adoption. While this perspective has the advantage of simplicity and clarity, it is also archaic, ignoring the multiple new possibilities and nuances that ARTs have introduced into the process of having babies.

Turning to those who do not consider embryos to be full-fledged human beings, at first blush the condition of frozen embryos seems similar to that of people on life-support machines: they are in a liminal state. But as soon as one tries to define the states between which they are suspended, it becomes clear that frozen embryos are not in limbo between life and death, as are people on life support. The pertinent threshold for embryos is not death, but birth. Not having been born, they have never been fully alive. For the same reason, should they be discarded, they do not exactly die. They are suspended not so much between life and death as between existence and nonexistence. This is an entirely different matter, and our culture offers no pattern or template for coming to terms with it. This, I suggest, is why people are in such a paralytic quandary about what to do with the embryos left over from IVF procedures that languish in frozen storage. Lacking any generally accepted model for even understanding what the embryos are or the condition they are in, no option other than implanting them in the hope of pregnancy makes any sense. No longer interested in that one meaningful action, they are unable to deal with the issue. They avoid thinking about it. They do nothing.

The inability to deal with suits for wrongful life is as powerful as the paralysis occasioned by excess frozen embryos, and it can be explained in largely the same way. When a plaintiff claims to have been injured by being born, that it would be better not to have been born, the mind boggles. It requires comparing the plaintiff's existence with nonexistence, and no guidelines are available for doing that. This can be especially disturbing in a lawsuit, because once it is accepted for hearing the court is obliged to come to a determination. The courts, like everyone else, have no model for drawing the required comparison, and so they too, like people with frozen embryos, do nothing. They refuse to entertain the suit.

Life-support systems, sperm extraction from dead or brain-dead men, frozen embryos, and suits for wrongful life represent the most extreme challenges that recent technology has posed for conventional

understandings. They cause the concepts of birth, life and death, existence and nonexistence to grate against each other in ways that confuse and shake the architecture of those concepts themselves. Having never been born, frozen embryos are neither human nor not human. Plaintiffs in wrongful life suits do not claim that they would be better-off dead. They claim that they should never have been born, which is very much not the same thing. People in vegetative states are neither living nor dead. No longer being exactly alive, when the plug is pulled they do not exactly die. They have done that, or most of that, already.

Oedipus, horror-struck upon learning that he had unknowingly killed his father and had married and produced children with his mother, cursed the confusion of categories that produced his intolerable position:

The marriage rites  
 That gave me birth, and then, commingling all,  
 In horrible confusion, showed in one  
 A father, brother, son, all kindreds mixed  
 Mother, and wife, and daughter, hateful names,  
 All foulest deeds that men have ever done.<sup>9</sup>

Although responses tend to be less dramatic than that taken by Oedipus, the chaos of categories discussed in these last four chapters is even more momentous. Far from an individual blinded to his fated violation of rules that remained intact, here the rules themselves have become confused and commingled. Some of the new circumstances have been assimilated with relative ease, but the cultural turmoil created by others is far from subsiding.

## Chapter 6

### Time and Identity

In 1556 a man appeared in the southwestern French village of Artigat claiming to be Martin Guerre, a villager who had abruptly disappeared eight years earlier. Despite some doubts, among them the village cobbler's curiosity about his shoe size being smaller than it was eight years ago, his physical resemblance to Martin, and his ability to give detailed accounts of his life and events in the village prior to his disappearance persuaded residents, including his wife, four sisters, and uncle, that this was indeed Martin Guerre. He lived for three years with his wife and a son who had been born before his disappearance, and they had two more children together. As dramatized in the well-known 1982 film *Le retour de Martin Guerre* and the 1983 book *The Return of Martin Guerre* by historian Natalie Zemon Davis, an inheritance dispute with his uncle led the latter to claim that he was an imposter. During the course of the legal actions that followed another man appeared claiming to be the real Martin Guerre. Although he was more vague about details of his earlier life than the accused man, when they were presented together to the uncle, wife, and four sisters, they agreed that the newcomer was the authentic Martin Guerre. The imposter was convicted of adultery and fraud, and was hanged.

Martin Guerre's identity was confirmed by those who had known him previously by means of physical resemblance and the ability to remember details about his earlier life. And, if this case was typical, the latter criterion carried less weight than the former. Verifying the identity of strangers was also important, for example, to certify that an individual bringing an important message was the authentic courier. That might be done on the basis of physical appearance—such as a distinctive scar, birthmark, or bodily deformity—or by means of a password or other private token.

Today technology provides a dizzying array of methods for identifying who people are: computer passwords, hand geometry, iris scanning, fingerprints, DNA, and so on. All of them, however, are still grounded in the centuries-old criteria already mentioned: bodily attributes, passwords, and possession of privileged knowledge from the past (such as mother's maiden name, name of first pet, or other information stored against the possibility of forgetting passwords for Internet sites).

Bodily attributes remain the most common in ordinary social interaction, as when people routinely recognize each other by what they look like and describe persons in terms of their height, weight, skin and hair color, and other physical characteristics. Photography makes it possible to use these criteria to verify the identity of persons one does not know personally, as when an immigration agent compares one's face with the photograph in a passport, or the photo ID now required in many states to be allowed to vote.

More recently facial recognition has been automated with computer software that links images caught on camera with those stored in a database. Results here have not been encouraging, however. Attendees at the 2001 Super Bowl were scanned by camera with the hope of identifying criminals, but with no success. Also in 2001 Tampa police placed cameras in various places around town and used facial recognition software to compare passersby with a database of 33 thousand known fugitives, sexual predators, and runaways. After two years with no matches, they abandoned the project (Feldman 2002–2003:659). Facial recognition software has improved considerably since that time, but it is interesting to note that this oldest and most common means of identifying people is the least effective technology among those in use today (*National Biometrics Challenge* 2011:12, 37).

Personal recognition technologies are used for two purposes. *Verification* certifies that a person is who he or she claims to be on the basis of a comparison with information on record from that individual. *Identification* involves comparing information from an unknown individual with information stored in a database with the aim of finding a match and thus determining who the unknown individual is. Passwords are a common means of verification that restrict the use of computers, cash registers, bank accounts, and Internet sites to persons authorized to use them. The obvious problems with passwords—the security risk if one uses the same password for everything and the difficulty of remembering them if one uses a variety of different passwords—lead to the conclusion that it would be more convenient to use unique characteristics of one's body as a password (Froomkin 2000:1494).

Efficient verification on the basis of bodily characteristics requires that the procedure be minimally intrusive and rapid. The most common method is to scan fingerprints. Disney World does this to prevent people from sharing or reselling their admission passes, and Lionclock Software is developing a time clock activated by fingerprint to track times employees sign in and out.<sup>1</sup> Hand geometry is also widely used, with commercial applications available since 1986. The hand is scanned and subjected to some 90 measurements such as distance between knuckles, finger length, and thickness. It is highly efficient because data are stored in just nine bytes of data, which is extremely low compared with other biometric techniques. Hand geometry is not suitable for identification but is an effective verification technique. It was used to control access to the Olympic Village in 1996.<sup>2</sup> Iris scanning is a highly accurate verification technique that recognizes the random patterns in the iris that are unique to each individual. Among its uses is speeding security operations in airports such as Amsterdam's Schiphol and Dallas/Fort Worth.<sup>3</sup> South Korean and Japanese banks verify their clients by scanning the pattern of veins on the back of their hands, and India is exploring a range of biometric technologies in a nation where many citizens have no means to prove their identity (*National Biometrics Challenge* 2011:24).

Identification, which involves matching a sample with a large database to identify or learn more about an individual, is more complicated than verification. Other than DNA, to be discussed at length below, the most effective method in current use is fingerprints. This technique, of course, has been in use for a long time. It was introduced in the criminal context in 1903 at the federal prison in Leavenworth, Kansas, when a new inmate named Will West arrived. He had the same name and physically resembled an inmate already there, so prison officials hit on the idea of telling them apart by their fingerprints (Bernasconi 2001:1005).

Today the federal government's Integrated Automatic Fingerprint Identification System stores information for about 62 million individuals and identifies about 30 thousand fugitives each month (*National Biometrics Challenge* 2011:5). Among its impressive results, on March 30, 2009, the system

received an electronic fingerprint submission from the Columbus [Georgia] Police Department for an individual arrested for willful obstruction of a law enforcement officer and a family violation. The fingerprints were processed on IAFIS, and, with 56 seconds, the individual was identified as wanted by the FBI in San Francisco since June

9, 2006. The individual had a criminal history in California, Texas and Georgia. The history included previous arrests for false identification to peace officers, two counts of unlawful sex with a minor older than three years, oral copulation with a minor older than 10 years, receiving stolen property, revoked probation, criminal intent to terrorize, two counts of driving on a suspended license, failure to appear, domestic violence, battery on a spouse, child stealing, exhibiting a firearm, carrying a concealed weapon in a vehicle, felony possession of a firearm, purchase and sale of a narcotic substance, and parole violation. The individual used a false name at the time of arrest. (29)

Although fingerprinting has been widely accepted as highly accurate, in actuality the examiners are governed by few defined standards, procedures are lacking to assess their expertise, and they “refuse (and indeed are forbidden by professional norms) to discuss probabilities and population statistics, instead hiding behind rather dubious assertions of absolute certainty” (Cheng 2005:653).<sup>4</sup> One such assertion occurred in 2004 when three experts declared that a fingerprint found on a bag associated with the train bombing in Madrid was an absolutely certain “bingo match” with Oregon attorney Brandon Mayfield. A convert to Islam who had defended a member of the Taliban in a child custody case, he was jailed for two weeks as a material witness in a terrorism investigation. Then Spanish police determined that the fingerprint actually came from Algerian Ouhmane Daoud. Upon closer examination the fingerprint evidence against Mayfield was judged to be valueless. He was released, and the Justice Department made a formal apology and settled a lawsuit for \$2 million.<sup>5</sup>

In recent decades the distinction as the most reliable form of identification has passed to DNA analysis. Increasing knowledge of the structure and functioning of DNA has been touted as perhaps the most important development in science and technology of the second half of the twentieth century. It has located the source of many physical and mental traits, produced advances in the diagnosis and treatment of disease, enhanced understanding of human evolution and migrations, assisted in the identification of criminal suspects, brought about increases in crops and livestock, and the development of genetically modified foods. One example discussed in detail already, in chapter 4, is prenatal genetic testing and its implications for whether or not fetuses will be brought to term. Here I want to suggest that human DNA testing introduces perturbations in two fundamental cultural meanings. One is that DNA testing creates a new way of knowing the individual that is radically at odds with the conventional notion of identity. The other is that DNA technology bends



the concept of time. It highlights different concepts of past, present, and future at play in science and the law, and it forces a reassessment of what is meant by time in general. We begin with identity.

### **By Their Barcodes Ye Shall Know Them**

It will be recalled that “verification” refers to a means of confirming the identity of an individual by comparing his or her appearance, possession of a password, or biometric data such as fingerprints, iris pattern, hand geometry, or vascular pattern on the back of the hand with data stored from that particular individual. “Identification,” on the other hand, concerns comparing a biometric sample taken from an unknown individual with data stored in a database of thousands of persons in order to ascertain who that individual is. For DNA, the armed forces have planned to take samples from all personnel so their identity could be verified and their remains returned to their families should they be killed and other means of identification are not available (Leary 1992). At present, the time-consuming process that requires sending samples to specialized laboratories rules out its use for verification. That may change with machines currently under development that can analyze DNA on the spot and submit the results for rapid comparison (*National Biometrics Challenge* 2011:12–16). They would make it possible to use the DNA of individuals who have been stopped for a traffic violation or for some other reason to ascertain their actual identity and to check for outstanding warrants.

On the other hand, DNA analysis is the most powerful technology available for identification. Any vestige of an unknown person (saliva, blood, semen, hair, bone, flakes of skin, tissue of any sort), when analyzed for DNA, can be used to identify precisely who he or she is, or was.<sup>6</sup> One such use of DNA analysis has been to identify victims of large-scale disasters such as the collapse of the World Trade Center on 9/11. DNA retrieved from some 15 thousand body parts recovered at the scene was used to identify the remains through comparison with DNA from toothbrushes, hairbrushes, or razors of the missing, or with DNA taken from their close relatives (Brenner and Weir 2003).

This is the most extreme example of a general property of technology discussed repeatedly in this book: its tendency to deal with parts of persons rather than with the whole. Most extreme because DNA testing achieves identification on the basis of information that is microscopic and completely meaningless from the perspective of ordinary life. The DNA markers used to determine identity are hidden from public view, and they provide no information about an

individual's appearance, history, personality, or any other characteristic conventionally used for description and identification. We shall see how in criminal investigations DNA serves as a placeholder until an individual as a whole, with a name, a body, a personality, a history, and all the rest of it, can be located. It is the same with body parts recovered after a disaster. Here too, before a match is established the identity of the victim is the bit of DNA and nothing else.

All this indicates that DNA establishes a new kind of identity that functions alongside the conventional notion of identity. That is, we now have two identities that are radically different. The new one enjoys a high degree of scientific precision but it is devoid of all meanings that we normally associate with knowing someone. It is similar in this regard to the anonymous sperm donor as the empty center of a donor sibling family, as was discussed in chapter 3. Just how DNA identity is emptied of conventional meanings becomes clearer from a consideration of how it is used to pursue otherwise unknown criminal suspects.

### **Criminal Investigations**

In 2000 a warrant was issued in Sacramento, California, for the arrest of rape suspect "John Doe." DNA evidence gathered at the crime scene indicated that John Doe was an "unknown male with Short Tandem Repeat (STR) Deoxyribonucleic Acid (DNA) Profile at the following Genetic Locations, using the Cofiler and Profiler Plus Polymerase Chain Reaction (PCR) amplification kits: D3S1358 (15, 15), D16S539 (9, 10), TH01 (7, 7), TPOX (6, 9), CSF1PO (10, 11), D7S820 (8, 11), vWa (18, 19), FGA (22, 24), D8S1179 (12, 15), D21S11 (28, 28), D18S51 (20, 20), D5S818 (8, 13), D13S317 (10, 11), with said Genetic Profile being unique, occurring in approximately 1 in 21 sextillion of the Caucasian population, 1 in 650 quadrillion of the African American population, 1 in 420 sextillion of the Hispanic population" (*People v. Robinson*, 47 Cal.4th 1104, 1115). DNA identification of this sort is based on evidence found at a crime scene. It is highly accurate, but there is an inevitable lag between the time of the actual crime and the collection of the DNA evidence, followed by an additional delay while the laboratory analysis is conducted and a match with DNA profiles in the national database is sought. DNA evidence obviously represents only part of the suspect, which is compared with samples of DNA of known individuals with the hope of achieving a match, and therefore a full identification. At first blush this does not appear greatly different from traditional methods. The information gathered from eyewitnesses is also limited to parts of the suspect—ethnicity, height, build,

hair color, clothing, and so on—which are compared with information from other individuals to narrow the field. Ultimately a single, named individual may be identified, perhaps by an eyewitness’s selection from a police lineup or book of mug shots.

Upon reflection, however, DNA identification differs from traditional methods in at least three ways that have great significance for the conventional cultural concept of personal identity. First, the parts that are used in the initial step in the traditional method of identification, such as coloring, height, and build, are all publicly visible and their use is not limited to criminal investigations. In everyday descriptions bodily features are joined with information about an individual’s personality, likes and dislikes, personal history, and relationships to say who a person is. DNA identification is totally different. It relies on characteristics that are anything but publicly visible. They can be ascertained only by means of complex laboratory procedures, apart from which people don’t know who has them. Indeed, people don’t have any idea of their own alleles at these genetic locations. They play no part in our conventional listing of the traits in terms of which we describe personal identities, be it of others or of ourselves.

Second, the characteristics traditionally used to describe a suspect are not very reliable. Eyewitnesses are often mistaken about the person’s build, coloring, age, and erroneous identifications are not uncommon from lineups, mug shots, or pointing out the defendant during trial. As for fingerprinting, as late as 2001 it was claimed that fingerprint evidence is more conclusive than DNA (Bernasconi 2001:984 [note 27], 1008–1010), but certainly no one would say that today. All other forms of evidence pale in comparison with the certainty of DNA identification, which has become so sanctified in the public mind that it has been termed “the finger of God” (Delisle 2009:1298). Procedures for DNA testing have gained a reputation for such objectivity and infallibility that a 5–4 US Supreme Court decision in 2012 held that the right of defendants to face their accusers does not extend to the technicians who conduct DNA analysis (Savage 2012). If a subsequent test reveals that the DNA of a person convicted of a crime does not match the sample collected at the crime scene, that is enough for exoneration and release from prison. As for the opposite scenario, although additional evidence is usually required, in some sexual assault cases it has been held that DNA evidence alone is sufficient for conviction (Lester 2010:270).<sup>7</sup>

Third, the traditional specifications of a suspect’s characteristics are very general. Law enforcement does not issue an arrest warrant for a blue-eyed Caucasian male about 30 years of age, weighing about

180 pounds, and about six feet tall. That is obviously unworkable, for it would mean arresting thousands of suspects. DNA evidence, on the other hand, is extremely precise, a typical genetic profile being possessed by only one person on the planet.

