

Chapter 2

**Intellectual Property Goals in a
Changing Information Environment**

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Intellectual Property Goals in a Changing Information Environment

FINDINGS

In an information age, decisions about the granting of intellectual property rights are linked to other information policy decisions, and in making them, we are making decisions about the nature of society itself. Given the convergence of these issues, it may be necessary to establish clearer priorities about the goals towards which intellectual property policy is directed.

The new information and communication technologies create, for both individuals and society as a whole, new cultural, economic, and political opportunities, as well as new information requirements and needs. These technologies are capable not only of generating, storing, and processing vast amounts of information; they can also provide greater access to information, enhance the environment for learning and creativity, generate new opportunities for profit-making and economic growth, and facilitate participation in political and social affairs.

Insofar as they afford new socioeconomic opportunities, the new information and communication technologies will assume a greater role in society, and in the economy, giving rise to public policy issues about their use. Issues will emerge, for example, with respect to which information needs will be met; which opportunities will be developed; and which parties will benefit from them.

Concerned primarily with the use and flow of information in society, intellectual property law has historically served in the United States to decide many of these issues. In resolving them, an effort has been made to strike a suitable balance between the needs of creators, producers, and distributors of intellectual properties and the social, economic, and political needs of the nation as a whole. In such a fashion, intellectual property law has been able to simul-

taneously serve a wide variety of social and economic public policy goals.

The ability of intellectual property law to strike such a balance was not particularly difficult in the past, when the social and economic stakes in information were lower than today and when relatively few and well-defined players were involved in the intellectual property process. Information-based products and services were peripheral to the performance of many social and economic activities, and people had lower expectations about their use and the level of profit that might be derived from them. As a result, issues involving the granting of intellectual property rights could be worked out among the major players without much public involvement or concern.

The resolution of these issues in an information age, however, will be more problematic, requiring that more stakeholders be taken into account and that decisions be made about the distribution of incentives and rewards. Given the variety of opportunities that the new technologies afford, the increased value of information, changing relationships among the traditional participants in the intellectual property system, and rising expectations about the benefits of these technologies, the number of stakeholders with disparate interests and competing claims on the system will be greater than ever before. In such a context, the granting of intellectual property rights, instead of mutually serving a variety of different stakeholders, and equally fostering a broad set of diverse policy goals, may pit some stakeholders and goals against one other. Moreover, given the ease of access to the new technologies, members of the public are now major stakeholders in the system, and as such their attitudes and behavior are likely to have a greater impact on policy choices and outcomes.

INTRODUCTION

Although intellectual property rights have been recognized in natural law, historically, governments have granted such rights to achieve a variety of policy goals. This is equally true today. In the West, the granting of copyright, for instance, is viewed primarily as a mechanism for encouraging the dissemination of information. But in Eastern bloc countries, the policy goals differ and it is regarded chiefly as 'an instrument for the management of cultural processes.'¹

Which policy goal a particular intellectual property system is designed to serve depends, in large measure, on the history, circumstances, and overriding needs of a society at the time the system is first set up. Developing countries, for example, which must import most cultural and scientific materials, have often been unwilling to extend protection to foreign works. This was true of the United States during its first 100 years, and is the case in many Third World countries today.

Despite their varying goals, however, all intellectual property systems basically concern policies involving the use and flow of information. This is especially true of the copyright system, which was established specifically to deal with the social and economic changes brought about by what, historically, has proved one of the most "world shaking" information technologies—the printing press. Characterizing copyright role in structuring information flow, Edward Plowman and L. Clark Hamilton wrote:

In a wider perspective, a number of basic dimensions of the nature and function of copyright may be distinguished. In an overall, cultural perspective, the stated purpose of copyright is to encourage intellectual creation by serving as the main means of recompensing the intellectual worker and to protect his moral rights. In an economic sense, copy-

right can be seen as a method for the regulation of trade and commerce.

Copyright thus serves as a mechanism by which the law brings the world of science, art, and culture into relationship with the world of commerce. In a social sense, copyright is an instrument for the cultural, scientific and technological organization of society. *Copyright is thus used as a means to channel and control flows of information in society.* [emphasis added].²

The patent and trade secrets systems also involve the flow of information. The patent system is designed primarily to foster scientific and technical information. Although patent law permits only the inventor or patent holder to make, use, or sell his invention, it also requires that the inventor disclose to the world the information necessary to enable others to reconstruct the invention after a 17-year period of protection has elapsed. Patent law, therefore, seeks to encourage the distribution of information by making disclosure a condition of protection. The trade secrets system, in contrast to the patent system, is designed to discourage the widespread flow of certain types of information. Secrecy is maintained in order to give the holder of the trade secret a competitive advantage in the marketplace.

Like the printing press, the new information technologies also affect society. They are changing the way people work and conduct their business; how they interact and relate to one another; the way they learn, create, and process information, and their needs and expectations. In fact, these new technologies are altering the way man views himself and his place in the world.³

Together, the development and widespread use of these new technologies have helped to usher in what some social observers characterize as a "post-industrial," or "information"

¹Puscher, "Copyright in the German Democratic Republic," *Copyright Bulletin of the USA*, vol. 10, No. 3, 1976, as cited in Stephen Stewart, *The Law of International Copyright and Neighboring Rights* (London: Butterworth & Co. (Publishers) Ltd., 1983), p. 10.

²Edward W. Plowman and L. Clark Hamilton, *Copyright: Intellectual Property in the Information Age* (London: Routledge and Kegan Paul, 1980), p. 25.

³Sherri Turkel, *The Second Self: Computers and the Human Spirit* (New York: Simon & Schuster, 1984),

society.⁴ In this society, the creation, use, and communication of information plays a central role. Not only will the amount of information continue to increase, but people will also rely on it in more and in different circumstances. The changes brought on by the new technologies will generate new social, economic, and cultural opportunities and choices, which will bring with them the need for major policy decisions.

Because intellectual property policy, and especially copyright policy, serve as a policy tool that structures the use and flow of information, it is likely to play a major role in an information age. How the intellectual property system is structured will determine not only which individuals and groups benefit from the new opportunities afforded by the new technologies, but also in what ways and the extent to which, as a society, we might take advantage of them. Furthermore, if the enhanced value of information creates conflicts between economic, political, and cultural goals, the structure of the system will establish some of the rules that determine whether information will be treated as an economic commodity or a societal resource.

Given the relationship between intellectual property goals and social change, and the probable influence of the copyright system in an information age, the question arises of whether the policy goals of the United States intellectual property system, established in an agrarian society and when print technology dominated, are still appropriate for today.

Evolution of the Concept and Practice of Granting Intellectual Property Rights

Social, economic, political, and technological factors all influence the nature of intellec-

tual property systems and the goals that governments have sought to promote by granting those rights. The connection between these factors and intellectual property systems is clearly visible if one examines the concept of intellectual property as it evolved over time. Intellectual property rights began in an autocratic period, as a tool of monarchs to stimulate invention, regulate trade, reward favorites, establish patronage, and control and censor the dissemination of ideas and information. Two hundred years later, in a democratic context, this tool evolved into a system designed to foster freedom of expression and the creation and dissemination of new ideas.

Emergence of the Concept of Intellectual Property Rights

The birth of the idea of intellectual property itself demanded certain social conditions. It required a centralized political authority and a government that intervened in economic affairs; the development of trade and commerce; a market for literature, art, and invention; and the growth of the idea of, and respect for, the individual as creator. Only in the late Middle Ages did such conditions develop, and only then did the concept of intellectual property rights, as we know it today, emerge.⁵

In addition to these societal changes, technological change—and in particular, the development and widespread deployment of the printing press—also created the need for intellectual property protection. Before the development of printing, inventors, embodying their ideas within their own persons, did not need to concern themselves with the prospect

⁵Bruce W. Bugbee, *Genesis of American Patent and Copyright Law* (Washington, DC: Public Affairs Press, 1967). This latter condition existed in Roman times where the social climate was supportive of individual attribution and payment for intellectual activities. In a number of texts from the period, for example, there are references to individuals as authors and to the terms of payment for intellectual contributions. Moreover, plagiarism was clearly considered to be unethical. There is no evidence, however, that such attitudes and procedures were in any way sanctioned by law. Conditions radically changed during the Middle Ages, however, when monasteries and other religious institutions began to assume primary responsibility for intellectual and creative pursuits. As in pre-Roman times, the idea of individual, as author, lost support. Plowman and Hamilton, *Copyright*, pp. 9-11.

⁴For discussions and characterizations of the "Information Society." See, for example, U.S. Congress, Office of Technology Assessment, *Computer-Based National Information Systems*, OTA-CIT-146 (Washington, DC: U.S. Government Printing Office, September 1981); Susan Artandi, "Man, Information, and Society: New Patterns of Interaction," *Journal for the American Society for Information Science*, January 1979; and Daniel Bell, *The Coming of Post Industrial Society* (New York: Basic Books, 1973).

of others reaping the financial rewards of their work. They simply went from town to town selling their intellectual wares. However, once their ideas were recorded and widely distributed in print, the inventors lost this control and, hence, their economic bargaining power. The problem created by the printing press was even greater for authors whose profits were derived not from their ideas but from what subsequently was even more easily duplicated, the written word itself.

The first intellectual property rights were granted as patents. Characterized by one author as being “the idea of progress appearing in the law, patents were associated with technological development from the start.⁶ Offered by sovereigns and local governments as part of their overall economic policies to stimulate commerce and technological advance, they were, essentially, monopolies designed to entice artisans and inventors into their States or localities.⁷

Copyrights—or the granting of rights in literary property—did not develop in either concept or practice until the 15th century. Even more than patent rights, copyright can be identified with one specific technology, the printing press.

The printing press brought about major social, economic, and political changes.⁸ By great-

⁶Significant inventions of the late Middle Ages included various processes that would increase the efficiency of artisans, such as textile-making equipment, textile dye processes, glass manufacturing, stained glass processes, mining and metallurgy, windmills, and ship-building designs. Bruce W. Bugbee, *Genesis of American Patent and Copyright Law* (Washington, DC: Public Affairs Press, 1967), pp. 12, 167.

⁷The city-state of Venice, with its important role in world commerce and its strong central government, became the first government to grant patents. The importance that the Venetians attached to the goal of economic development is reflected by the fact that a patent right granted in a work had to be relinquished if it did not prove to be commercially successful. As towns and commerce revived, technological development accelerated, and political centralization increased, this practice of granting patent rights spread throughout Europe.