These differences importantly restructure cultural assumptions about criminal investigations and evidence. What used to be a complex and creative process of reconstructing the particular circumstances of a crime, divining the motives and modes of operation of criminals, sorting through the complex interpersonal relations of those involved, getting usable information from witnesses who might be partially or wholly unreliable is now eclipsed and close to being replaced by the quest for DNA left at the crime scene. If it is found and matched with that of a known person, that dominates the prosecution and is close to being all the evidence needed for a conviction. All this may be bad news for criminals, but it can also haunt prosecutors. The popularization of forensic science—the “CSI effect”—encourages defense attorneys to attack prosecutions by asking where the DNA evidence is, and juries are sometimes reluctant to convict without it (Ty Kaufman, personal communication).

All three of the differences listed above, and especially the first one regarding the decidedly nonpublic nature of DNA identification, diverge immensely from our traditional concept of personal identity, of the self. In ordinary life I am still known as a white man about 5'10" tall, married with three children, who teaches anthropology, who did his doctoral research in French Polynesia, who belongs to various organizations, who champions certain causes, and so on. None of that has any significance from the perspective of DNA identification. DNA signals a difference—enough of a difference to distinguish each of us from every other human—but nevertheless a difference that makes no difference for the kind of persons we are. Known by our DNA, we are empty tags, each marked by a barcode with no meaning beyond the fact that it is different from everyone else's barcode.

The emptiness of DNA identification is magnified by the fact that chromosomal locations used consist of “junk” or noncoding DNA. As much as 98 percent of the human genome does not code for proteins. While this DNA does vary among individuals, it has no effect on a person's physical or mental makeup. This makes it possible to develop unique genetic profiles while not invading privacy regarding phenotypical matters such as ethnicity, proneness to disease, and other genetically linked characteristics (Kaye 2007).

Things may not remain that way, however. As genetic science advances it may be discovered that regions of DNA now thought to

have no function for encoding proteins do in fact have important roles to play.<sup>8</sup> Or policies may shift toward including chromosomal locations that are pertinent to people's phenotypical makeup in the databases used for John Doe warrants. This would not be difficult to do technically, because all states except Wisconsin allow retaining actual physical samples, which contain the individual's entire genetic code (Murphy 2008:1329). If DNA that codes for physical and mental characteristics were recorded, large databases would include sensitive information about millions of individuals. This possibility occasions a great deal of speculation about possible consequences, such as the potential for discrimination against people in employment, insurance, and other important matters (Shelton 2009:358–360). If a genetic basis for criminal behavior were discovered, miscreants might argue that their responsibility is diminished or absent because they cannot control what their genes force them to do (Shelton 2009:360, Lewis 2005:541–546).

### **The Healthy Ill**

DNA tests are also used to identify genes for which the function is known. These are screens for genetic diseases and disorders, performed either prenatally or with living persons. Far from the empty identity that comes from DNA analysis for law enforcement purposes, these tests may reveal the presence of disorders that have a major impact on one's identity in the conventional sense. It may be a matter of higher or lower probabilities, as is the case with illnesses such as breast or colon cancer or Alzheimer's. Or it may be a certainty, as with prenatal tests that reveal Tay-Sachs disease or Down syndrome, or genetic tests of already living people for Huntington disease. This incurable condition attacks the brain, resulting in gradual loss of control over one's bodily movements and culminating in death. Symptoms do not appear until middle age. The cause is a dominant gene, meaning that children of a parent who suffers from the disease have a 50 percent chance of contracting it themselves. This leads to a great deal of anxiety on the part of such offspring, who face the choice of whether to be tested and thus know their fate.

When genetic tests reveal that someone is certain or likely to contract a certain disease at some future time, they inaugurate one into the category that Ruth Hubbard has termed the "healthy ill." That prospect may become the most important part of their identity. Others who are aware of the projected diagnosis may consider them as being sick already, and treat them as such by being especially solicitous of them, not relying on them, avoiding them, or dismissing

them as no longer relevant. The healthy ill may regard themselves in the same way, deciding not to marry and have children, retiring early, and abandoning aspirations (Hubbard 1993:1221–1222, see also Goldstein 1990:316). In this way genetic tests for microscopic agents have the capacity to change a person from someone characterized by certain physical and mental characteristics, who participates in certain social relationships, and who has certain future prospects, into someone with an entirely different identity. Indeed, if the tests are done prenatally and lead to abortion, they deny the fetus the possibility of becoming a person, of having any identity at all.

Genetic diseases confuse the notion of self in still another way. They are usually viewed like other diseases, such that one can “have” Huntington disease or sickle cell anemia just as one can “have” malaria or smallpox. This usage connotes that the disease is produced by outside microscopic agents and therefore is not part of the self. And yet the source of Huntington’s or sickle cell anemia is not some foreign bacteria or virus, but is part of one’s genetic makeup. They are not something one *has* but are part of what one *is* (Hubbard 1993:1210). People who do not have smallpox have not succumbed to an attack of the virus that causes it. This is entirely different from young carriers of the gene for Huntington’s who do not show symptoms. In their case it is because the debilitating effects of that gene have not affected them, *yet*. In the former case the individual is free of the causal agent; in the latter the causal agent is already present, is part of one’s genetic markup, but so far has remained latent. Thus one could say that an individual free of symptoms is now and always has been a victim of Huntington’s disease, something that could never be said of smallpox.

It is not news that people sometimes are at war with themselves, deny themselves, and hate themselves. But it is entirely different with genetic diseases, which are parts of oneself of which one is unaware or uncertain (as when, for example, breast cancer or Huntington’s disease runs in one’s family). And yet they threaten the self, debilitate the self, and even kill the self.<sup>9</sup> The difference is that these parts of the self act completely independently of one’s attitude and will. They injure or kill the self autonomously, regardless of whether one has a sense of self-loathing or thoughts of suicide.

DNA tests for medical diagnosis also challenge traditional ways of knowing the self. Originally one knew oneself primarily by introspection, which constituted an exclusive, privileged access to one’s own thoughts and feelings. Outsiders began to intrude on the self with developments such as psychoanalysis. Contemporary tests for intelligence, honesty, drug use, and vocational aptitude greatly extend

that tendency (see Hanson 1993). And now genetic and diagnostic medical tests, with their reputation as the gold standard of reliability, constitute a different kind of intrusion on self-knowledge and self-autonomy, for they provide undeniable information about one's present and future condition of which one was unaware.

In this regard, Ruth Hubbard draws attention to the degree to which people capitulate to results of medical tests that fly in the face of their apprehension of themselves. They affirm a diagnosis that they are sick even if they feel fine; they embrace a diagnosis that nothing is wrong even if they feel terrible (1993:1210). In assessing their own condition they rely more on technological information from external sources than on their own introspection. If this represents a form of alienation of oneself from oneself, even more radical is one's unique identity as provided by a string of noncoding DNA that will never manifest itself to oneself through symptoms or anything that can be introspected. It is not possible to imagine a form of knowledge of the self that is more alienated from the self than this.

The use of genetic tests for medical diagnosis is an outstanding example of the effect of the impersonal imperatives that Foucault called "Power/Knowledge" (1980). New knowledge opens the opportunity for the exercise of power in new areas. Power is to be understood here not just in the negative sense of coercing people to do things they do not wish to do, or preventing them from doing things they want to do. Knowledge is the ally of power in that knowledge identifies the proper way to behave. If a genetic test reveals, for example, an increased danger of breast or colon cancer, it is only reasonable to take whatever lifestyle precautions are available to forestall its onset. That is, people are induced willingly to behave in certain prescribed ways because scientific or other knowledge lends a sense of rectitude, even inevitability, to those ways of behaving. One behaves as power directs because it is in one's best interest to do so; it is nearly unthinkable to do anything else. And yet it represents a surrender of self-control. To believe I am sick when I feel fine, or that I am fine when I feel sick, and to act in terms of what I am told rather than what I feel, must be the proper course because the science and technology of medicine surely know more about my condition—about me—than I do.

### **DNA and the Bending of Time**

Human beings have always demonstrated a powerful—if vain—passion to know the future. Every culture has poured out its diviners, witches, soothsayers, Norns, seers, prophets, shamans, fortune tellers, and

purveyors of utopias and science fiction to foretell what will happen. Today it is DNA technology that reveals certain aspects of the future with some degree of probability or even with certainty. I am referring to DNA tests for the genetically inherited diseases discussed above, such as colon or breast cancer, Alzheimer's, and Huntington's disease. These tests disrupt the conventional sense of time by bringing the future into the present. In the ordinary way of thinking, action takes place in the present. Both the past and the future are separated from current events, the former because it is over and done with, the latter because it has yet to occur. To be sure, what people think and do is heavily influenced by the past and is undertaken with an eye to hopes and fears for the future, but their actual behavior is restricted to the present. For the healthy ill who organize their present activities in terms of the illness they are destined to suffer, the present has expanded to include the future. The reality in which they behave, view themselves, and are viewed by others is one in which they are sick now, the fact that the actual symptoms have yet to appear being beside the point.

Be it creating the category of the healthy ill among those already living or by using prenatal tests—as discussed at length in chapter 4—to gain information about fetuses who have not been (and may never be) born, these tests influence people to deal now, in the present, with what is likely to happen in the future. We have already encountered other technologies—life-support systems that stave off fully dying, freezing embryos to delay fully living—that also bend time. Although they are distinct media focused on a variety of different objectives, in McLuhanesque terms their common message is to complicate the previously straightforward division of time into past, present, and future.

DNA also bends time as it operates in the law. To appreciate the shift, it is necessary first to say something about the standard concept of time in the law. The glacial pace of the law is notorious, its wheels grinding “exceeding slow, but exceeding fine.” The latter part of this adage explains the former. Time, often a lot of time, is devoted to the careful investigation necessary to ensure that settlements are just. Nevertheless, the goal is to complete the process with all deliberate speed. Any matter that comes up for adjudication is by definition in an unsettled state, fraught with disagreement and uncertainty. The job of the courts is to impose a settlement as rapidly as thoroughness allows so that the litigants can reach closure and get on with the business of living (or, in capital punishment cases, not). Much effort is expended to ensure that the process is done fairly and with justice, but, given the messiness of human life, absolute precision is a vain dream.



Nevertheless, if closure is to be complete, legal settlements should be consistent and they should be final. Reliance on statutes and precedent is a means of maintaining consistency, and the doctrine of *res judicata*—the refusal to reconsider previous judgments—defends finality. This often holds even when it is demonstrated that a judgment was mistaken. For example, from 1984 to 1994 women received massive awards because silicone breast implants were thought to cause connective tissue disease, culminating in a \$4.2 billion class action settlement by Dow Corning in 1994. Research was incomplete, however, and ultimately, in 1996, a definitive conclusion was reached that silicone implants represent no large increase in connective tissue disease (Cheng 2003:316–317).<sup>10</sup> The settlement, however, was not reversed. In addition to being an example of *res judicata* this case reveals a reason for it, because undoing the settlement and demanding that the thousands of members of the class return the money is obviously unworkable. The findings of lower courts may be reversed by higher courts, but once the appeal process is exhausted, “what’s done,” as Lady Macbeth has it, “cannot be undone.”

Not, at least, until DNA evidence became a more prominent factor in legal actions. Today the past is no longer beyond reconsidering. The best example is the use of DNA to exonerate people convicted of crimes that they did not commit. Writing in 2008, Brandon Garret reported that “since 1989, 216 prisoners have been exonerated by post-conviction DNA testing, and thousands of others have been exonerated before trial” (Garrett 2008:1631). The story of Frank Lee Smith is representative, if in its particulars more tragic, of ones regularly reported in the newspapers. Smith was convicted and sentenced to death in 1986 for a rape-murder. His attorneys obtained a stay of execution in 1998 and pressed for DNA testing to prove his innocence. The state of Florida resisted until DNA implicated another man in a series of rapes and murders in the same area. Smith’s DNA was finally tested and proved not to be that found in association with the crime for which he had been convicted. Sadly, that conclusion was reached in 2000, after Smith, imprisoned for 14 years, had died of cancer on Florida’s death row. Partly in reaction to this case, in 2001 the Florida legislature passed a law entitling prisoners to request DNA testing and to receive relief if it proved them innocent (Garrett 2008:1631–1632).

Such cases demonstrate that the law’s finality—that past judgments cannot be changed—no longer holds across the board. Although many states put up serious obstacles to post-conviction DNA testing (Garrett 2008:1673–1683), a chink in the armor of *res judicata* has definitely appeared. DNA evidence has provided previously unknown

information about the past, and the exoneration revises a past event (the conviction) in the light of that information. This contrasts with our earlier consideration of how medical DNA tests provide previously unknown information about the future, and how one's present identity and behavior is revised in light of that.

DNA evidence used in criminal investigations also bends time by "tolling" the statute of limitations. Such statutes stipulate that prosecution must be terminated if it does not begin within a specified time after commission of the crime. To toll the statute of limitations is to set aside that deadline, giving the state more time to mount its case. DNA evidence identifies the suspect as a unique individual, but law enforcement is often not in a position to make an arrest because a match with a known individual has not been found. However, an arrest warrant for the DNA stands as a placeholder until the suspect can be identified as someone with a name, a history, an identity in the conventional sense. To issue an arrest warrant is considered the beginning of the prosecution, so it tolls the statute of limitations, allowing the investigation to remain active. As one example, in 2000 a warrant was issued in Wisconsin for the arrest of "John Doe 12," identified solely by a certain sequence of DNA from semen recovered from a kidnapping and sexual assault that had taken place some six years earlier. The warrant was issued because, in three days, the statute of limitations was set to expire and after that it would no longer be possible to prosecute the crime. No match turned up immediately, but two months later a match was found with the DNA of Bobby R. Dabney. His name was substituted for "John Doe 12" on the warrant, he was arrested, tried, convicted, and sentenced to three consecutive 40-year prison terms (*State v. Dabney*, 264 Wis.2d 843).

While no one would criticize the use of DNA evidence to exonerate the innocent, the reasons behind statutes of limitations may be threatened by DNA warrants for the arrest of otherwise unknown persons. Murder is not subject to statute of limitations, and complaints against tolling it for other violent crimes such as kidnapping and rape are rare (Ulmer 2001:1622). When it comes to less heinous crimes, however, a good deal of concern about using DNA warrants to get around the statute of limitations has been voiced. One issue is whether it violates the Fourth Amendment prohibition on warrants that are executed without probable cause and do not sufficiently specify the person to be seized (Hunter 2010:600–601). It is argued, however, that DNA found at the scene of a crime (say, from blood on a broken window pane in a robbery) does suggest a probable link between the possessor of the DNA and the perpetrator of the crime.

And because the DNA profile is touted as unique to a single person in all of humanity, the criterion of specificity is generally thought to be satisfied. Another question is whether the gravity of the crime justifies the expenditure of professional time and money to do DNA analysis. Thus, among the large variety of crimes and misdemeanors reported by Laura Bauer (2010) for which DNA arrest warrants have been issued is DNA extracted from a candy wrapper found at the scene of a robbery where the loss amounted to \$1.40.

Statutes of limitations in the United States were first enacted in 1790, for a period of two years. More time was granted to prosecutors when it was increased to three years in 1876 and then to five years in 1954 (Powell 2008:117). The most important justification for them is to enforce the right to a speedy trial as guaranteed by the Sixth Amendment. That is intended to enable the accused to mount a vigorous defense, as well as for the prosecution to present an accurate and credible case, both of which can be compromised as evidence deteriorates when witnesses die or move away or their memories dim as the crime recedes into the past. Another purpose of statutes of limitations is to avoid undoing the psychological and social healing that may come with the passage of time. This applies to perpetrators who have rehabilitated themselves and have gone on to live productive lives (Ulmer 2001:1613–1617, Bernasconi 2001:1034–1035), examples from literature being Victor Hugo's Jean Valjean, Thomas Hardy's mayor of Casterbridge, and several of O. Henry's characters. While statutes of limitations are far from perfect, Frank Ulmer suggests that they do serve reasonably well in striking a balance between the defendant's interest in a fair and speedy trial and the state's interest in bringing offenders to justice (2001:1624).