⁸For a detailed and in-depth discussion of the social changes brought about by the advent of printing, see Elizabeth L. Eisenstein, *The Printing Press as an Agent of Change: Communications and cultural transformations in early modern Europe*, vol. I and II (Cambridge, England: Cambridge University Press, 1982); For a discussion of the more general impact of communication technology on society, see Harold Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951).

ly increasing the speed and reducing the costs of reproduction, printing made it much easier to disseminate ideas. By increasing the general level of literacy, it also made more people susceptible to, and eager to partake of, such ideas. As a result, the market for information products and literary works grew, and their economic value was greatly enhanced. In fact, one might say that printing was the growth industry of the time. Later, as books and manuscripts ceased to be isolated on monestary shelves, and became available to many people simultaneously, they began to serve as an important forum for public discussion.

Occurring at the time of religious and political turmoil, printing presented the monarchs of Europe with both a political threat and an economic opportunity. The law of copyright was developed to deal with this threat, as well as to take advantage of this opportunity. The shape the law took reflects its dual purpose: censorship of the press and regulation of trade. Although copyright systems were established across Europe, England provides the most useful illustration of how the system worked, since the American system was derived from English experience.

Copyright as a Mechanism for Censorship and the Regulation of Trade

As in most European countries, England's need for copyright protection arose with the invention of the printing press, and it had its origins in the English censorship laws. These acts included the Star Chamber Decrees of 1566, 1586, and 1637, as well as three acts passed in the 1640s during the Interregnum, and the Licensing Act of 1692. Together, they provided for such things as the granting of patents for specified works, the confinement of printing to authorized presses, the licensing of books before publication, and the use of trade organizations and special government agencies for enforcement.⁹

While direct censorship was the most effective means of confronting the political threat

⁹Benjamin Kaplan, *An Unhurried View of Copyright* (New York and London: Columbia University Press, 1967).

brought about by the new technology, it also stifled the printing industry, and thus limited the government economic benefits from printing. Seeking to both end the dissemination of heretical and seditious literature, but still profit from the burgeoning printing trade, the English Government aligned itself with publishers. In exchange for an agreement to enforce the censorship laws, the government granted the publishers' guild, known as the Stationers, a monopoly right to print, publish, and sell works—a copyright. ”

The effectiveness of this arrangement came about, as Ithiel de Sola Pool has noted, because “the printing press was a bottleneck where copies could be easily examined and controlled.”¹¹ The arrangement was also beneficial to publishers. It not only provided them with a monopoly; but also, as partners with government, they were free to manage their own affairs.¹² Thus, through their bylaws, they regulated the book trade. ’3

Copyrights To Prevent Monopoly Practices: The Idea of Author Rights

In the period following the Restoration, the Government’s major concern was no longer press censorship. Instead, there was a growing wariness about the publishers’ monopoly

“The copyright was limited to members of the Stationers’ guild so that only registered members could print books. Once a publisher entered the title of a work, his name, and the date of publication into the company register, he obtained a perpetual copyright in it. With what was essentially an economic right designed to protect his investment from competition, the publisher could also trade in rights. He could buy copyrights, sell them, or assign them to any other member of the company. When cases of copyright infringement and disputes among publishers arose, they were decided by the company courts. The Stationers’ copyright remained in force for over 150 years, when the conditions underlying the system changed significantly. Stephen Stewart, *Law of International Copyright, and Neighboring Rights* (London: Butterworths & Co. (Publishers), Ltd., 1983).

“Ithiel de Sola Pool, *Technologies of Freedom* (Cambridge, MA: Belknap Press, 1983), pp. 16-17.

“Originating as a craft guild in the early 15th century, the Stationers were established as a company by Henry VIII in 1557. They consisted of members of the book trade—printers, book binders and booksellers. For a discussion of the history of the Stationers’ Company and its role in the development of copyright, see Lyman Ray Patterson, *Copyright in Historical Perspective* (Nashville, TN: Vanderbilt University Press, 1968). Chapter IV.

“Stewart, *The Law of International Copyright*, p. 18.

of the book trade. By buying up all of the rights to copy books, the publishers had effectively limited their competition, restricted the supply of books, and artificially raised prices. No longer in favor of blatant censorship,¹⁴ or sympathetic to monopoly, the Parliament found this situation unacceptable. In 1695, it failed to renew the Licensing Act of 1692, thus allowing the Stationers copyright to lapse.

The result was confusion in the book trade. Piracy became commonplace. The Stationers aggressively appealed to Parliament to reestablish order with a new copyright law. As Lord Camden later described it:

They—the stationers (whose property by that time) consisted of all the literature of the Kingdom, for they had contrived to get all the copies into their own hands—came up to Parliament in the form of petitioners, with tears in their eyes, hopeless and forlorn, they brought with them their wives and children to excite compassion, and induce Parliament to grant them a statutory security. ’5

Responsive to the Stationers’ petitions to reestablish order in the book trade, but opposed to excessive monopolies, the Parliament passed legislation in 1709 that was supposed to meet both concerns. This was the Statute of Anne. Characterized as the first modern copyright law, it served as the model for copyright law in the United States, and all other English-speaking countries.

Although the Statute of Anne resembled the Stationers’ copyright in some ways, it was designed to end their monopoly of the book trade and included several provisions to assure this end. Copyright would no longer be exclusive; the statute made it available to everyone. Moreover, it was limited to a period of 14

“It should be noted that the repression of the press did not end in 1693. Instead of using copyright as a mechanism to control the press, the British Government used a tax policy. The government imposed taxes, for example, on newsprint, ads, and on newspapers. one newspaper *The Spectator*, folded in 1712, as a result of increased publication costs due to heavy taxation. de Sola Pool, *Technologies of Freedom*, p. 15.

“Donaldson v. Becket” (H.L. 1774), as reported in 17 *Hansard, Parliamentary History of England, 953, 995 (1813)*, as quoted in Kaplan, *Unhurried View*, p. 7.

years. 'G As a concession to the Stationers, the act allowed them to maintain their existing copyrights for a period of 21 years, after which the works attached to them would be returned to the public domain.

Entitled "A Bill for the Encouragement of Learning and for Securing the Property of Copies of Books to the Rightful Owners Thereof," the new statute stated clearly that copyright should benefit authors. The law advanced the idea of authors' rights, absent from the Stationers' copyright, although authors had previously been paid for their works.¹⁷ In the new political and economic context, however, parliamentary leaders viewed the granting of copyright to authors as a good device to break the publishers' monopoly, although not necessarily inherently virtuous.¹⁸

The legitimacy of the claim of authors' rights also found support within the larger society. In 1690, John Locke argued in his *Two Treatises on Civil Government* that the author has a natural right in his work since he had expended his own labor in creating it. "At the same time, European thinkers and jurists put forth similar views.²⁰ The public and the courts,

"The statute allowed a second term of 14 years if the author was alive. Even if he had sold his copyright, the author could claim it back after 14 years.

"Manuscripts were generally bought from authors for some lump sum. Once the authors sold his material to the publishers, it was the publishers who had the right to make multiple copies, Kaplan, *Unhurried View*, 1967.

"Ironically, in the end, the publishers were the most effective and outspoken constituency in generating acceptance for the idea of authors' natural rights in their work, and it was they who benefited most from it. The previous statutes, it should be remembered, provided publishers with an economic right, which protected only the economic benefits derived from the publication and sale of copies. The issue of who owned the work was not involved. However, with the growing acceptance of the idea that the author had a natural right in his work, the notion of what the right protected was considerably expanded. Since authors routinely assigned their copyrights to publishers, having no other recourse to distribute their works, it was the publishers, and not the authors, who benefited over the long run from this expanded right. Patterson, *Historical Perspective*, p. 18.

¹⁷John Locke, *Two Treatises on Civil Government* (Cambridge, England: Cambridge University Press, 1967).

"European jurists conceived of authors rights as being natural to the way things are. In France this attitude was incorporated into two basic decrees granting authors: 1) the right to public performance (1791), and 2) the right to copy and reproduction (1793). These two decrees served as the mainstay of French copyright law for over 160 years. Plowman and Hamilton, *Copyright*, p. 16.

too, were generally more willing to reward the author for his special contribution to society. As Kaplan has pointed out, there was a gradual moving away from the Elizabethan perspective that imitation was admirable and innovation dangerous, and a growing appreciation of the role of the creator.²¹

These developments, notwithstanding, copyright in England remained a statutory right, reflecting its origins as a privilege granted by government to achieve a particular public policy purpose. The issue of authors' common law rights was tested in two major court decisions. In the first, *Millar v. Taylor* (1769), the publishers' and authors' point of view prevailed: the court ruled that the author had a common law copyright in perpetuity. Five years later, however, this position was reversed with the decision in the case of *Donaldson v. Becket* delivered by the House of Lords in 1774. While recognizing the author's common law right to print, publish, and sell his work, and his right to assign his copyright to another, the House of Lords held that this right was supplanted by the Statute of Ame. Thus, while the author had a right to decide whether to publish or not, once he had chosen to do so, his copyright was a statutory one and it was limited by the terms of the statute.²²

As this brief account suggests, the concept of intellectual property rights emerged at a particular time when socioeconomic conditions were ripe for it. It emerged as a public policy device to deal with the problems and enhance the benefits of the rash of technological innovations that occurred in the late Middle Ages and early Renaissance. The law of copyright, in particular, was related to the advent of one technology, the printing press.

"As Kaplan notes, "From the classical writers as expounded by critics of the Italian and French Renaissance, the Elizabethans had received the notion that artists' excellence lay in imitating the best works of the past, not in attempting free imitations. All they needed, indeed, all the possible subjects and materials for literary production were already disclosed in existing writings, the "publica materia" to which Horace referred. What was required of an author was to give an expression compatible with his own time." Kaplan, *Unhurried View*, p. 23.

"Ibid., p. 14; see also discussion by Patterson, which suggests that if the common law courts had had a role in the early development of copyright, the English might have adopted a stronger position in favor of the author. *Ibid.*, p. 16.

While the structure of the laws and the goals to which they were put have changed with time and historical circumstance, intellectual property law has essentially remained a mechanism government can use to structure and channel the societal impacts of technological change. In the Elizabethan era, intellectual property law was used to control the flow of information. But when transplanted to the United States, it was conceived of not only as an instrument to foster the creation of new inventions and ideas but also to encourage their dissemination among the public.

Traditional Goals of the U.S. Intellectual Property System

Although the ruling monarchs of Europe had regarded the widespread dissemination of information with considerable alarm, the opposite view prevailed in the United States. Building a nation required the establishment of communication links, the development of a unified market, the forging of a common culture, and the building of a democratic polity. The widespread flow of information was essential to accomplish these tasks, and the establishment of an intellectual property system, they believed, would aid the creation and spread of information. Appreciative of the potential that information held for fostering national development, the Founding Fathers saw the granting of intellectual property rights, not as a natural right, but as a statutory, or positive right, in this case granted to promote learning.