The healing benefits of statutes of limitations may apply to victims as well. DiFonzo suggests that even for a crime as serious as rape, prosecution years after the event may upset what closure the victim has managed to achieve by forcing her to relive a traumatic experience and making it known to family and friends whom she may never have told (DiFonzo 2004:1270–1276). On learning of an arrest in 2012 for a 1992 double rape in Kansas City, one victim was "excited to hear about the break in the 20-year-old case, but the other victim reacted with more hesitation because she hadn't told many people about the attack" (Vendel 2012b:A4).

Although not necessarily linked to DNA *per se*, a similar impact of technology on the operation of time in the law affects people who have been exposed to toxic industrial substances that may result in future illness. Statutes of limitations also apply to lawsuits such as those filed

in these circumstances. This can be a problem for would-be plaintiffs who can demonstrate exposure (which marks the moment when the statute of limitations starts running) but whose disease symptoms do not appear before its expiration (Stecker 2003:40). Some 80 percent of lawsuits for exposure to asbestos are filed in these circumstances. To avoid flooding the courts with lawsuits for which damages cannot be easily determined because the injury has not (yet) manifested itself, many courts have placed these claims in “inactive dockets.” This, like DNA arrest warrants for criminal suspects, has the effect of tolling the statute of limitations and delaying further action until the relevant facts come to light (Cheng 2003:342, Behrens and Parham 2001:7). Both inactive civil dockets and DNA arrest warrants have the effect of stopping time, but they do so for opposite reasons. Whereas the criminal warrants toll the statute of limitations in order to enable the future prosecution of persons known only by their DNA who may have done something in the past, inactive dockets toll it to enable known persons to bring actions for events that may occur in the future.

All these matters—inactive dockets, the uses of DNA evidence both to toll the statute of limitations, and to exonerate the innocent—represent an incursion of science into the law. Time operates differently in science than in the law. Science has nothing comparable to the law’s *res judicata*. While some scientific propositions are more established than others, nothing is ever irrevocably settled. All findings, regardless of how long they have prevailed, are subject to reinterpretation in the light of new data or theory. This means that, compared with the situation in the law, time is of relatively minor significance in science. Of course there is an interest in conducting scientific research in a timely fashion, and career considerations motivate scientists to be the first to publish significant findings. Especially when the stakes are high, this temptation may result in over-hasty announcements, as when Martin Fleishman and Stanley Pons declared in 1989 that they had discovered cold fusion. And yet, as the scientific community’s subsequent rejection of that claim demonstrates, science values verifiability more highly than time. When scientists are working on a given problem, how long it takes to reach a solution is less important than the reliability and productivity of the solution that is eventually proposed. And every scientific solution is always subject to revision.

The advent of DNA evidence and other technological innovations are moving the idea of time in the law toward the scientific concept. It is important in this context to remember a fundamental difference between the purposes of science and the law. Despite the fact that its

findings are always provisional, the goal of science is to approach a better understanding of permanent truths about the natural world. The law, for its part, is concerned with the behaviors and relationships among human beings. These are much less uniform and predictable than the subject matter of natural science. Human relations—the state of a marriage, the relationship between parent and child, the conduct of an extramarital affair, the waxing and waning of antagonisms, a crime spree—are highly variable and unstable. They begin, flourish (not necessarily in the positive sense of the term), and may end in relatively short periods.

The different purposes of science and the law have important implications for DNA evidence and statutes of limitations. DNA, as part of the natural world, is one form of evidence that does not deteriorate over time. Unlike the memories of witnesses, which belong to the human world, DNA is recorded in permanent form, and the physical samples can be preserved for later analysis. This is becoming an important tool in law enforcement. Between October and December 2012 in Kansas City alone, police made arrests for two rapes, one that occurred in 1983 and the other in 1992, on the basis of DNA matches that appeared decades after the crimes were committed (Vendel 2012a, 2012b). Florida officials have requested the exhumation of the bodies of Richard Hickock and Perry Smith, executed for the 1959 murder of the Clutter family near Holcomb, Kansas,<sup>11</sup> to determine if their remains contain a DNA match with semen found in the underwear of Christine Walker, who was raped and, together with her husband and two children, was murdered, also in 1959 (Hanna and Lush 2012). Cases such as these strengthen the argument that DNA should be used to toll statutes of limitations because it overcomes the problem of deteriorating evidence, which is one of those statutes' reason for being. The counterargument is that this puts too much reliance on DNA evidence. Assumptions about its infallibility feed a tendency to assume that if DNA evidence places an individual at the scene of a crime, he or she is automatically guilty of it. This is of course not necessarily the case, but as time passes the natural DNA evidence remains as firm as ever while exculpatory human evidence such as reliable testimony of eye witnesses becomes harder to obtain. Thus the right of the accused to a fair trial is compromised (Ulmer 2001:1622–1623, Bernasconi 2001:1013–1016).

The ideal situation is for the DNA collected at the scene of a crime to find an immediate match with the DNA record of a named individual in the FBI's Combined DNA Index System (CODIS). That individual is identified as the prime suspect, and an arrest warrant is

issued. The delay comes when, as in the case of Bobby R. Dabney, the collected DNA does not match any in the database. Then law enforcement must wait, sometimes for decades, hoping that some new entrant into the database will match the DNA they have placed on file.

If the past is considered to be over and done with, beyond revision, and the future is unknown and out of reach, the present is the period when effective action can occur. DNA technology puts time out of joint by bringing the supposedly immutable past and the previously unknowable future under the sway of the actionable present. DNA evidence makes it possible to revisit and revise the past by exonerating individuals who have been wrongly convicted of crimes. Medical tests import future events into the present by creating the category of healthy ill, people who are treated as diseased now although their symptoms have yet to appear. DNA arrest warrants and inactive dockets extend the actionable present into the future by erasing the boundary between them set by the statute of limitations.

These refractions of time are themselves time-dependent, for future developments may render some of them obsolete. The time lag between collecting DNA at a crime scene and matching it with some known individual may eventually disappear as the number of people with DNA on file increases. By 2008 CODIS, authorized by Congress in 1994 to store DNA profiles of convicted offenders throughout the country, held millions of profiles and was growing at the rate of 80 thousand individuals per month (Polanco 2005:483, Murphy 2008:1330). That rate is accelerating as criteria for inclusion in the database are loosened. CODIS includes DNA information collected by the states, seven of which required samples from all arrestees by 2008. The federal government takes samples from illegal immigrants, and Murphy worries that it may eventually be required of mentally ill individuals and others who, while not having been arrested for a crime, are considered to be “dangerous” (2008:1330). It does not stretch credibility to imagine a future when the DNA of everyone will, perhaps at birth, be recorded in a national or international database (Shelton 2009:358–360, Kaye, Smith, and Imwinkelried 2001–2002). A foretaste of this is the DNA dragnet implemented in Truro, Massachusetts, when police requested voluntary samples from every man in town in an effort to solve the stabbing murder of Christa Worthington (Iraola 2005:18–19).

Were a universal DNA database come into existence, the dislocations of past, present, and future occasioned by DNA evidence in criminal investigations would be put back in joint. There would be no need to delay the future by tolling the statute of limitations while

awaiting DNA matches for criminal suspects because identification would be instantaneous (Shelton 2009: 357–358). Present revisions of the past to exonerate falsely convicted individuals would be less frequent because false convictions in crimes where DNA evidence is available would become rare.

On the other hand, the importation of the future into the actionable present would be magnified if a universal database included coding DNA. In that event many more people known to be destined for probable or certain future genetic disease symptoms would be identified, and present actions concerning them would therefore increase. In addition to the healthy ill themselves, those interested in doing something about them now in the light of their future condition would include insurers, employers, physicians, potential spouses, children, and other family members.

The consequences of a universal DNA database for identity would be different. Conventional identity would continue to be used in everyday life, but the DNA identity would come increasingly into play if there were a reason to find out who left some DNA somewhere. In addition to criminal investigations, this would be pertinent to non-criminal issues of marital infidelity, the whereabouts of one's children, the behavior of employees or welfare recipients, and on and on. DNA in that regard would be used for similar purposes to the GPS and other tracking and identification technologies to be discussed in chapter 8.

## Conclusion

This chapter has explored the impact of genetic technologies on the cultural concepts of personal identity and time. These do not vary independently but are linked. Just what that linkage is becomes apparent when we consider the traditional relationship between personal identity and time, and then examine the changes brought about by DNA technologies.

The conventional version of personal identity develops over time. The newborn baby is not a complete *tabula rasa*, for it is born with physical and mental qualities that form parameters within which the person develops. Nevertheless, the individual's upbringing, education, familial and other social relationships, employment history, and a myriad of other experiences conspire throughout life to mold who that person is. All of those influences are happenings; they exist in time. Hence this concept of personal identity depends on the passage of time, and it changes over time.

Time, on the other hand, is immaterial to one's DNA identity. This is true of both the use of DNA for the diagnosis of impending disease in fetuses and living persons and its use in criminal investigations. Exemplifying technology's attention to parts rather than wholes, both of these excise large portions of the traditional concept of personal identity. They bypass an individual's mind, spirit, and social relationships as components of identity to focus exclusively on the body, indeed, only an infinitesimally small part of the body. Genetic diagnosis identifies the markers that reduce the person to a specific disease or disorder: a case of Down syndrome, cystic fibrosis, Huntington's disease, or whatever. As we have discussed, genetic testing for disease that has yet to manifest its symptoms distorts time by bringing elements of the future into the present. It also may have a decisive impact on personal identity because the anticipated disease symptoms affect people's own and others' image of themselves and may significantly transform the way they live their lives or, in the case of prenatal testing as a reason for possible abortion, if they even have a life to live.

The situation is quite different when DNA is used in criminal investigations. This represents a radical reduction of the self to a tag like a barcode, setting each individual apart from every other but in a way that is devoid of all content that bears any relation to the traditional notion of the person. With the self whittled down to a meaningless serial number, time as a context within which personal identity can develop loses its relevance. To be sure, the body exists in time. It is born, grows, changes, deteriorates, and dies in time. But, between the brackets of conception and decomposition, DNA is not time-dependent. One is born with a certain genome already established and retains it unchanged for one's entire life.

A few practical applications of time remain. For the healthy ill there is the question of when symptoms will appear. Or, if the diagnosis is made from a prenatal test and abortion is a possibility, or if the diagnosed condition is probable rather than certain, the question becomes if the symptoms will appear at all. For DNA identification some time may elapse before a match is found. This, however, concerns how DNA information is used. In terms of what DNA identity *is*, apart from how it is used, it expunges time altogether. The passage of time is not pertinent to personal identity as a certain pattern of DNA because an individual's genetic makeup does not develop. It is always already there.



## Chapter 7

# Thinking in a New Key

In the last few decades technology has brought about a radical transformation in what it is to think. If we define thinking as the processing of information by intelligence of some sort, thinking was originally the monopoly of living beings. Inanimate objects such as stones or the wind do not think, but by this definition animals and even plants do. A predator processes information received through its senses about the proximity of prey to adjust its behavior in the direction of capturing it. A Venus flytrap snaps shut upon receiving information from the hairs on its leaves that something has disturbed them. Human thought, of course, is infinitely richer in content and more complex in operation than the thinking of any other being.

That is, until recently. Human beings have surrendered their sole hold on complex thinking with the advent of artificial intelligence. Some early murmurs of this were heard from devices such as the abacus and the adding machine, but artificial intelligence received its most massive boost in the last few decades with the development and widespread use of computers. This has transformed and expedited global communication and the management of large quantities of information to such a degree that even people like myself, who lived large portions of their lives in times before computers became ubiquitous, wonder how we ever got along without them.

Information processing consists of assembling information and then analyzing or otherwise manipulating it. In the pre-automated era both of these activities were undertaken by human intelligence. Artificial intelligence now supplements or replaces human intelligence in many applications of thinking. Consider investigating an issue by means of a keyword search on the Internet or in some other electronic database. Here the assembly of relevant information becomes the task of artificial intelligence, while its analysis remains

the province of human intelligence. I aim to establish that association with artificial intelligence represents not only a change in the overall thinking process, but also a transformation in the workings of human intelligence itself. More than any other topic discussed in this book, this technologically induced transformation brings about tectonic shifts in cultural understandings about the human condition and the nature of reality. The argument turns on the distinction between classifying and indexing as different processes of thought, and how automation fosters a shift in the balance from the former to the latter.

### **Classifying**

To classify is to organize the particulars in a body of information according to some preexisting, meaningful scheme. This is the pre-eminent means conventionally used by human thinking to organize information. The body of information may be as small as the contents of a single article or as large as the entire corpus of recorded knowledge. The classificatory scheme involved may be as unique as the table of contents of a book or as general as the Dewey Decimal System for cataloging all materials in libraries. In all cases, the distinctive feature of classification is its assumption that meaningful relationships exist among the components of the body of information being classified: that some of them are more general than others, that they share certain characteristics, that they are ordered in a particular logical sequence, or are related in other ways.

It is difficult to overemphasize the importance of classifying, as the distinctive human mode of thinking, in making sense of the world. Classification underpins the social order. Society as a whole is organized by categories and subcategories, such as the medieval triune division of society into the clergy (responsible for maintaining the right relationship with God), the nobility (responsible for protection against enemies), and the peasantry (responsible for providing food). Contemporary global organization is based on division into nation-states, each with its territorial and class divisions and subdivisions. Institutions such as the Roman Catholic Church, the military, governments, and business enterprises all have their carefully plotted subdivisions (dioceses, regiments, departments) and their meticulously defined hierarchies of command. Universities organize themselves in accordance with the classification of knowledge into specialized professions such as law, medicine, engineering, together with the liberal arts and sciences. The latter are further divided into

the humanities, natural, and social sciences, the last of these are subdivided again into economics, political science, psychology, sociology, and anthropology, and further divisions exist within each of those.

Ordinary behavior is no less heavily governed by classificatory schemes. Patients go to allergists for conditions that fall in one category, to gynecologists for those falling in another. Jewelry is purchased in one store or department, shoes in another. One goes to a different kind of lawyer depending on whether one wants to draw up a will or needs criminal defense. One's wealth is measured by monetary schemes organized as pounds and pence or dollars and cents. Many classificatory schemes, such as those just referenced, are understood to be culturally variable constructions designed to facilitate activities and interactions of various sorts in one society or another. Others are thought by those who subscribe to them to reflect the natural or divine order of things, as with the taxonomic organization of biological species, the Great Chain of Being's hierarchical assignment of various animals, humans, angels, and God in their proper positions, or the ancient Chinese classification of seasons of the year, organs of the body, flavors, emotions, colors, directions, and much else in an integrated system of five categories (Veith 1996).

Classifications provide a sense of order, stability, intelligibility, and predictability in life. As Robert Browning put it in "Pippa Passes,"

Morning's at seven;  
 The hill-side's dew-pearl'd;  
 The lark's on the wing;  
 The snail's on the thorn;  
 God's in His heaven—  
 All's right with the world!

Actually, however, all's not right with the world, and an important reason for that is found in classifications themselves. The certainty built into many classificatory schemes means that when people encounter ways of thinking and behaving that do not fit with their own, a typical reaction is to assume that the alien ways are at best misguided, and at worst heretical and evil. Examples are *laissez-faire* capitalism versus communism, fundamentalist versions of Christianity, Judaism and Islam aligned against each other, or all of them drawn up together against science. A different mode of thinking introduced by artificial intelligence lessens this threat although, as we shall see, it brings new problems of its own.

## Indexing

Artificial intelligence stimulates a departure from classifying. When used to manage information, it diminishes the role of classifying in favor of a distinct mode of thinking that we will call indexing. Indexing is a finding technique that uses a symbol for a topic (often in the form of a word or number) to locate whatever material is pertinent to that topic in a body of information stored in human memory, in print, or electronically. The point is not to organize that information according to some preexisting scheme, as classifying does. Instead, the topic in question is selected by users to suit their present need. Readers of a book, for example, may not be interested in the specific way the author presents the material but still anticipate that something in the work may be useful to them. In that event they decline to read the full text, consulting instead only those pages that the index indicates tally with their interests. This has important implications for the meaning of the text. Such a reader may remain oblivious to the meaning the author intended to convey by writing it. On the other hand, the text (better, selected parts of it) may hold meaning for the reader quite apart from what the author intended. It is of course nothing new for readers to miss the author's point, or to detect meanings in a text that the author did not mean to put there. But that is more likely to occur when the reader accesses the text by means of an index than when following the author's argument from start to finish.

This applies with special force to digitized information because indexing in the form of automated keyword searching is more powerful than any print index. Let me explain with an example. Some years ago I wanted to use, as the epigraph for a chapter I was writing on vocational interest testing, a passage by Mark Twain: "A round man cannot be expected to fit a square hole right away. He must have time to modify his shape." My source indicated that the passage occurred in Twain's book *Following the Equator*, but I needed to verify it. I went to the library and pulled the thick volume off the shelf. Unfortunately it had no index (even if it had, I'm not sure how useful it would have been for my particular purpose), so I began scanning each page. After nearly an hour of eye-breaking tedium, I finally found it. Had the full text of that book been available in electronic form, I could have conducted a keyword search for, say, "round man," and I would have found the passage in a matter of seconds.<sup>1</sup> Essentially what I was doing by scanning the pages, and also what I would have been doing in the keyword search, was constructing an index for the book. A

strange kind of index perhaps, having but a single entry, but an index nonetheless.

The point of this little story is that artificial intelligence is better at indexing than human intelligence, be it the laborious searching I did in this case or a print index found at the back of a book or in a library catalog. It is fast: Contemporary search engines search millions of documents in less than a second. It is general: Most printed documents lack indexes, but any digitized text or database is subject to electronic searching. And it is customized. Everyone has had the frustrating experience of finding print indexes too general and/or being unable to divine what terms the indexer selected for the topic of one's interest. With automation users create their own ad hoc indexes with topics of their own choosing by entering keywords tailored to their particular interests (Harrington 1984–1985:546, Bowker and Star 1999:292, Bolter 1991:22, Richmond 1965:5). This transforms the index from one-size-fits-all to a more powerful, highly customized tool for information retrieval.

The equally important counterpoint is that artificial intelligence is inferior to human intelligence when it comes to classifying. Any classification, be it a hierarchical taxonomy or any of vast number of other criteria for lumping some categories together and splitting them from others, is a meaningful scheme. Human intelligence does this naturally, and is very good at it. But artificial intelligence cannot classify because the concept of “meaning” is entirely foreign to it. It can deal only with relations among particular, explicit symbols such as numbers, letters, fragments of words, words, groupings of words. It is not good at generalizing them into larger categories, and is at a total loss to deal with meaningful relationships, especially those couched in metaphor, satire, double entendre, or that depend on context or delicate nuances.<sup>2</sup> To reiterate the essential point, human intelligence excels at classifying and is mediocre at indexing, while artificial intelligence is superb at indexing and a dismal failure when it comes to classifying.

The difference between classifying and indexing is captured by Gilles Deleuze and Félix Guattari's distinction between arborescent (tree-like) and rhizomatic structures. A classification is arborescent, its most general category being the single trunk from which the more specific, derived categories branch out. Indexing, on the other hand, is rhizomatic. Examples of rhizomes are mushroom plants or networks. “Unlike trees or their roots, the rhizome connects any point to any other point, and its traits are not necessarily linked to traits of the same nature. . . . In contrast to centered (even polycentric) systems

with hierarchical modes of communication and preestablished paths, the rhizome is an acentered, nonhierarchical, nonsignifying system without a General and without an organizing memory or central automaton, defined solely by a circulation of states" (Deleuze and Guattari 1987:21).

In nonautomated contexts the distinction between classifying and indexing is not particularly prominent because human intelligence conjoins the two functions comfortably, and in some cases almost imperceptibly. Indexes at the back of books, for example, often include both single topics such as personal names (which is indexing) and general entries with subtopics (which is classifying). The same can be said of much more complex classification schemes, such as the Dewey Decimal System when it is used to locate items in a library. These are classified indexes, or, if you will, classifications that also serve the function of finding devices.

The sliding, overlapping relation between classifying and indexing may also be glimpsed in the history of encyclopedias. The encyclopedic movement began in the late eighteenth century with the lofty goal of providing a systematic compilation of all knowledge. With the accent on "systematic," early encyclopedias were primarily classifications that organized knowledge into hierarchical schemes. In the twentieth century, however, encyclopedias began to concentrate on presenting easily accessible information on a large variety of particular topics, arranged in alphabetical order (Dolby 1979:167–168). That is, their primary function shifted from classifying to indexing.

As we have seen, artificial intelligence is very good at indexing and very poor at classifying. Therefore, when artificial intelligence joins with human intelligence in thinking, indexing becomes more distinct and prominent because that is the unique contribution that artificial intelligence makes to the thinking process. Its main function is to assemble a greater quantity and variety of information than human intelligence ever could, which is then presented to human intelligence for evaluation and analysis. The fact that artificial intelligence assembles the information by means of indexing rather than classifying means that preconceived classificatory categories do not govern the information that is presented for analysis. Human intelligence is still likely to frame its interpretation of the data in terms of categories, because that is what human intelligence does best. However, because the data to be interpreted have been assembled without regard to any classification, human intelligence has more latitude to choose among different categories, or to invent new ones. In that way, preestablished categories become less influential in governing how human

intelligence carries out its interpretations. This constitutes a shift from what may be termed the classificatory to the indexical worldview. Its consequences are far-reaching.

### **Classificatory and Indexical Worldviews**

Information assembled by indexing does not come in chunks that are prepackaged in accordance with conventional categories. It comes in response to a particular question that a user asks or a particular problem to be solved. If the classificatory worldview leads people to organize what they want to know in terms of what they assume is out there, the indexical worldview organizes what is out there in terms of what they want to know. Users have a greater opportunity and responsibility to make their own sense of information assembled by indexing because it comes in the form of a list, with no internal organization of its own. This is why, despite the anxiety of some, the growth of artificial intelligence does not threaten to restrict or replace human intelligence. On the contrary, it liberates human intelligence from the constraints of received categories to think more imaginatively as it deals with unanticipated connections and juxtapositions. It is similar in many respects to what happens when artists free themselves from standardized ways of looking and thinking.

How this works can be demonstrated by a practice that has become entirely simple and mundane: surfing the web. A few years ago, when I was first developing these ideas, I ran a couple of trial searches using the metasearch engine Vivisimo (ancestor to Clusty and the present Yippy). I selected search topics that I already knew quite a bit about, which would enable me to assess the results most effectively. Given my research experience in the Pacific, I chose “Tuamotus” (an archipelago of atolls in French Polynesia) and “Clifford Geertz” (a highly influential cultural anthropologist whose work I have long studied and admired). Metasearch engines return results in clusters of websites with something in common.<sup>3</sup> One small cluster that appeared in my search for Tuamotus was “Pitcairn Island.” That piqued my interest because Pitcairn, while near the Tuamotus, is not part of that archipelago. Opening the sites in that cluster, I was intrigued to learn of a legal case that had been going on since 1999 in which 13 men (out of a total population of 47) have been charged with sexual abuse and assault. Wondering how a society with a population of under 50 could persist (especially with virtually all of its adult males under indictment), and whether it was time for another anthropological study to be conducted there, I followed some of the hyperlinks to

view photographs of the island and its people and to learn a bit more about life there.

After a half hour or so of informative browsing, I decided I had better get on with my main task, and I left Pitcairn Island to conduct another search for Clifford Geertz. Among its 130 or so findings was a five-site cluster “ethnocentrism.” Most of the sites in it pertained to an article by Keith Windschuttle titled “The Ethnocentrism of Clifford Geertz,” published in *The New Criterion* in October 2002. Intrigued, because I had never thought of Geertz as a particularly ethnocentric fellow, I read the article on one of the sites that had its full text. It included a discussion of Geertz’s reaction to comments made by the eminent French anthropologist Claude Lévi-Strauss regarding the tendency of different cultural strains within diverse, contemporary societies to distinguish themselves and claim superiority over the others. This struck me as fitting very well with my own research interest regarding the divisive role of culture in contemporary society. Accordingly, I incorporated the Lévi-Strauss and Geertz essays in the book I was writing at the time (Hanson 2007:17) and also into a course I regularly teach on Culture Wars.

Finishing the article, I once again chastised myself for straying from my main task and focused my thoughts back to how using a tool such as Vivisimo affected the research process. Then, with a start, I realized that what I had been thinking of as diversions were exactly the effect I was interested in exploring. I had encountered items that were unpredictable: “Why Pitcairn? It’s not in the Tuamotus.” “Geertz ethnocentric? I don’t think so.” Not so unpredictable, however, as to be unintelligible: Pitcairn is located not far from the Tuamotus; Geertz is associated with ethnocentrism, although more by way of criticizing it than representing it. In other words, the degree of novelty in these findings was sufficiently high to pique my curiosity. When that provoked me to look further, I learned some new and interesting things (about the charges against Pitcairn Island men), and I found material relevant to me (Lévi-Strauss on cultural diversity) in a way entirely different from the original purpose of the search. These are cases of thinking “outside the box” about the topics, and that is what leads to new discoveries and insights.

The indexical worldview loosens commitment to particular, received sets of ideas and values characteristic of classificatory worldviews. Hence the indexical worldview is less prejudiced, more open-ended, and more conducive to open-mindedness, than the classificatory type.<sup>4</sup> People, less committed to a prior set of conclusions, become more aware of alternative perspectives and interpretations and



more open to their possible merits.<sup>5</sup> They are less prone to leap to the conclusion that ways of thinking and valuing other than their own are just plain wrong and may even be dangerous and evil. Obviously this has important beneficial implications for intercultural relations in a shrinking world. The absolutist tendencies of the classificatory worldview mark its greatest contrast with the indexical worldview, a contrast that generates tectonic clashes among cultural meanings and values.

### **The Cultural Impact of Indexing: The Law**

The range of practical effects of the indexical worldview may be brought out in a few concrete examples. One of these is a paradigm shift in American law. Prior to the mid-1970s legal research was conducted with a set of print resources, prominent among which were case records organized by the “key number” system. This system classified the points of law addressed in appellate level judicial opinions according to a scheme of over four hundred categories, each with its subcategories. This enabled attorneys to locate cases of interest to them from any time period and jurisdiction.<sup>6</sup>

The key number system had been introduced by the West Publishing Company toward the end of the nineteenth century to help attorneys cope with the “appalling glut” of rapidly accumulating published cases that they needed to consult (Gilmore 1977:59). By the early 1960s the continuing flood of published cases again became too much to handle, even for the key number system, and the Ohio State Bar Association formed a group to explore if computers could be enlisted to help. They learned of a program designed to help the Air Force keep track of its huge files of procurement contracts. It was modified to suit the needs of the law, leading to the birth of LEXIS in 1973. The West company quickly brought out its competitor, WESTLAW, and by the mid-1980s LEXIS and WESTLAW had placed case law, legal journals, and other resources online, where they became subject to powerful electronic keyword searching strategies (Harrington 1984–1985, 543, 547–554).

The impact of automation on legal research has been immense. Manual research using “the books” was made obsolete as it became possible to do in minutes what had previously required hours of tedious work. Hyperlinks allow attorneys searching for favorable precedent instantly to move from one opinion to another as they review cases similar to the one they are working on. Hyperlinked footnotes in online law review articles enable readers to go directly to other

relevant works as they build a knowledge base for their own work. Certainly the ease of following hyperlinks results in lawyers actually consulting more cited cases and publications than they would have done when it required finding the relevant volumes in the library. However, the impact of computerized legal research is greater than just doing the same kind of things as before, only faster and more thoroughly. The transformation in how information is located has important consequences for what that information means.

The law looks different depending how it is researched. Nonautomated techniques such as encyclopedias, treatises, and the key number system are classified indexes. Much as other encyclopedias and library cataloging systems, they organize the law in a hierarchical system of categories that also serve as devices for finding legal information. For those imbued with such research techniques, the classificatory scheme underlying them reveals what the structure of the law really is. A good example is legal positivism: the view that the law exists in its own right and is out there, waiting to be discovered (Berring 1986:29, 33; Hasnas 1995:87).

In contrast, lawyers who regularly use LEXIS and WESTLAW can design highly customized searches that pinpoint and juxtapose information in ways that would be impossible with the key number system or any other classified index. An attorney wanting to learn about cases involving a particular kind of factual situation would be able to search for them using LEXIS or WESTLAW more easily than in the print reference sources, which are organized according to legal principles rather than factual circumstances. Or the attorney might be interested what happens in cases where two or more points of law are simultaneously in play. Automated searching allows them to be found directly, while using the traditional tools would involve a more tedious process of separately noting down cases and articles that involve each of the relevant points and then manually comparing the resulting lists for overlaps. Legal research of any sort, be it in case law, regulatory law, or the academic literature, is being weaned away from the hierarchical categories embedded in the traditional research tools.

This is generally seen as an advantage. As John Henry Merryman prophetically wrote in 1977, "One of the most attractive features of the LEXIS system...is that it liberates the researcher from [preestablished] indexes and opens up an enormous range of possible avenues of access to the literature" (1977:426, see also Bowker and Star 1999:292). When asked what appealed to her about computerized legal research, Roberta Shaffer replied: "Being liberated. Having the

choice between looking at something using someone else's taxonomy... versus letting your own mind create the taxonomies. With the books, you don't have the freedom to think of it the way *you* think of it. You're constrained by how somebody else chose to present it" (quoted in Halvorson 2000:114–115).

This signals a basic change in the perception of legal knowledge and of the law itself. Despite its advantages, some think of it as a change for the worse. Lawyers are coming to think of the law as a collection of facts and principles that can be assembled, disassembled, and reassembled in a variety of ways for different purposes (Bintliff 1996:345–346, Berring 1986:42). This makes one less likely to imagine that the law is organized in an absolute, eternal way, that the law actually *has* an intrinsic, hierarchical organization (Katsh 1989:221–222, Berring 1986:42). It challenges the widespread view that the law is a fixed and rational set of procedures and rules that ensure equal opportunity and equal protection. Instead, the supposedly foundational principles of justice and fairness may be nothing other than variable devices to assist in coping with particular situations.

### **The Cultural Impact of Indexing: The Academy**

The shift from classifying to indexing brought about by automated information technology is visible in many fields of activity beyond the law, where it brings the same advantages of flexibility, innovation, and creativity, as well as the same anxieties about the loss of established structures and meanings. One case in point is scholarly research and education. Knowledge has been classified into distinct branches ever since classical antiquity's quadrivium (arithmetic, music, geometry, and astronomy) and trivium (grammar, rhetoric, and logic). The expansion of recorded knowledge with the passage of time and inventions such as printing made it evident that the Renaissance man could not survive long after the Renaissance, and scholars became disciplinary specialists.

Prior to the twentieth century science justified itself mainly as adding to knowledge, filling in our understanding of the world. This was conducted in the context of the various disciplines, each of which had carved out a part of reality as its domain for investigation. This was entirely characteristic of the classificatory worldview. The disciplines themselves represent the classification of things in the world together with the methods for studying them, and there was a tendency toward exclusiveness, each discipline developing more or less in isolation from the others. As knowledge accumulated the number of

specialized disciplines proliferated and their isolation increased. Eric Wolf, for example, describes how the early social scientific discipline of political economy split into sociology, economics, and political science, each defining its subject matter and proceeding with scant attention to the others (Wolf 2010:7–11).

Twentieth-century research moved in the direction of the indexical worldview as it turned more toward practical applications in war and industry (Dolby 1979:187–188) and to focused questions in basic research. This shifted science from discipline-orientation toward problem-orientation, which is cross-disciplinary in nature. If anything, this tendency is gaining momentum today. For example, the National Science Foundation (NSF) influences the overall course of scientific research in the United States by allocating a portion of its funding resources to interdisciplinary research. In 2004 it launched the Human and Social Dynamics priority area, designed to encourage a “comprehensive, multidisciplinary approach across the sciences, engineering, and education [to] stimulate breakthroughs in knowledge about human action and development as well as organizational, cultural, and societal adaptation and change.”<sup>7</sup> The NSF also supports interdisciplinary graduate training through its IGERT (Integrative Graduate Education and Research Traineeship) program. Private enterprises such as pharmaceutical and aeronautic companies and other federal agencies that support scientific research—the Department of Defense, the Department of Energy, the National Institutes of Health—are even more directive in defining the particular applications of scientific research that they are willing to fund, many of which also involve interdisciplinary teamwork. Conrad Kottak argues that the research model of lone anthropologists carrying out fieldwork among isolated societies must be replaced by “linkages methodology” that features teams of economists, political scientists, demographers, ecologists, anthropologists, and others pooling their diverse approaches to arrive at understandings and workable solutions for the increasingly interconnected contemporary world. His illustrations include the complex issues of the environmental impact of industrialization and commercialization in Brazil and biodiversity conservation in Madagascar (Kottak 1999:29–33).