To understand the import attached to the idea of learning, one must consider the historical context of the times. The writers of the Constitution were products of the enlightenment. Their views and attitudes reflected the increasingly pervasive awareness of the power of knowledge to affect social change. As the historian Peter Gay has described it:

In the century of the enlightenment, educated Europeans awoke to a new sense of life. They experienced an expansive sense of power over nature and themselves; the pitiless cycles of epidemics, famines, risky life and early death, devastating war and uneasy peace—

the treadmill of human existence—seemed to be yielding at last to the application of critical intelligence. Fear of change, up to then nearly universal, was giving way to fear of stagnation; the word innovation, traditionally an effective term of abuse, became a word of praise.²³

Looking at the concept of learning in this context it is clear that, to the Founding Fathers, learning was more than an end in and of itself. It was the hope of an age, the means to achieve a whole range of goals. With knowledge and learning, virtually anything was considered to be possible.

That knowledge should be fostered and disseminated was also a paramount belief of the times. The age of enlightenment was, according to Gay:

... an age of academics—academics of medicine, of agriculture, of literature, each with its prizes, its journals, and its well attended meetings. In the academies and outside them, in factories and workshops and coffeehouses, intelligence, liberated from the bonds of tradition, often heedless of aesthetic scruples or religious restraints, devoted itself to practical results; it kept in touch with scientists and contributed to technological refinements.²⁴

Given this general mood of the age, it is easy to understand why the idea of granting intellectual property rights was so popular. Correctly anticipating acceptance of such a right, James Madison, wrote in *The Federalist*, for example, “The utility of this power will scarcely be questioned.”²⁵ He was right. There was practically no discussion of intellectual property rights at the Constitutional Convention, even though provisions for granting such rights merited a prominent place in the Constitution. The convention was convened in early May 1787, and was adjourned in mid-September. The issue of intellectual property rights, however, did not arise until August 18th, when James Madison and Charles Pinckney each put

²³Peter Gay, *The Age of Enlightenment: An Interpretation. The Science of Freedom* (New York: W. W. Norton & Co., 1977), p. 3.

²⁴Gay, *Age of Enlightenment*, p. 9.

²⁵As quoted in Bugbee, *Genesis*, p. 130.

forth proposals to include among Congress' powers the right to grant intellectual property rights. And the idea was not considered again until September 5th, when the Convention unanimously approved without discussion a committee proposal to adopt a constitutional clause empowering the Congress "To Promote the Progress of Sciences and Useful Arts, by securing for limited Times to Authors and Inventors the Exclusive Right to their respective Writings and Discoveries."²⁶

That the enhancement of learning was the purpose of this clause—Article 1, Section 8 of the Constitution—can be reasonably discerned despite the lack of debate at the convention. Two intellectual property rights proposals were submitted, one by Madison and one by Pinckney. Although introduced independently of each other, they both were couched among other proposals aimed at advancing the state of science and learning. Both proposals also authorized Congress, for example, to:

- grant charters of incorporation in cases where the public good may require them;
- establish a university;
- encourage by premiums and provisions, the advancement of knowledge and discoveries; and
- establish public institutions, rewards, and immunities for the promotion of agriculture, commerce, trade and manufacture.²⁷

Because all of these proposals were submitted jointly, one can assume that they shared a common intent.

Just as it was clear from the time of the Constitutional Convention that intellectual property law was intended to serve the goals of education and learning, so it was also plainly understood that intellectual property rights were to be considered statutory rights, granted to fulfill a public policy purpose. This idea is apparent in the first Federal copyright act of 1790 insofar as it excluded nonresidents from the benefits of copyright. It was reaffirmed, moreover, by the Supreme Court in the famous

case of *Wheaton v. Peters* which, drawing heavily on the British case of *Donaldson v. Becket*, concluded that copyright was a statutory construct to the point of requiring compliance with the formalities of the law as a condition of protection.²⁸ It is clearly laid out again in the legislative committee report on the 1909 Copyright Act, which describes the purpose of copyright as follows:

The enactment of copyright legislation by Congress under the terms of the constitution is not based on any natural right that the author has in his writings, for the Supreme Court has held that such rights as he has are purely statutory rights, but on the ground that the welfare of the public will be served and progress of science and useful arts will be promoted . . . Not primarily for the benefit of the author, but primarily for the benefit of the public such rights are given. Not that any particular class of citizens, however worthy, may benefit, but because the policy is believed to be for the benefit of the great body of people, in that it will stimulate writing and invention to give some bonus to authors and inventors.

The Founding Fathers' hopes for the intellectual property system were well founded. In the century and a half after its establishment, there was not only a great flourishing of creative, technological, and scientific works; but also, many of these works were designed with the needs of society and the common man in mind. Edward Riddle noted how much American technology reflected a concern for the public welfare in his report to the commissioner of patents about the 1851 technology exhibit at the Crystal Palace in London. Comparing the U.S. contribution to those of other European states, he said:

The Russian exhibition was a proof of the wealth, power, enterprise, and intelligence of Nicholas; that of the United States an evidence of the ingenuity, industry, and capacity of a free and educated people. The one was the ukase of an emperor to the notabilities of Europe; the other the epistle of a people to the workingmen of the world. . . . We

²⁶Ibid., 128-130.

²⁷Patterson, *Historical Perspective*, ch. 12.