Thinking in problem-oriented, interdisciplinary research is greatly augmented by artificial intelligence. Its mathematical capacities to solve complex equations and assess multiple variables much more rapidly and effectively than human intelligence can has enabled much progress in the natural sciences and engineering. Today artificial intelligence is rapidly spreading throughout the academy as centers

for digital research in the social sciences and the humanities are springing up in universities all over the world. The particular aspect of artificial intelligence of greatest interest to this analysis is that, as in the law, automated indexing techniques such as keyword searching in large databases via metasearch engines, Google Scholar, and WorldCat instantly bring together massive amounts of information on any topic from a variety of specialized fields. This juxtaposition of information makes the hitherto unrecognized relevance of research on a topic in one field apparent for work being done in another.

Computer-assisted interdisciplinary research unearths possibilities for new insights derived from sharing findings and methods and for future collaboration. The work of each researcher may still be specialized, in some cases more than ever. But automated information retrieval enables them to become aware of what others are doing. They perceive common ground, upon which the differences between the contributions of scholars from different fields become recognized as complementary rather than compartmentalized. Disciplinary separation gives way to interdisciplinary cooperation.

Problem-oriented, interdisciplinary research is representative of the indexical worldview. It is ad hoc and open-ended. It consists of sifting a wide range of data for material that seems relevant, recognizing that what is or is not relevant may change as the investigation proceeds, and building conclusions on the basis of facts and concepts that may never have been combined in that way before. What Ethan Katsh said with reference to the law is equally apt for scholars in other disciplines: "Speed and convenience may be the attraction for new computer users and the justification for purchasing hardware and software, but most users at some point find themselves using information differently, possessing information that they would not have had previously, asking questions they might not have asked previously and working with people they might not have had contact with before" (Katsh 1993:443).

Similar developments have occurred in education. Scholars, thinking that what they teach ought to be more in line with what they do as researchers, began to design curricula and degree programs that spill over the borders between different disciplines as traditionally defined. Students began to seek training tailored to their personal interests. The result of such rethinking on the parts of both teachers and students is the institutionalization of interdisciplinary studies. Programs in human development combine biology with psychology and other social sciences. Physical, biological, and social sciences all figure in the curriculum of ecology, which also may incorporate

history and literature. Cultural Studies, Women's Studies, Gay and Lesbian Studies, Peace and Conflict Studies all draw upon history, literature, philosophy, and several of the social sciences in various combinations, as do geographical area programs devoted to bringing research in a variety of social scientific and humanistic disciplines together to advance understanding of particular nations and cultures. In 2004 Princeton University introduced a freshman/sophomore science curriculum designed to teach chemistry, physics, biology, and computation in an integrated fashion over four semesters. The sequence features a "just in time" approach that, in common with manufacturing procedures that provide materials only when they are needed, introduces concepts and methods at the moment they will be used to address specific questions rather than presenting them at the beginning with the assurance that they will come in handy later on.<sup>8</sup>

All of these developments are enhanced by the partnership of artificial and human intelligence in the thinking process. Interdisciplinary learning and research amplify human intelligence as automated indexing techniques of assembling information by keyword searching through large databases throw up unanticipated combinations of information upon which the human mind is called to exercise its peculiar powers of interpretation. This is conducive to the indexical worldview that liberates knowledge-seekers and knowledge itself from classificatory assumptions that assign a place for everything in advance.

As in the law, however, the advantages of the indexical worldview in the academy are accompanied by threats. Certain interdisciplinary programs—particularly Ethnic Studies of various sorts, Women's Studies, and Gay and Lesbian Studies—focus on groups that have traditionally experienced discrimination and they are often accused of sacrificing serious, disinterested scholarship for political polemic. Movements on many college campuses to replace the writings of some DWMS (dead white males) in Western Civilization courses with those of women, ethnic, and other kinds of minorities encounter resistance for the same reason. The National Association of Scholars was founded in 1987 to confront such political correctness on American campuses. Numerous books have drawn attention to how the incursion of liberal politics into the classroom has watered down serious scholarship, a few examples being *Tenured Radicals: How Politics Has Corrupted Our Higher Education* (1990) by Roger Kimball, *The Closing of the American Mind: How Higher Education Has Failed Democracy and Impoverished the Souls of Today's Students* (1987) by Allan Bloom, and Dinesh D'Souza's *Illiberal Education: The Politics of Race and Sex on*

*Campus* (1991). All these manifest a distinctly conservative political and economic slant.

However, the confrontation is more than a purely political squabble. It reflects the same uncertainties about the nature of reality and how to go about knowing it and dealing with it that we have discussed both in general and in the particular form they take in the law. Interdisciplinary studies are one more example of the fluidity and indeterminacy of the indexical worldview. The anxieties they provoke and the cries raised against them represent the classificatory worldview's bias toward received truths and established categories.

### **The Promise and Peril of the Indexical Worldview**

This chapter has been concerned with how technology has forced a redefinition of thinking, and has fostered the growth of the indexical worldview. What both of these developments have in common is movement away from unity, fixity, and certainty toward plurality, variability, and indeterminacy. Moreover, their emergence follows a logical progression. Human and artificial intelligence conspire to carry out more powerful thinking. That kind of thinking, particularly the contribution of artificial intelligence in the form of indexing, produces the indexical worldview.

One is tempted to call this the “city of indexing,” because indexing achieves something very similar to urbanization. The concentration of people from diverse backgrounds in cities brings different interests and ideas into close contact. This generates a vitality visible in the fact that intellectual and artistic innovations flourish in cities. The diversity of information assembled by indexing is like the demographic diversity of cities, with similar creative results.

And yet, it is also true that one can get lost in cities. Innovation and creativity are by definition unpredictable. This is a double-edged sword. People are most comfortable in predictable situations, where what happens is intelligible because it fits into established categories. Urban diversity and lack of redundancy lead some city dwellers to lose their bearings, their values, and their sense of meaning in life.<sup>9</sup> Accordingly, cities are often considered to be cesspools of libertinism, vice, and despair. So far as thinking is concerned, the classificatory worldview provides the redundancy of life in small towns while the indexical worldview is more like the novelty, creative unpredictability, but also the corrosive indeterminacy of the city. Thus, while the indexical worldview brings about a number of advantages, it also raises anxiety as a threat to the intellectual and social order.

Both the advantages and the threat of the indexical worldview can ultimately be attributed to the fact that meaning is foreign to artificial intelligence. The kind of thinking that has commanded our attention occurs in two steps: the assembly of information, followed by its evaluation and analysis. Before artificial intelligence came on the scene both of these tasks were undertaken by human intelligence. Information was assembled from books, articles, encyclopedias, catalogs, and original research designed to expand the scope of established fields of knowledge. All of these presented information prepackaged in some kind of meaningful scheme. It then fell to human intelligence to analyze the results. This might take the form of supporting, modifying, or refuting the meanings already present in the data. In all cases, however, analysis was framed in the context of those meanings. This way of thinking is rooted in the classificatory worldview.

When artificial intelligence joins the thinking process it works solely on the assembly side, where it often replaces human intelligence. The classic case we have used is gathering information by means of an automated keyword search in one or more databases, followed by an analysis of the results. Because artificial intelligence cannot deal with meaning the analysis phase is, again, left to human intelligence. But now the information presented to human intelligence for analysis, having been gathered by the indexing capacity of artificial intelligence, has no internal organization or meaning. This removes constraints of preestablished categories and liberates human intelligence to select from a wider range of categories, or to create new ones, as it frames its analysis in terms of the particular problem or question that instigated the investigation. This is the advantage of the indexical worldview: It fosters interpretations that are more creative, with more novel insights, than those emerging from the classificatory mode.

But the same conditions also constitute a major threat. Classification has been the primary human way of ordering the world since time immemorial. The tectonic shifts provoked by other technologies discussed in this book force change in the meaning of particular categories, but they leave the categorical way of organizing the world intact. The indexical worldview is the more radical challenge because it places the very idea of preexisting categories in jeopardy. The fundamental axiom that meanings are grounded in received classificatory relationships is itself challenged as human intelligence determines meaning in each body of information it addresses in a variable, ad hoc fashion. The predictability and intelligibility so necessary to ordered social life are strained as the permanence and depth of the classificatory



worldview give way to the shallower, situationally contingent connections of the indexical worldview.

The world does not look the same from this perspective. The observation cited above from Katsh and Berring—that automated searching techniques call into question the assumption that the law has an intrinsic structure—is easily extended to all of the other fields we have considered, as well as to many others that we have not. That challenges the assumption that our thought and our morality are rooted in absolute truths, in the way the world really is. From the indexical perspective the world really is no way at all; it varies according to the particular circumstances.

This raises disturbing implications for ethics and epistemology: the contingency of situational ethics, the groundlessness of relativism, the indeterminacy of postmodernism. It provides support for Jean-François Lyotard's contention that the postmodern condition signals the end of "grand narratives" of truth, of reason, of morality (1984). This is worrisome enough for fostering an "anything-goes" attitude of libertinism in morals and in scholarship. One can readily imagine, for example, the horror-struck in the National Association of Scholars, and not only there, by Stephen Tyler's apparent celebration of a postmodern ethnography that discards scientific thought as an "archaic mode of consciousness" to replace it with an "esoteric conjunction of reality and fantasy" that banishes such inappropriate notions as facts, generalization, and verification (Tyler 1986:123, 134, 130). Going even further, it becomes downright nihilistic in the words of Jean Baudrillard, who suggests that contemporary culture has come to a state of utter exhaustion where "we have nothing else now but objects in which not to believe" (2000:40). This is the ultimate threat of the indexical worldview.

A shift from the classificatory to the indexical worldview is the most extreme form of the basic issue posed by all of the technologies we have examined in this book. All of them are welcomed for making it possible to achieve previously unattainable goals and desires. But in so doing, they set off tectonic collisions and shifts that threaten the received meaning of cultural categories, be it parenthood, time, existence, or, in this outer limit, the system of received categories itself. How culture addresses these threats is the subject of the next two chapters.

## Chapter 8

# Scales of Time and Space

### Man the Measure(d)

If there is any natural way that human beings relate to the world, it is through the medium of ourselves. We see only a portion of the color spectrum, infrared and ultraviolet being outside the range of what our eyes can perceive. Our ears can hear sounds only within certain frequencies. Objects of significance in our daily lives are within a limited size, the midpoint being our own bodies. Objects as small as microbes or as large as galaxies are beyond this range. Meaningful spans of time are likewise defined by the fact that we are creatures that live for a certain period—longer than dogs and cats, shorter than lake sturgeons and Galapagos tortoises—and behave at a certain rate—faster than a sloth, slower than a hummingbird.<sup>1</sup> We can scarcely comprehend what milliseconds or nanoseconds are, and we don't even have a common word for durations longer than a millennium.

In his influential book *Understanding Media: The Extensions of Man* Marshall McLuhan famously argued that “the medium is the message.” Technologies are media, and they convey messages that are more general and more fundamental than the specific purposes to which they are put. To my mind many technologies are “extensions of man” in that the message they share is enhancement of the human senses. Microscopes and optical telescopes allow one to see objects too small or too distant to be perceived with the naked eye; loudspeakers enable one to hear otherwise inaudible sounds. Clocks bring greater precision to the human experience of duration, giving more exact information as to what time it is and how long something lasts.

Other technologies, however, are of a different order. More than extensions of man, they are based instead on instrumental perceptions

on a new and different scale, infinitely more powerful and precise than human senses. Scanning tunneling microscopes can provide contour maps of surfaces atom by atom. One of the most precise atomic clocks, based on a single aluminum atom, is accurate within one second in 3.7 billion years.<sup>2</sup> Some technologies of this sort introduce new dimensions of space and time into daily life. Their message is that man is no longer the measure. If previously the world was intelligible in human terms, now it is presented to us in dimensions defined by our instruments and the technologies they enable. Not only the external world, but we ourselves become intelligible in terms of those instruments and technologies. “Man the measure” becomes “man the measured.” These different scales bring with them new forms of experience and cultural consequences.

### **Time Out of (Human) Joint**

Originally man was the measure of time. Time was concerned with events and durations that are perceptible and significant in human experience: the minutes or hours necessary for the completion of various tasks, the day, the organization of activities by weeks (the Sabbath is a day of rest) and by seasons, how long it takes to get a college education, the span of a career, the course of a lifetime. My wife tells me of a recipe in one of the Kansas cookbooks she collects named “Go to church roast,” which requires two and a half hours in the oven. In an earlier age spans of time were reckoned in “whiles,” a common example being a “pater noster while:” the time required to say the Lord’s Prayer. Thus of the death of French King Louis XI in 1483 it was written, “Having received all his sacraments without all grieffe to man’s judgement, and talking continually even within a *Pater Noster* while of his death so he gave order for his funerall” (Lansdale 1906:47). Another, somewhat more earthy while was a “pissin’ while” (Nares 1867:663, see also Robson 2003:20).

Time has been transformed by technology. Human scale time is bounded by human memory. Events that no one remembers have no significance there. Human memory, however, has been supplemented and often superceded by artificial memory: repositories of consultable records stored outside the human mind in handwritten and printed texts, musical scores, graphic images, electronic documents, and databases. Artificial memory has given a massive boost to the amount of information available, for all the libraries and databases in the world obviously store far more information than could possibly be held in any individual memory, and probably more than is held in

the collective memories of all humankind. Moreover, records stored in artificial memory are more durable than those in human memory. They are not subject to forgetting, but have the capacity to last indefinitely. Numerous persons have learned that lesson to their chagrin as sensitive information that they posted about themselves on social media sites comes back to haunt them as they seek employment or form new relationships (Rosen 2010).

An interesting example of how writing generates a new timescale is visible in English Common Law. Up to the end of the twelfth century the courts relied solely on oral testimony. Evidence was limited to what witnesses could recollect, and litigants were required to provide proof of claims only for the period covered by “living memory.” This was the outermost limit—about a century—of the memory of the oldest living person. Everything before that was known as “time out of mind,” and beyond consideration in court proceedings (Grossman 1994). Then, with remarkable rapidity, written records jolted juridical time out of the human scale by expanding the time period pertinent to the law far beyond the limits of human memory. By 1235 writing had become so essential in the courts that “a plea was judged to be void because no written document had been produced” (Goody 1986:161).<sup>3</sup>

The importance of artificial memory to the law is also evident in criminal investigations. The efficacy of using DNA to identify unknown criminal perpetrators is only partly due to DNA testing itself. Equally important is CODIS, the FBI’s database that stores DNA information on millions of individuals. That is a repository of artificial memory, and without its capacity to match samples, taking DNA from a crime scene would be useless. The permanence of DNA samples and their records in CODIS make it possible for persons wrongly convicted of a crime to be exonerated after perhaps many years in prison, and it enables the identification and apprehension of criminals long after their crimes were committed. The permanence of DNA evidence removes it from the human scale of time in the sense that it remains fixed while human beings change. Evidence provided by eyewitnesses deteriorates over the years as they die, move away, or their memories fade. The affronts to victims may heal and perpetrators may rehabilitate themselves. Among other functions such as the protection of the right to a speedy trial, statutes of limitations operate on the human scale of time and recognize the possibility that such positive changes sometimes take place. Paralleling these variables on the human scale, DNA evidence exists its own unchanging time frame, always there, always the same.

Several biomedical technologies also modify time. One of these is life-support systems. These perpetuate the functioning of vital organs when, in their absence, those organs would fail and the individual would die. The effect is to postpone death, which is beneficial in those cases where the patient can be cured and returned to a viable condition but less so when the patient is left, like Terri Schiavo, hovering between life and death in a vegetative state with no hope of recovery. Another time-bending technology is diagnostic testing. In the human scale of time, knowledge of the condition of a baby is unavailable until after it is born, and disease strikes adults and children when symptoms appear. This is upset when diagnostic tests for Down syndrome, cystic fibrosis, Tay-Sachs disease, Huntington disease, and other conditions, conducted prenatally or at any later time, bring knowledge of future conditions into the present. That knowledge leads to actions that could not have previously been undertaken, such as abortion or planning made by the "healthy ill" and those around them to prepare for their impending illness and perhaps premature death.

Still another technology that represents a major departure from the human scale of time is the maintenance of living tissue in a frozen state. This enables, among others, professional women who cannot find the time necessary to have and raise a child in the early stages of their careers to freeze their eggs for later use, avoiding the increased probability of birth defects in children born when their mothers are in their forties. The departure from the human scale of reproductive time is not that older women are now having more children, because prior to contraceptive technologies women would regularly be pregnant up to menopause. It is rather that with freezing technology and, more importantly, contraception, younger women are having fewer children. In other words, the period of reproduction for women is being lopped off at the younger end. The cultural implications of this for what women are able to do with their lives, the number of children per family, and the experience of children growing up with older parents and fewer siblings are massive.