²⁸Kaplan, *Unhurried View*, p. 26.

showed the results of pure democracy upon the industry of men.²⁹

This close association of technology with democracy was widespread throughout America in the first 100 years of its development.³⁰ A democratic polity was thought to be a prerequisite to advancement in applied science, while technological achievements were expected to provide the physical means of achieving the democratic objectives of political, social, and economic equality. Visiting America in 1831, Alexis de Tocqueville, the well-known commentator on American society, observed this linkage. Describing the relationship between technology and democracy, he wrote:

... the extreme social mobility in America was fertile soil for progress in technology, because democratic peoples were ambitious, never satisfied with their status, and—above all—were always free to change it. . . . You may be sure that the more a nation is democratic, enlightened, and free, the greater will be the number of these interested promoters

²⁹Edward Riddle, "Report on the World's Exposition," Report of the Commissioner of Patents for the Year 1851, *House Exec. Docs.*, 32 Cong., 1 sess., No. 102, Part 1, pp. 484-85, as cited in Hugo A. Maier, "Technology and Democracy, 1800-1869," *Journal of American History*, vol. 43, p. 625.

³⁰Meier, *Technology & Democracy*, p. 618.

of scientific genius, and the more will discoveries immediately applicable to productive industry confer gain, fame, and even power on their authors.³¹

This enthusiasm for learning and the belief that it is linked to technological development and socioeconomic progress is less apparent today. One can particularly see this in the area of intellectual property law. Unlike the founders of the intellectual property system, who saw the law as mutually serving both educational and economic goals, many people now see these goals as competing with one another. A number of people fear, for example, that widespread public access to the new technologies will limit industry's ability to exploit fully the economic potential of these technologies. Emphasizing that economic growth and development is to the benefit of all individuals, they urge that the law be restructured to favor business needs over individual ones, and economic goals over social ones. As the following discussion points out, conflicts such as these are likely to become more prevalent in an information age.

³¹Alexis de Tocqueville, *Journey to America*, translated by George Lawrence, J.P. Mayer (ed.) (New York: Anchor Books, 1971).

OPPORTUNITIES AND POLICY CHOICES IN AN INFORMATION AGE

The development of new technologies creates opportunities for society as a whole, as well as for individuals and groups. The new information and communication technologies will also create such opportunities. These technologies are capable not only of generating, storing, and processing vast amounts of information; they can also provide greater access to information, enhance the environment for learning and creativity, generate new opportunities for profit-making and economic growth, and enhance the decisionmaking process as well as facilitate participation in political and social affairs.

Whether and how people develop technological opportunities offered by recent advances,

and who will benefit from them, depends on an array of societal variables. The direction technology takes, for example, might be affected by such factors as the role of government and policy makers, cultural mores, the extent of existing technological infrastructure, or the structure of the economic system.

As we have seen, one way that governments have historically sought to structure and channel the direction of technological change has been through the intellectual property system. To understand how intellectual property policy might affect the development of the new information and communication technologies and the distribution of the opportunities that these technologies afford, it is necessary, first,

to briefly identify these opportunities and point out where the realization of one may complement or preclude the development of another.

Three Realms of Opportunity

Examining how society has evolved in the face of technological development, the sociologist, Daniel Bell, characterizes modern society as being divided into three distinct realms: the techno-economic, the political, and the cultural.³² In preindustrial societies, these realms were relatively indistinct from one another. However, with the advance of technology and the specialization that it imposes, they have become increasingly differentiated. Today, each has its own rhythm of change, its own set of values, and its own corresponding mode of behavior. Moreover, because the forces that drive each of these realms are no longer complementary, they are generating a growing number of conflicts between them.³³

Bell's framework for analyzing advanced industrial societies is a useful tool for identifying the kinds of economic, political, and cultural opportunities that the new information technologies provide. Because it describes how each realm operates and the values that it supports, it can help to pinpoint the particular needs that the new technologies might serve. Moreover, insofar as it identifies the areas where there may be conflict between realms, it may suggest circumstances under which there might be competition for information resources, and hence conflicts about intellectual property goals.

Opportunities in the Techno-Economic Realm

The techno-economic realm is organized primarily to produce and distribute goods and services. The principle value underlying this realm is that of 'functional rationality'—that is to say, according to the rule that each indi-

vidual and each group in the system carry out rationally conceived, specified roles which, when taken together, are designed to maximize production. The principle means of achieving this value is by economizing; decisions are made on the basis of cost/benefit analyses, and technology is applied to substitute less efficient processes with more efficient ones. Designed to further this kind of rationality and efficiency, the techno-economic realm is structured in a bureaucratic, and hierarchical fashion.³⁴

Today, the new information and communication technologies provide numerous ways of enhancing the values of the techno-economic realm: they can improve efficiency, increase productivity, and thus they can engender economic growth. Information is, for example, reusable and, unlike capital resources such as steel or iron, it requires very few physical resources for its production and distribution.³⁵ Moreover, information can now be used not only to substitute more efficiently for labor; it can also be used to improve the overall efficiency of the productive process itself. And, as productive processes become increasingly complex in advanced industrial societies, the largest reserve of economic opportunities will be in organizing and coordinating productive activity through the process of information handling." Given these characteristics and capabilities, information is likely to become more important as a resource in the techno-economic realm.

This growing importance of information to the economy is evident from the continued growth of the information sector of the economy, a trend that, as can be seen from figure Z-1, has been paralleled in other advanced industrial societies. In fact, it was to highlight such changes that terms such as the "information society" and the "information age"

³²Ibid., p. 11.