The strangest transformation that freezing technologies impose on the human scale of time is that they make it possible for people to conceive children after they have died. Once eggs are sperm are extracted they can be maintained in a frozen state and the condition of the women and men who produced them becomes irrelevant. Whether they are living or dead, their gametes can be thawed and used for reproduction. If anything is central to the human scale of time, and to human existence in general, it is that having babies is

an activity of the living. Freezing technologies render that principle obsolete. Finally there is the question of frozen embryos. This occurs frequently because, to avoid the costs and hardships of future egg extractions and fertilization procedures, many people produce extra embryos when they use IVF. In the human scale of time there is a definite and limited span for embryos. Within the period of nine months they either develop into fetuses and are born, or they die. A spatial dimension is also in play here, for in the natural world there is one and only one place that embryos inhabit: the uterus. Excess embryos from IVF technology, however, are located elsewhere in space and time. In the freezing facility that is their home, time stops. They await in an arrested state of development the decision to implant them. And when there is no longer any intention of implantation, they may languish there indefinitely. Their condition is similar in some ways to the patient in a persistent vegetative state and in other ways very different. Similar because they exist in a state of suspended animation between life and death, the latter occurring should they be thawed and discarded. Different because, unlike the patient in a vegetative state, they have never been alive in a fully human sense and thus their end is not death in that sense. Whatever the nature of their existence may be—and the controversy over abortion signals that there is no consensus about that question in sight—it is clearly outside the ordinary human scale of time.

### **Space: Distance and Location**

Distance-shrinking technologies have been with us for thousands of years. Rafts and boats enabled people to travel over the water. These were later supplemented by bicycles, trains, motor vehicles, and airplanes. Technologies such as the telegraph and the telephone enable instant communication across great distances. Today's technologies visit the moon, land exploration vehicles on Mars, and send probes to the outer reaches of the solar system. "Far away" no longer means what it used to, when an hour ago I used the image feature of Google Maps to see the house where we lived 50 years ago during my doctoral fieldwork on the remote French Polynesian island of Rapa, and both an aerial and a high resolution street-level view of the building where we lived in Paris 25 years ago. Smart phone applications that remotely start one's car, reset the thermostat in one's house, and start the coffemaker redefine the difference between presence and absence. So too with the massive use of cell phones by younger people, especially for texting. Watching groups of them walk down the street or sitting

at café tables, each totally engrossed in sending and receiving messages on a cell phone, it is difficult to escape the impression that they are present where they are bodily absent, and absent from where they are bodily present.

Many physical activities no longer require bodily presence. The only way to engender a child used to be via sexual relations, an activity that par excellence requires the participants to be on the scene. Such is no longer the case. It may or may not be that cybersex is a sufficient replacement for the physical variety, but its reproductive function can now be performed at a distance both in space and time. If the genetic father is a sperm donor he may have produced the sperm months or years before, and may be miles away—or even dead—at the moment the genetic mother introduces his sperm to fertilize an egg. If the matter is handled by IVF, neither of the genetic parents need be present, or living, at the moment of fertilization. All that is necessary are the gametes, properly prepared, and a petri dish to house their coupling.

When it comes to knowing where someone or something is, the human scale has been eclipsed by the Global Positioning System (GPS). This powerful technology determines location by calculating how far a transmitter on earth is from a satellite on the basis of the precise amount of time required for a signal to pass between the two. Triangulating the distances between the transmitter and at least 3 of the 24 satellites in the network determines the position of the transmitter within a few meters anywhere on the earth's surface.

Among the cultural consequences of GPS is that it has redefined, or perhaps better, has banished the idea of absence. Someone equipped with a transmitter realizes the sentiment of the psalmist with more substantial stuff than faith:

If I take the wings of the morning and dwell in the uttermost parts  
of the sea  
Even there thy hand shall lead me and thy right hand shall hold me.  
(Psalm 139)

The system gives parents the comfort of knowing where to look for their small children should they get lost or be abducted. Newer automobiles are routinely equipped with it to provide drivers with directions to where they want to go, to find out where they are if they get lost, or where the car is if it gets stolen.

Not everyone, however, appreciates being under the constant gaze of Big Brother. A GPS device called Trackstick used to monitor where

teenage drivers go generated a stir, among other places, in Auckland, New Zealand, and the positions were not invariably defined on generational lines. One mother said it is a way to build trust between parents and children, but a father of three teenagers said he sees its use as breaking down the mutual trust and respect that he wants to maintain with his sons (Robinson 2011).

Among those who definitely do not appreciate having their locations constantly monitored are criminals, potential criminals, or those who are suspected of being in one of those categories. Police may affix tracking devices to criminal suspects' cars to find out if they visit other criminal figures, places associated with the crime such as drug houses, or other potentially incriminating locations. Sex offenders who have been released from prison may be required to wear GPS bracelets so police can track their locations at all times, perhaps for the rest of their lives. Some jurisdictions have instituted electronic surveillance of gang members on supervised release, parolees, and even individuals suspected of being sex offenders but for whom the evidence does not rise to the requirement for criminal conviction (Murphy 2008:1333–1334).

From a legal perspective an important question is whether such methods can be used without warrants in criminal investigations without violating the Fourth Amendment barring unreasonable search and seizure. This is significant from our point of view because the issue turns on whether electronic methods such as GPS are merely extensions of man (a means of enhancing physical, human-style surveillance as happens, for example, with binoculars), or whether the technology changes the situation to the point where it constitutes a difference in kind. The Supreme Court in *United States v. Knotts* (460 U.S. 276, 1983) supported the former view in a case involving a beeper concealed in a suspect's vehicle that helped officers follow it. The Court held that this was not a violation of the Fourth Amendment because privacy expectations are diminished when one is in a car. Its movements on the public streets can be observed by anyone, including police who are following it, and the beeper simply assisted with that task.

The other side argues that GPS, a technology considerably more sophisticated than a beeper, is fundamentally different from simple sense enhancement. Man is no longer the measure when a law enforcement officer using GPS can track several vehicles simultaneously without leaving the police department, and a machine generates a computer record that can be consulted anywhere and at any time (Ganz 2005:1339–1340, Karim 2004:509). The extraordinary powers of



GPS were brought into play in *People v. Weaver* (12 N.Y. 3rd 433, 2009). In this case police, apparently only on the basis of “hunch or curiosity,” surreptitiously affixed a GPS device on the underside of Scott Weaver’s van and monitored its movements for 65 days. During that period the van had driven slowly by a K-Mart on the evening the store was robbed. Evidence from the GPS evidence was used, together with the inconsistent testimony of a witness, to convict Mr. Weaver of the robbery. The New York Court of Appeals reversed the trial court on the basis that the GPS evidence was inadmissible without a warrant, and ordered a new trial. The Court held that GPS surveillance, which provides detailed information about a person’s movements over an indefinite period of time, with no law enforcement officer physically present, is utterly different from an aid to the senses and is an unwarranted invasion of privacy by the state. As the majority opinion put it:

The potential for a similar capture of information or “seeing” by law enforcement would require, at a minimum, millions of additional police officers and cameras on every street lamp. . . . The whole of a person’s progress through the world, into both public and private spatial spheres, can be charted and recorded over lengthy periods possibly limited only by the need to change the transmitting unit’s batteries. Disclosed in the data retrieved from the transmitting unit, nearly instantaneously with the press of a button on the highly portable receiving unit, will be trips the indisputably private nature of which takes little imagination to conjure: trips to the psychiatrist, the plastic surgeon, the abortion clinic, the AIDS treatment center, the strip club, the criminal defense attorney, the by-the-hour motel, the union meeting, the mosque, synagogue or church, the gay bar and on and on. What the technology yields and records with breathtaking quality and quantity is a highly detailed profile, not simply of where we go, but by easy inference, of our associations—political, religious, amicable and amorous, to name only a few—and of the pattern of our professional and avocational pursuits. (*People v. Weaver* 441–442)

In his dissent, Justice Smith denounced the idea that some technologies are simply too good to be used without a warrant. Rejecting the notion that GPS is different in kind from sensory-enhancing technologies, he held that the Supreme Court’s unanimous decision in *Knotts* should govern this case, and he warned that the majority’s decision would place unjustified limitations on law enforcement (449).

The matter was settled by the US Supreme Court in *U.S. v. Jones* (132 S.Ct. 945). A drug investigation with facts similar to *Weaver*,

police used a GPS device to track the movements of a suspect's car for a month with no warrant. The District of Columbia Court of Appeals reversed the conviction of one of the defendants because of the warrantless surveillance. The government appealed. The Supreme Court heard the case in 2011 and decided in January, 2012, agreeing with the *Weaver* court that the warrantless use of a GPS tracking device attached to the defendant's vehicle did indeed violate the Fourth Amendment right against unlawful search and seizure.

The decision was a victory for individual rights, but the fact remains that GPS is widely used for a variety of reasons, among them police (with a warrant) surreptitiously tracking suspects. Cultural understandings have changed and it is no longer possible to hide. So far one can still conceal the contents of one's thoughts, but not the location of one's body.

### **Size Matters**

Another shift from the human scale of space pertains to how the properties of physical materials often vary according to their size. For example, a piece of iron weighing one pound and exposed to air and water will rust. Rusting is oxidation, the interaction of iron molecules with oxygen. It occurs only on the surface. If we divide that piece of iron into smaller and smaller pieces the surface area increases and the amount of oxidation increases accordingly. Many materials manifest new properties when they are extremely small, often because of increased surface area, and nanotechnology takes advantage of this to make new kinds of electronic semiconductors, diagnostic and treatment procedures for cancer, more targeted drugs and surgical precision, and mundane products such as fabric, paint, and sunscreen. Nanotechnology, of course, operates on a scale of size far smaller than human senses can perceive.

The analogy of nanotechnology with other technologies discussed here is instructive. I have repeatedly stressed that most of them are concerned with parts of individuals rather than with persons as wholes. Sometimes those parts are very small, such as bits of DNA, eggs, and spermatozoa. Very often results can be achieved with small particles that are impossible in their full bodily context. When sperm and eggs are removed from the body, for example, they can be held in suspended animation by freezing them. They can be joined without the necessity of bringing men and women together, thus dispensing with the macroscale physical and emotional trappings that accompany whole body mating. Other technologies focused on microscopically

small objects such as bacteria, viruses, chromosomal, and genetic characteristics enable more precise diagnosis of diseases than is possible by assessing human-scale phenomena such as blood pressure, pulse rate, fever, lack of appetite, energy level, complexion color, and so forth. The identity of individuals can be ascertained more precisely from the reduction of a bit of blood, saliva, or some other bodily substance to an even smaller sample of DNA than from human-scale methods of looking at them or their photographs. However, in all this the human individual is lost in the shuffle. Certainly to laboratory technicians, and often to physicians as well, that which is frozen or joined in vitro or tested is more a “case” than a full human being.

The most important consequence of the removal of the full human being from its place at the center of action and experience is the loss of the integrity of the individual. By this I am not referring to anything having to do with honesty or moral uprightness, but mean specifically that the individual as an integral (coherent, unified, self-sufficient) unit is disappearing. In contemporary American culture, which prides itself first and foremost for its individualism, this is a major shift indeed.

Although less physical than the personal fragments reviewed above, an excellent example of the loss of individual integrity is the notion of a “limited liability persona.” Proposed by Mike Neuenschwander, the limited liability persona is a way to preserve security in Internet transactions. Rather as happens already with online game players, an individual would create several such personas or identities, each of which might have, for example, a debit account that can be used for purchasing items online or be restricted to certain kinds of other interactions. No link would connect an individual’s personas with each other, so that if the identity of one were stolen the damage would be limited to that persona. It splits one individual into several different legal entities, or different individuals may merge carefully restricted parts of themselves into a single persona. In either event, the purpose of creating the personas is to insulate the human individuals whom they represent from them so that if the security of any one of them is compromised that persona is simply abandoned, with no further consequences for the individual. The effect is to place a buffer between individuals and their activities, so that what they do is done not directly by them, but by any number of special purpose artificial proxies.<sup>4</sup>

### **Spreading the Surface**

In the physical world increased reactivity accompanies a reduction of size of particles because that increases the surface area, where

reactions take place. The same increased reactivity that accompanies a reduction in scale is also visible in thinking, although in a different form because ideas are not material objects. Recalling the distinction we drew between indexing and classifying, indexing operates with separate particles of information whereas classifying concerns larger patterns. Classifying is preoccupied with depth, with revealing how different bits of information fit into preestablished, underlying principles and generalities. Indexing operates on the surface, where artificial intelligence identifies matches between a search query and the words in a book, database, or other body of information stored in artificial memory without attending to any underlying generalizations that might link them. These matches are then presented to human intelligence, which processes them into categories and generalizations. Analogous to increased reactivity at the nanoscale, indexing enables the recognition of more associations among particles of information because, unlike the deep, preexisting categories that characterize classifying, indexing reveals surface juxtapositions of a wide range of diverse signs and concepts. This is not to say that indexical thought is less coherent than classifying, especially after the human mind has created the generalizations and categories, but it is less preordained. It is also more scattered, both in the sense that different individuals are more likely to develop their own, idiosyncratic ideas, and that the same individuals are more likely to develop different generalizations at different times as they deal with the ad hoc arrays of facts and ideas that indexing presents to them.

A close association also exists between indexing and means of identification such as fingerprints or DNA. The submission of a sample from an unknown individual to find a match in a database of DNA or fingerprints works the same as a search query that seeks matches in a database of information. Both procedures operate on the surface. The keyword searching process conducted by artificial intelligence just looks for matches with particular words or other signs, with no comprehension of what they mean. That question is left to the human mind to address once the matches have been presented. Similarly, DNA analysis is restricted solely to certain microscopic biophysical fragments and says nothing at all about qualities of the individuals they represent such as personality and life history. It too leaves what is to be done with the results to the human mind, which factors other, more meaningful data into the decision whether to seek an arrest and mount a prosecution.

Generalizing still further, orientation toward surfaces more than depth is characteristic of postmodernism. One example that has been

mentioned already is Deleuze and Guattari's distinction between rhizomatic and arborescent structures. Remaining with the botanical analogy, the rhizomatic form, as a web or network extending in all directions at or just below the surface, is likely to make contact with a wide variety of diverse plants. In that sense its extensive surface area is more reactive than the arborescent form with its deeply penetrating roots. Similarly, postmodernist art, architecture, literature, and popular culture often adopt playful forms that eclectically connect with a wider array of associations than their more serious, modern counterparts.

The surface, however, is not always a playground for fun and games. Its very reactivity, the fact that a lot of diverse and fairly complicated things are going on there, is a source of frustration in contemporary life. For one example, users can divine no underlying rationale to the protocols of computer programs. They operate entirely on the surface, requiring a string of particular keystrokes in precisely the proper order. This is alien and often frustrating to the human mind, which has difficulty learning a set of arbitrary procedures and then quickly forgets them if they are not used repeatedly. More generally, people often speak of the problems that come with "spreading themselves too thin" as they try to engage in many enterprises and find that they lack the time to do any of them in-depth. It threatens the sense of a coherent meaning in one's life. This is perhaps particularly difficult for women, increasing numbers of whom add the requirements of a career to the special demands of being a wife and a mother.

### **Turing's Man**

The best account of how technology fosters an orientation toward surfaces is J. David Bolter's book *Turing's Man*. Although it was published 30 years ago, it remains a lucid, insightful analysis of how technology induces change in worldview in the most general terms. Bolter distinguishes between Faustian man and Turing's man. Faustian man corresponds to the modern mentality. He is preoccupied with the infinite, the sublime. Like Goethe's Faust, for whom he is named, he considers the quest for deep meanings and ultimate knowledge to require years of dedicated effort. The rewards that would accompany reaching one's goal justify the greatest dedication and most dire risks—in Faust's own case, the selling of his soul (Bolter 1984:223–224).

Turing's man<sup>5</sup> is personified by the computer programmer. He perfectly fits the profile of a postmodernist. He cares nothing for deep truths, being preoccupied with means-end analysis, simulation,

and optimization. Behaviorists who chart how certain stimuli elicit certain responses, and have no interest in exploring the black box containing the underlying mechanism that governs the process, are Turing's men (219–220). So are those economists who treat human beings as “unambivalent pleasure machines” (220). All Turing's men agree that “what happens in the mind or brain is played out according to the rules of a formal system. These rules are finite, and they can someday be specified” (220). “Turing's man analyzes not to understand but to act” (222). Knowledge is a game with the objective to create a procedure that works, that successfully solves a certain problem. The stakes are not nearly so high as they are for Faustian man, because the world of electronics has taught Turing's man that his achievements in designing smaller semiconductors or faster, more efficient software will be rendered obsolete in a few years, if not months (223–224). Jacques Ellul's lament, noted in chapter 1, that technology empties life of its mystery, of the sublime, is an outstanding example of Faustian man's dismay upon regarding the world of surfaces inhabited by Turing's man.