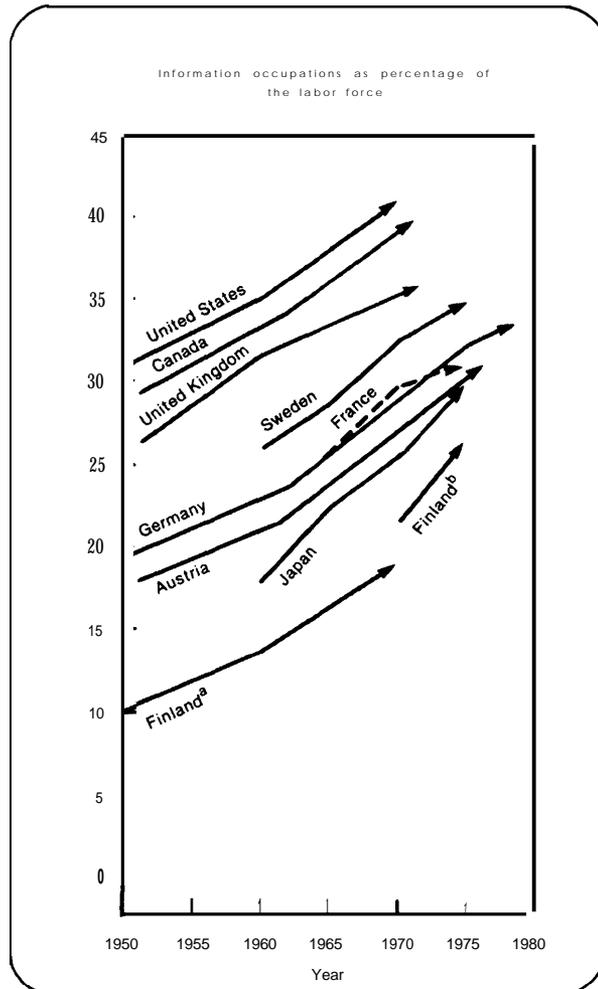
³³Harlan Cleveland, "The Twilight of Hierarchy: Speculations on the Global Information Society," Bruce R. Guile (ed.) *Information Technologies and Social Transformation* (Washington, DC: National Academy Press, 1985), p. 56.

³⁴Charles Johnshur, "Information Resources and Economic Productivity," *Information Economics and Policy I* (North Holland: Elsevier Science Publishers, 1983), pp. 13-35.

³²Daniel Bell, *The Cultural Contradictions of Capitalism* (New York: Basic Books, 1976).

³³Ibid., p. 10.

Figure 2-1.—The Evolution of Information Occupations



NOTE Data for Finland was derived from two separate sources:

^aL. Pietarinen,
^bThe central Statistical Office of Finland

SOURCE: H.P. Gassman, "Is There a Fourth Economic Sector?" *OECD Observer*, No 113, November 1961, pp 18-20, as cited in Magda Cordell McHale (Center for Integrative Studies, SUNY at Buffalo), *Facts and Trends The Changing Information Environment An Information Chartbook* (Rome Intergovernmental Bureau for Informatics, 1985), p 32

were first employed.³⁷ A recent analysis estimates that the information sector constitutes

"Fritz Machlup was one of the first to note these changes and to measure the information sector in his pioneering work, now a classic, entitled *The Production and Distribution of Knowledge in the United States*. Others have followed this tradition. By far, one of the most ambitious efforts to date has been the innovative work of Marc Uri Porat for the Office of Telecommunications in the U.S. Department of Commerce. In 1967, according to Porat, information activities accounted for 45.2 percent of the GNP—25.1 percent in the "primary information" sector (which produces information goods and services as final output) and 21.1 percent in a "secondary information" sector (the bureaucracies of non-information enterprises).

34 percent of the gross national product (GNP), and accounts for 41.23 percent of the national labor force.³⁸

The changing economic role of information can also be seen by examining how information technologies are being used by business and industry. Businesses are now applying computer technology to almost all of their activities: from recruiting to laying off workers, from ordering raw materials to manufacturing products, from analyzing markets to performing strategic planning, and from inventing new technologies to designing applications for their use.³⁹ These technologies, moreover, are being applied not just to traditional tasks; the diffusion of the new technologies is also being used to reconfigure the nature of the business process itself.⁴⁰ Figure 2-2, for example, identifies how new technologies might be used to rationalize all of a firm's activities. As a result, some economists are suggesting that in the future, whether or not a business will be competitive, will depend on the extent to which it can find creative applications for these technologies." Representatives of industry agree. As Airlliam H. Gruber, President of Research and Planning, Inc., described it:

The difference between now and five years ago is that then technology had a limited function. You weren't betting your company on it. Now you are.⁴³

.....
³⁸Michael Roger Ruben and Mary Taylor Huber, *The Knowledge Industry in the United States: 1960-1980*. This volume updates work done by Fritz Machlup. In their breakdown of the information sector of the economy, Ruben and Huber note that, leaving education aside, the contribution of knowledge production to the GNP increased from 17.9 percent in 1967 to 24.5 percent in 1980. The contribution of education, on the other hand, fell from 16.6 percent to 12.0 percent during the same period, a decline that accounts for the fact that knowledge production's overall contribution remained relatively stable at about one-third of the GNP.