## Chapter 9

# Expansions

All of the technologies discussed in the foregoing chapters focus on parts rather than persons as wholes. Working with elements that are often microscopically small, these technologies use the parts to ascertain an individual's identity or condition of health, to store a person's procreative gametes indefinitely, to keep a person alive in one or another sense of that term. One of the pervasive themes of this book, indeed, is that technology bypasses whole persons and pares them down to parts.

Another of the book's overall themes, however, is the self-evident fact that technology enables people to do things they otherwise could not accomplish. These two themes contain two quite different perspectives on the relation between human beings and technology. The first one, the one that reduces individuals to certain parts, concerns what happens when persons are the objects of technology, when technology is applied *to* them. The other theme, about how technology enables us to achieve hitherto-unreachable ends, is more in play when individuals are the subjects of technology, when technology is applied *by* them. In this role human individuals are agents, the doers of deeds: Those who use *in vitro* fertilization, hire surrogates, buy or sell eggs and sperm, conduct prenatal or other medical tests, check fingerprints and DNA, write articles and books, and produce works of graphic or musical art. On this side, far from paring persons down technology adds to them, producing agents in which the human individual is only one of several parts.

### A Different Kind of Agent

To apply technology is to work in concert with it: to identify an objective and then to select and use the appropriate technology to achieve

it. That happens every time one decides to go somewhere in an automobile, call someone on an old-fashioned telephone or a smart phone, subject oneself, a fetus, or someone else to a medical test, use in vitro fertilization, conduct a keyword search on the Internet, compose a text with a word processor, and so on through literally all of the technologies we have studied. The institutional question then becomes, what is the agent that achieves the objective? The standard social scientific theory, known as methodological individualism, holds that the agent is the human individual (Jones 2000, Kincaid 1997, Udehn 2001). Computers, other machines, tools, diagnostic tests, assisted reproductive technologies (ARTs) are just aids that people encounter and manipulate in the course of their actions (see Cohen 2000, Giere 2006, Himma 2009, Matthias 2004).

This view of the matter seems inadequate; however, when one reflects on how helpless we are when deprived of various technologies. Contemporary medicine relies entirely on them. We are virtually immobilized when the automobile breaks down. People feel frustrated and naked if they forget the cell phone. Accountants calculating, scholars writing, engineers designing, people making reservations for airline or theater tickets are all rendered helpless when the computers go down. Virtually everything stops in an electrical outage. Moreover, our technologies forcefully remind us of their indispensability when they refuse to cooperate if we don't get their protocols just right: the correct sequence to push on/off buttons for the TV, DVD, and DVR, how to operate a computer program or a cell phone. The notion of technology as just helping us out is an anemic view of this reality.

A more robust account recognizes that if nonhuman entities are essential for the doing of a deed, they are properly understood as part of the agency itself, that which does the deed. Bruno Latour writes (1992:227):

To balance our accounts of society, we simply have to turn our exclusive attention away from humans and look also at nonhumans. . . . They knock at the door of sociology, requesting a place in the accounts of society as stubbornly as the human masses did in the nineteenth century. What our ancestors, the founders of sociology, did a century ago to house the human masses in the fabric of social theory, we should do now to find a place in a new social theory for the nonhuman masses that beg us for understanding.

Theoretical discussions of agencies that include nonhumans as well as humans give them names such as cyborgs, actor-networks,



distributed cognition, extended or composite agency (Haraway 1991, Law and Hassard 1999, Hutchins 1995, Suchman 1998, Verbeek 2009, Hanson 2004, 2007, in press). What they all have in common is the notion that the human individual is not an integral, enduring, stand-alone being. Instead, “one’s identity is continuously emergent, re-formed, and redirected as one moves through the sea of ever-changing relationships” with both other people and with things (Gergen 1991:139, see also Bolter 1984:232). These combinations, in common with the previously discussed focus of many technologies on minute parts of persons, represent another example of the loss of the pristine integrity of the individual. Taken together, they challenge culture to make sense of the new conditions of life that take place on scales both smaller and larger than the human. My suggestion is that culture’s response to that challenge has been to redefine the relation of the human to the nonhuman in a way that, far from diminishing our humanity, expands it to a new stage of human and cultural evolution.

### **Composite Agency**

In that expansion the individual, anything but self-sufficient, becomes just one of several essential parts that constitute a cyborg, actor-network, composite agency, or whatever one wishes to call it. To adopt this point of view is to recognize that, of all the things we do, the proportion that we as individuals accomplish totally alone, without the participation of other humans, animals, tools, automobiles, computers, technologies of any sort, is vanishingly small. This situation has existed ever since our ancestors made the firsthand axes in the Paleolithic, but the undeniable and increasing importance of computers, cell phones, machines of all sorts in doing virtually everything we do brings it into unprecedented clarity today.

The merging of the human and nonhuman to form a single agent is most obvious in prosthetic devices. South African sprinter Oscar Pistorius is a double amputee who competed in the 2012 Olympics with carbon fiber legs. It is easy to imagine Pistorius’ artificial legs to be part of him; indeed, the part that enables him to do what he most loves doing. Remembering however that his legs are bits of technology that have been attached to him, it is clear that this Olympic sprinter is something other than just a biological human individual.

People also abandon their integrity as individuals when they blend with objects that are not physically inserted in or attached to the body. Gregory Bateson argued that the definition of the agent conducting

any activity should *include* the lines of communication essential to that activity rather than cutting across them. He instances a blind man using a stick to walk down the street. The agency in this case should not be limited to the man but should comprise all the essential communicating components: the man, the stick, and the street (Bateson 1972:459). The same applies to what is happening right here, right now. These sentences are produced because I am manipulating the keyboard of a computer. Myself, the computer hardware, the word processing software, and the English language are necessary for the action to occur, so the agent, the doer, in this case consists of all of us taken together.

These observations apply equally to the process of thinking. At the dawn of our species there was only human thinking, consisting of individuals using their human intelligence to process information stored in their human memories. A great deal of thinking is still conducted in this way as, for example, when we conduct face-to-face conversations with each other. But today human memory is supplemented by information stored in artificial memory such as books, graphic images, musical scores, and electronic databases. Likewise, human intelligence is supplemented by artificial intelligence, as manifested most clearly in computers.

The participation of artificial memory and intelligence with their human counterparts in composite agencies vastly expands the scope and power of thinking. Human beings, of course, are responsible for all these developments, but node of growth in the thinking process is clearly located on the artificial side. The capacities of individual human memory and intelligence have not materially increased in at least the last three thousand years, and probably much longer. That is, contemporary society does not produce people with memories more capacious than Homer's, or with powers of reasoning more trenchant than those of Plato or Aristotle. By contrast, in that same period artificial memory and intelligence have expanded phenomenally. The reason is that human intelligence and memory are governed by the glacial Darwinian principles of biological evolution while their artificial counterparts develop by the more rapid process of cultural evolution, where, in Lamarckian fashion, each generation learns and builds upon the accomplishments ("acquired characteristics") of its predecessors.

Of the total amount of available information, the proportion stored in artificial memory is far greater today than it was a few centuries or even a few decades ago. Artificial intelligence now excels human intelligence in certain kinds of information processing, such as rapidly

searching large bodies of data for specific items, mathematical calculation, and the solution of complex problems governed by multiple rules (Baldi 2001:92–93). Future advances in artificial intelligence will doubtless enable it to rival or surpass human intelligence in other areas as well.

The recognition that most of the things that are done today are done by composite agencies consisting of both human and nonhuman components in no way diminishes the importance of human beings. These remarks especially do not imply, as some fear, that human beings are in jeopardy of being replaced and dominated by robots or computers. On the contrary, the strongest points of human and artificial intelligence are different, and they work together in complementary fashion (Bolter 1984:234–239, Dreyfus 1992:286–291, 301–303; Norman 1997). It is true that when human intelligence collaborates with artificial intelligence in the most powerful forms of thinking, it loses its self-contained and autonomous quality. In this sense, and only in this sense, there is a loss of human integrity. But that is anything but a negative. On the contrary, the participation of artificial intelligence in the thinking process creates previously impossible opportunities for the application and growth of human intelligence.

The same is true of the human/technological collaboration that characterizes composite agencies of all descriptions, from yardsticks, the abacus and eyeglasses to scanning tunneling microscopes and DNA analysis. It is precisely our associations with things outside ourselves that enable us to leave the human scale of time and space to achieve new levels of performance and satisfaction. This constitutes a tectonic shift in our system of cultural understandings as the human individual, earlier dominating the center as the autonomous doer of deeds, now participates with machines and other nonhuman components in larger, more powerful composite agencies.

The notion that nearly all of the things we do are done by larger entities of which human individuals are only parts, by composite agencies, brings about a new understanding of the relation between the doer and the deed. From the perspective of methodological individualism the doer precedes the deed. That is, the world is populated with individuals who undertake various activities. When I teach a class, or read a book, or play the piano, or write something, the agent, the doer, remains the same being: me. That's obvious from the way we use language: I do all of those things.

However, from the perspective of composite agency, the relationship between the doer and the deed is one of mutual dependence. Of

course there can be no deed without a doer, but likewise there can be no doer without a deed. In a world where nothing happens there are no agents. Thus the doer does not precede the deed, but is defined by the deed. The doer of any particular deed is that which does it, which is normally a composite agency. Such doers are not stable entities that do a series of different deeds. Different deeds define different doers. This is the fluidity of agency. When Gregory Bateson's blind man sits down to read a book in Braille a composite agent different from the doer that navigates along a street with a cane comes into being.

The view of agency as deed-specific cyborgs or actor-networks rather than multipurpose human beings represents yet another shift in time. A given doer from this point of view persists only as long as it is doing a particular deed. This is yet another way that technology banishes individual integrity. Although it is possible to track an individual through a series of deeds (I teach the class, I read the book, I play the piano, and so on), any stand-alone, autonomous quality of the individual is absorbed into the several composite agencies that are defined by that series of deeds. The fluidity of the doer can be brought out by seeing it less as a noun—an object or a collection of objects—than as a verb—an embodied activity, such as “a man reading a book in Braille.” This dynamic, recombinant quality of this concept of agency is consistent with the view of the world recommended by relativity and quantum theory. From that perspective, according to physicist David Bohm, everything is an unbroken flow of movement in which supposedly concrete and durable things such as observer and observed are only relatively invariant forms of movement that come together for a time to form wholes and then flow apart from each other into other wholes (Bohm 1980:xi, 47). “Complexity science,” as represented by chaos theory, fractal geometry, and molecular biology, entails a similar view (Downey and Rogers 1995:271, Dillon 2000:9). Michael Dillon describes it in terms of “radical relationality”—the notion that everything exists as temporary, recombinant relationships. This view does not allow for unequivocal definitions and distinctions, as between machine and organism, or the human and nonhuman (Dillon 2000:4, 12–13).

Technology transforms time, taking it out of the human scale, but it does so in different ways depending on whether it is applied to persons or by persons. When technology is applied to individuals as objects, it is concerned with particles of individuals. Those particles persist in a relatively unchanged state longer than the human beings of which they are parts. DNA, fingerprints, frozen gametes, and embryos do not change over several decades, while the factors

that define the individual in the ordinary sense of the term—overall physical appearance, state of health, energy level, personality, interests, habits, hobbies, accumulated knowledge, job, relationships with others—do change considerably in that period. Moreover, records of DNA, fingerprints, and other forensic evidence stored in artificial memory extend spans of consultable and actionable time well beyond the limits of the purely human scale. Freezing gametes and embryos extends the period of their potential use beyond that of unassisted nature. Presymptomatic diagnosis of disease likewise concerns itself with specific particles, bringing knowledge of the future that is unavailable to the ordinary human scale of time.

When humans apply technology, rather than having it applied to them, individuals join with other persons, machines, and objects to perform certain tasks. Here time becomes abbreviated rather than extended. The composite agencies that perform those tasks exist only for the duration of those tasks, a much shorter period than human time with its supposition that agents are individuals who exist in basically the same form for decades. This view has not (yet) penetrated very far into daily life, where the doers of deeds are still thought to be individuals rather than cyborgs or composite agencies. However, culture reveals a shifting of orientation away from slowly changing individuals toward shorter duration tasks and events in a staccato quality that is increasingly visible in daily life. The phrase, “Kiss today goodbye, and point me toward tomorrow,” from the Broadway musical *A Chorus Line*, conveys the sense that one’s future is not necessarily determined by one’s past but can be a new start. Scarlett O’Hara, in *Gone with the Wind*, expresses the same sentiment when she cries “Tomorrow is another day!”

Obviously this attitude is scarcely new, for Margaret Mitchell’s novel was published in 1936 and made into a film in 1939, while *A Chorus Line* opened in 1975. Still, the sense of time as a sequence of distinct, loosely related events rather than as a coherent flow is increasingly evident. Employers and educators stress that for students to prepare for jobs that they expect to do for their entire careers is no longer a viable option. Employees need to be flexible in adapting to new tasks and ways of doing things, usually as a result of the developing technologies with which one interacts. For the same reason, today’s students should expect to make one or more major career changes in the course of their working lives. It is a pointillist sense of time, each moment being relatively independent and insulated from other moments, as when the ad encouraging people to visit Las Vegas says, “What happens here stays here.” Multitasking such as texting

while driving, watching television while studying, or surfing the web in class takes the isolation of different activities to an extreme. Here one segregates not only those activities that happen sequentially but also those that happen simultaneously.

Looking one more time at the difference between indexing and classifying reveals the same distinction between independent events and connected, coherent continuity. Classifying stresses connections between ideas and things, finding their place in an preexisting scheme, whereas each keyword search on the Internet or submission of a DNA sample to the CODIS database is done entirely *de novo*, with no connection to any previous or subsequent search. It is the same with other technologies we have studied. A surrogate has a limited, time-restricted relationship with the child she carries. No continuity links the multiple sales and uses of a single donor's sperm by a variety of different women; each is an independent, isolated event. The idea behind the limited liability persona is precisely to divide an individual into separate entities such that what happens to any one of them bears no relation to any of the others. Life-sustaining technologies concentrate on certain functions of the body (heartbeat, alimentation) while leaving others (brain activity) unaffected.

Being creatures that seek and appreciate predictability, humans often try to redefine isolated events to endow them with more familiar continuity. The donor sibling family grows out of the reluctance to accept that the anonymous provision of a single donor's sperm to a variety of women represents a series of unconnected events. The effort to locate genetic half siblings and to establish ties between them based on the traditional family reflects a desire to connect those events and make them intelligible. The same objective drives Melanie Thernstrom to seek to replace the incomplete and temporary place of the twiblings' egg donor and surrogates with permanent and meaningful familial ties. She writes, "There was even something I liked about the idea of a family created by many hands, like one of those community quilt projects, *pietra dura*, or a mosaic whose beauty arises from broken shards" (Thernstrom 2010). Shards indeed, each one distinct, from a separate source.

### **The Expansion of Culture**

All the technologies that cause the tectonic shifts in cultural meanings discussed in this book move the boundaries between nature and culture, or, if you will, between the natural and the artificial. Manmade incursions into the traditionally inviolate realm of the natural have

made it possible to achieve formerly impossible results. New techniques of medical diagnosis and treatment have preserved people among the healthy who, left to nature's devices, would have been sick. Life-support technologies keep people alive who otherwise would be dead. Those who could not reproduce naturally are now able to do so artificially, and nature's sole means of doing so by sexual relations has become optional. The temporal and spatial limits of human senses set by nature have been thoroughly breached by technologies such as DNA analysis that makes it possible to know that a particular previously unknown person was at a particular place years ago, or to use GPS to determine the precise location of virtually anyone or anything anywhere on the surface of the earth. The natural limits of human memory and human intelligence have been vastly supplemented by writing, electronic data storage, and artificial intelligence. All of these boundary shifts have been documented in previous chapters. The message of all of them is that the scale of human existence has changed. The original scale defined by our bodies, senses, and the temporal and spatial contexts in which we naturally live—"man the measure"—has given way to scales defined not by us but by our technologies and their artificial instruments. This has resulted in the redefinition of cultural categories of knowledge, time, space, life and death, and much else.

The advent of ultrahuman scales of time and space and the removal of the human individual from the center of events makes what happens less familiar, and therefore less intelligible. The tectonic shifts brought about by technology generate new conditions that require new ways of thinking to make sense of them. Despite the swirl of minimally connected activities on the surface of existence, the human mind still lends meaning to experience by perceiving some kind of pattern or structure in what happens. The mechanism for achieving this is culture.

Culture is not simply a body of values and meanings that has been subjected to tectonic relocations by technology. As "the basic human capacity for self-creation" (Turner 1993:427), culture is also a means that emerges from social interaction for dealing with those relocations, for developing new ways of thinking and behaving that make them intelligible. "Man makes himself," anthropologists sometimes say, meaning that in a somewhat circular manner it is the quintessentially human phenomenon of culture that defines what it is to be human.

Being human is not what it used to be. I have stressed how technology has superseded the human scale of time and space, made artificial much of what used to be natural, removed the human being from the

center of events, and brought about the disintegration of the individual. It is time for man to make himself again, for culture to bring new intelligibility to the conditions of life in the present phase of our evolution. Central to those conditions, as we have repeatedly seen, is that because of technology the human can no longer be understood as an autonomous individual. Instead, the human consists simultaneously of something smaller than the individual—multiple particles any one of which may have a defining effect on its life—and something larger than the individual—task-accomplishing agencies composed of both human and nonhuman parts. How is such a human to be understood, to be made intelligible?

Partly it is by recognizing that much history remains pertinent to current conditions. The fact that the individual loses its integrity, either by different technologies' interest in some of its parts or by participating with other people and things in larger composite agencies, does not mean that the individual loses its identity, or its importance in social life. It means only that who the individual is, and why it matters, is to be understood in terms of the condition of its component parts and its relationships rather than in terms of some form of integral autonomy. But this is not new. As for the component parts, it has long been understood that individual's capacities and well-being depend on the condition of their various organs and other bodily parts, as well as on the beliefs and values they hold. As for participation in composite agencies, it has equally long been understood that each individual plays a variety of different roles. To use a few of my own as an example, I am a husband, father, teacher, author, peace activist, and theater board member. All of those are defined by a series of relationships with other people and things: my relationship with my wife, my children, students and the community, with books, articles and computers, and so on. I am no less myself, an individual, because I engage in these relationships. To the contrary, it is precisely these relationships that define who I am and what the significance of my life is. The fact that people's relationships have increasingly included machines and other technologies over the millennia does nothing to diminish them as individuals. If anything, it enhances it.

But today's human is far from pure redundancy with the past. It also carries something new that plays an important part in our current condition and that culture must also incorporate into today's concept of the human. The shift from autonomous, integrated individuals requires attention to ourselves as more complex creatures of multiple parts and relationships. Consider again the distinction between classifying and indexing. The crux of that distinction is that



classifying presents the mind with a relatively narrow range of possibilities because it offers data in preestablished categories. Indexing, on the other hand, delivers data selected from artificial memory (library holdings, databases) by artificial intelligence only on the basis of matches with an ad hoc search criterion. This challenges the human mind to come up with new meanings and patterns of its own devising, generating more diverse and creative conclusions than classifying.

In the same way, the particulate and relational human resulting from today's technologies experiences a rich, rhizomatic network of possibilities for realizing itself that extends beyond the narrower reach of the autonomous individual. Today's human has evolved into an actor-network, Bolter's Turing's man, Gergen's relational self, Haraway's cyborg, my composite agency, a hired womb, an anonymous source of eggs or spermatozoa, a frozen embryo, a bit of DNA, an impulse on a GPS transmitter, a text on a smart phone. None of this entails the loss of the capacity to care, to aspire, or to find meaning in experience. On the contrary, the challenge, and the opportunity, before culture today to articulate such meaning, and to use it for unprecedented ends, is greater than ever.

# Notes

## 2 Honor Thy Father(s) and Thy Mother(s)

1. One would think that this takes its toll on marriages, but that is not entirely clear. Goodwin (2005:42) mentions high divorce rates for couples using ARTs, while an earlier article by Andrews and Douglass reports the opposite (1991:630, 646–649).
2. By the 1960s evidence was accumulating that careful dietary restrictions could control the symptoms of the disease (Paul 1997).
3. Somewhat like Shockley, Watson ran into trouble in 2007 by saying that it's wrong to assume the intelligence of Africans is "the same as ours" (Manier 2007).
4. Today gestational surrogacy has all but replaced traditional surrogacy, with 95% of all surrogates now carrying infants not their genetic offspring (Difonzo and Stern 2011:355).
5. And children have been born using the egg nucleus of one woman and the cytoplasm of another woman's egg, bringing the total of biological parents to four (Burger 2008:30).
6. Transported by more technological possibilities, Lee Silver enthusiastically details how, in principle if not in present fact, a child could be the genetic offspring of two women, or two men, or a man coupled with a female who was never born (Silver 1997). As our concern is with the social and cultural impact of ARTs, we will not pursue those speculations further.
7. <http://www.thespermbankofca.org>, visited September 26, 2011.
8. See <http://www.npr.org/2011/11/06/142037660/custom-cycle-ferries-sperm-to-fertility-clinics>.
9. Another source gives a range of \$4,000–\$10,000 (<http://madhubber.hubpages.com/hub/How-to-donate-eggs-for-money>, visited September 26, 2011).
10. See Andrews (1992) for a discussion of commodification of the body as it relates to traditional surrogacy.
11. The only case of ART where natural criteria outweigh the cultural one of intent is when (in California and Kansas at least) the sperm is provided privately rather than through a licensed physician. And

it could be said that the cultural element was imperfectly realized in this case because it did not go through culturally (i.e., legally) approved channels.

### 3 All in the Family

1. In some states an intending mother with no biological relationship to a child must adopt it to be recognized as the legal mother. Oregon, where the twiblings were born, allows a pre-birth judgment establishing the legal motherhood of intending mothers in surrogacy cases such as the Thernstroms'. Hence it was not necessary for Melanie to adopt the twiblings (Melanie Thernstrom, personal communication, July 26, 2012).
2. See also <http://www.oprah.com/relationships/Autism-Aspergers-and-The-Donor-Sibling-Registry/5>, visited September 25, 2011.
3. And, more rarely, the social fathers of children of heterosexual couples.
4. <http://www.donorsiblingregistry.com>; <http://www.amfor.net/DonorOffspring/viewregistry.cgi>; <http://donorsiblinggroups.com/>, visited September 25, 2011.
5. I observed a similar situation between relatives and friends on the French Polynesian island of Rapa (Hanson 1970b:96–97).
6. It is difficult to know how to assess the study by Marquardt, Glenn, and Clark because its findings seem inconsistent. It reports on results of a written questionnaire completed by adults aged 18 to 45, 485 of whom are children of sperm donors, 562 are adopted, and 563 were raised by their biological parents. Contrasting with the negative results cited above, the study also reports that 61% of donor offspring favor the practice of donor insemination compared to 38–39% of the other two categories, about 75% of donor offspring agree with the statement that “artificial reproductive technologies are good for children because the children are wanted.” 20% of donor offspring had already donated their own sperm or eggs or have served as surrogate, compared with less than 1% in the other categories. But, returning to the darker side, 37% of donor children said they would encourage a friend not to use donor insemination, while 19% of adopted children and 25% of those raised by their biological parents agreed with the same proposition. The authors do not attempt to reconcile these inconsistencies. Blyth and Kramer (2010) raise these and other objections to the work.
7. MSMBBC Today, September 27, 2011, <http://www.msnbc.msn.com/id/21134540/vp/44684611#44684611>.
8. For more personal experiences, see “Anonymous Fathers,” the *Oprah Winfrey Show* for March 14, 2008, <http://www.oprah.com/oprahshow/Anonymous-Fathers>, visited September 25, 2011.
9. <http://www.freewebs.com/donor1476/>, visited September 25, 2011.

#### 4 Prenatal Testing and Its Discontents

1. But the next chapter nuances that proposition.
2. The vexed issue of abortion for eugenic purposes may not be permanent. Genetic engineering (also known as gene therapy, the capacity to transform the genes in a living individual, embryo, or fetus) may eventually reach the point where it will be possible to correct defects in utero, reducing the reason for abortion. We will return to this issue at the end of the chapter.
3. The confidence of some people have in genetic knowledge and its applications borders on the disturbing. For example, one social scientist Ekberg interviewed raised the question of what should be done about individuals who have done nothing illegal (so far) but carry genes associated with a propensity to criminal behavior: “Should society allow . . . [them] the choice between lifetime incarceration or anti-crime gene therapy without incarceration?” (2007:74). In the absence of gene therapy at the present time, the latter option can only mean abortion.
4. See Pollard (2004:371) on the unfairness of wrongful life jurisprudence.
5. The controlling cases are *Procanik v. Cillo* (478 A2d 785, N.J. 1984), *Turpin v. Sortini* (643 P.2d 954, Cal. 1982), and *Harbeson v. Parke-Davis, Inc.* (656 P.2d 483, Wash. 1983).
6. Unfortunately I was not aware of this 1986 decision when I reached my similar reasoning for why wrongful life suits should be allowed (Hanson 1996). However, after a quarter century of acceptance of wrongful life suits, in 2012 the Israeli Supreme Court rejected their admissibility when it overturned its landmark decision in *Zaitsov* (Michaeli 2011; Zarchin and Even 2012).
7. It must be noted, however, that damages for wrongful pregnancy suits are often limited to costs directly associated with the pregnancy itself. While some jurisdictions award expenses involved with raising the child, others do not because the existence of a healthy child is thought to be a benefit to its parents that offsets any such costs (Mitrovich 2007:623–625).
8. This is also true of the three jurisdictions that do allow wrongful life suits, because they too decline to deal with the nonexistence paradox.
9. This statement is restricted, of course, to societies such as our own, where infanticide is prohibited.

#### 5 The Frozen and the Dead

1. Information on success rates is taken from <http://www.ivf-success-rates.net/>, visited September 16, 2011. See also Andrews and Douglas (1991:630, 648).

2. Concerns about embryo disposition. Medical News December 5, 2008, <http://www.news-medical.net/news/2008/12/05/43800.aspx>, visited October 7, 2011; Fraker (2009:493).
3. Nadya Suleman, the famous “octomom,” said that “she had all eight of her embryos implanted because she could not bear to dispose of any of them” (Beil 2009).
4. See also the Ivanhoe Newswire report on this research at [http://www.ivanhoe.com/channels/p\\_channelstory.cfm?storyid=20334](http://www.ivanhoe.com/channels/p_channelstory.cfm?storyid=20334), visited April 29, 2012.
5. By 2011 storage fees for frozen embryos ranged from \$700 to \$1150 per year (Frith et al. 2011:3328).
6. Lewis 2010:1177; “‘I’m only making his dreams come true’: Mother who took son’s sperm before switching life-support machine off will see baby conceived this summer at Mexican clinic,” Mail Online, updated July 5, 2011, <http://www.dailymail.co.uk/news/article-2011410/Mother-Marissa-Evans-took-sons-sperm-switching-life-support-machine-off.html>. The site for donations is <http://www.giveforward.com/nikolaslegacydreams>.
7. This is not to say that the biological tie is devoid of importance. Some lesbian couples create a biological relationship of each of them with the child by the fertilized egg from one of them being gestated by the other.
8. As with virtually any generalization, this one has exceptions. One reason Mormons seal marriages for time and eternity is to enable the couple to continue to have children after death. This does not, however, entirely contradict the point I am making here, because such children are not born into this world.
9. Sophocles, *Oedipus the King*, translated by E. H. Plumptre.

## 6 Time and Identity

1. [http://www.lionclocksoftware.com/biometric\\_time\\_clock.html](http://www.lionclocksoftware.com/biometric_time_clock.html).
2. <http://www.biometrics.gov/documents/handgeometry.pdf>.
3. <http://www.schiphol.nl/Travellers/AtSchiphol/Privium/Privium/IrisScans.htm>; <http://dfw.cbslocal.com/2012/07/30/iris-scan-shorter-wait-in-airport-security-line/>.
4. See also <http://www.psmag.com/legal-affairs/why-fingerprints-arent-proof-47079/>.
5. [http://www.historycommons.org/entity.jsp?entity=ouhnane\\_daoud\\_1](http://www.historycommons.org/entity.jsp?entity=ouhnane_daoud_1).
6. In principle, at least, for DNA identification works by matching the collected sample with samples taken from already known persons, and the latter samples may not be available.
7. Of course, DNA evidence is not infallible. Raymond Easton was charged with burglary in 1999 because his DNA, which was on file, matched that found at the scene of the crime. When the police arrived

to arrest him, they found that Easton lived two hundred miles away from the scene, had advanced Parkinson's disease, and could not drive a car (Benedict 2004:545). (Ultimately a more sophisticated test revealed that his DNA was not a match.) In Illinois a woman charged with a crime on the basis of DNA evidence was actually in jail in Nevada at the time (Murphy 2008:1392).

8. For example, a certain noncoding sequence of DNA has been shown to contribute to the development of limbs (Prabhakar et al. 2008).
9. Relevant here is Marzano's study of the relation between the self (or "person") and the body (Marzano (1999).
10. Perhaps not entirely definitive, for in December 2011 questions were rising in Europe regarding leaks from silicone breast implants. The French health agency has recommended that implants from 30 thousand women be removed after one thousand implants have ruptured. Proof of a health threat is not certain, and the recommendation is cautionary. The problem is being traced to a single manufacturer, who used a cheaper, inferior grade of silicone ([http://www.washingtonpost.com/world/europe/french-authorities-to-pay-to-remove-risky-breast-implants-want-answers-from-manufacturer/2011/12/24/gIQAaUQNFP\\_story.html](http://www.washingtonpost.com/world/europe/french-authorities-to-pay-to-remove-risky-breast-implants-want-answers-from-manufacturer/2011/12/24/gIQAaUQNFP_story.html)).
11. Depicted in Truman Capote's best-selling novel and the subsequent film *In Cold Blood*.

## 7 Thinking in a New Key

1. As it happens, the full text of *Following the Equator* is available at <http://www.gutenberg.net/etext/2895>. I did search it for "round man," and found the quote very quickly.
2. Efforts are afoot to automate classification. They include the Cyc Project, Project Scorpion, and the categorizing functions of metasearch engines such as Yippie and Dogpile, clustering, HITS, and the semantic web. I have discussed elsewhere why these do not qualify as true classifying (Hanson 2004:338–345).
3. This is not classifying. See note 2.
4. Even as I stress the nonclassificatory character of indexing, by calling two worldviews "types," I am obviously making a classification of them. I'm not sure how else to proceed; after all, I'm only human.
5. J. David Bolter noted this property of computer-assisted thinking 30 years ago (1984:230–231).
6. See Doyle (1992:231–232), Grossman (1994:76–81, 83), Cohen (1985:34–47, 60–70), Bast and Pyle (2001), and Hanson (2002) for more detailed descriptions of these resources.
7. <http://www.psychologicalscience.org/observer/getArticle.cfm?id=1555>, visited August 7, 2012.

8. <http://www.princeton.edu/integratedscience/advantages/>, visited August 7, 2012.
9. Readers familiar with information theory will note resonances in my use of the terms “information” and “redundancy.” That theoretical distinction is central to my argument, and I am indeed using “redundancy” in that sense: the degree of predictability in a message. However, for the sake of simplicity and clarity I am using “information” in its ordinary sense of “data” rather than the technical sense of the degree of unpredictability in a message. I refer to information theory’s distinction with terms like “predictability,” “redundancy,” and “intelligibility” on the one hand and “novelty,” “unpredictability,” and “unintelligibility” on the other.

### 8 Scales of Time and Space

1. For an amusing example (hilarious is the better term) of speech outside the range of the normal, see the Bob and Ray skit *The Slow Talker* at <http://www.youtube.com/watch?v=ktYwuw9Mnjo>.
2. <http://www.nobelprize.org/educational/physics/microscopes/scanning/index.html>; [http://www.nist.gov/pml/div688/logicclock\\_020410.cfm](http://www.nist.gov/pml/div688/logicclock_020410.cfm).
3. I do not wish to imply that there were no written records before the end of the twelfth century, for obviously there were. This example is used simply to show what happened when English Common Law began to accept them as evidence in the courts.
4. Mike Neuenschwander, personal communication; Evans-Pughe 2008:17; Brad Kenney, Coming Soon: Your Limited Liability Persona, Industry Week Forums, November 18, 2009, <http://industryweek.com/blog/coming-soon-your-limited-liability-persona>, visited June 22, 2013.
5. Named for Alan Turing, the British pioneer in computer technology.

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