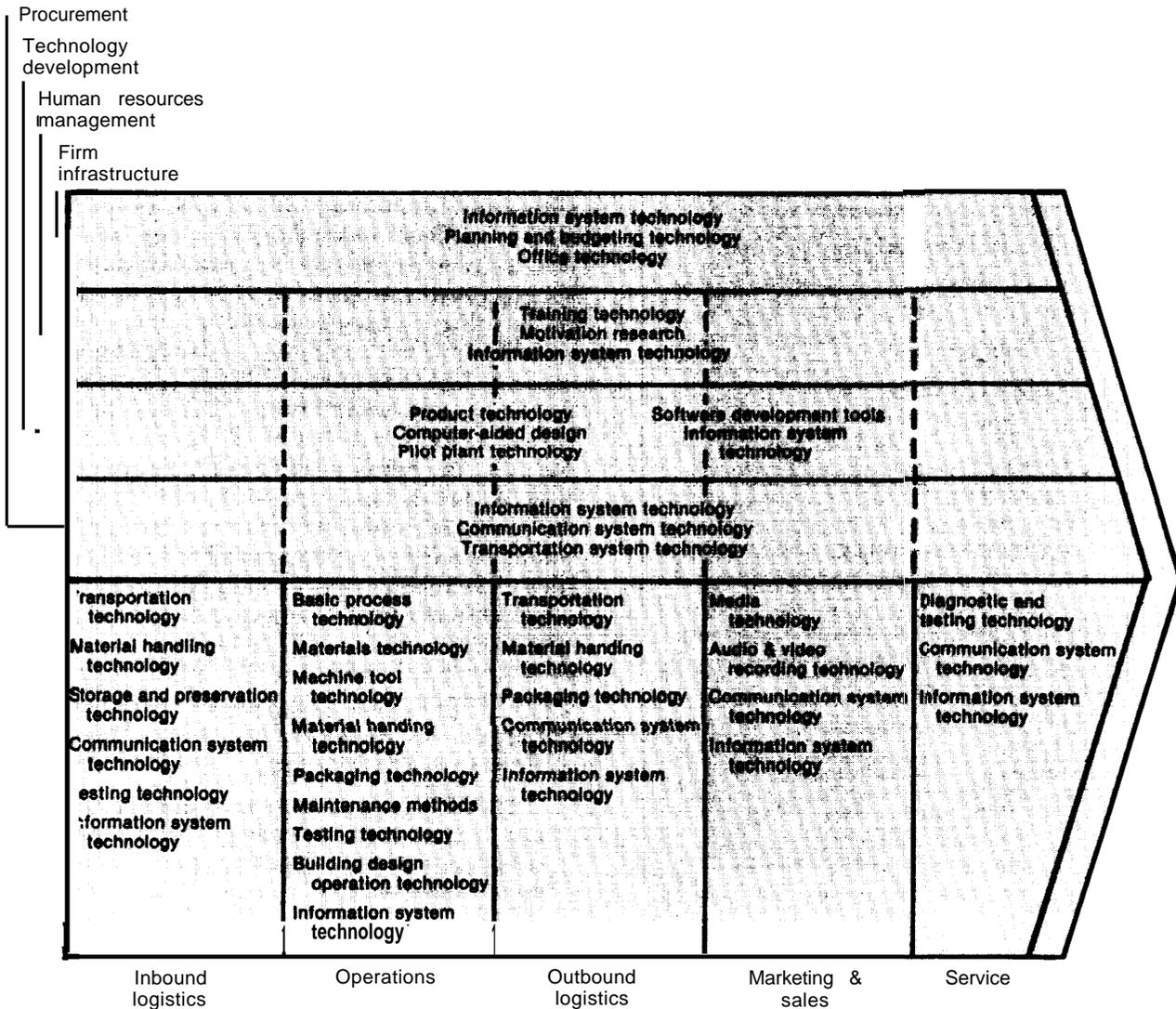
³⁹Theodore J. Gordon, "Computers in Business," Guile, *Information Technologies and Social Transformation*, p. 154.

⁴⁰"Information Power: How Companies Are Using New Technologies To Gain a Competitive Edge," *Business Week*, Oct. 14, 1985, p. 108.

⁴¹Michael E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance* (London: Free Press, 1985).

⁴³*ibid.*

Figure 2.2.—Uses of Information Technology Within the Firm



SOURCE Michael E Porter, *Competitive Advantage: Creating and Sustaining Superior Performance* (London: Free Press, 1985).

Many businesses are already successfully employing technology to their competitive advantage. Merrill Lynch & Co., for example, used computers to identify and automatically invest funds that were idle in checking, savings, credit card, and security accounts: In so doing, it was able to attract billions of dollars in assets from other places. Even though competitors were soon to follow suit with their own service offerings, Merrill Lynch, with its head start, was able to maintain almost 70 percent of the market.⁴⁴ Similarly, the America Hos-

⁴⁴Ibid., p. 109.

pital Supply Corp. gained a competitive advantage by being the first to communicate directly with its customers via computer terminals. As a result, it was not only able to provide services at less cost than its rivals, it could also use the data collected in the process to more accurately analyze trends and customers needs.⁴⁵

Because of its new economic and managerial importance, information is becoming much more commercially valuable. Businesses have always been willing to pay for information such

⁴⁵Ibid.

as market research and economic forecasts. Today, however, they are not only buying more; they are willing to pay much higher prices for it. Consider, for example, the high price that a consortium of Japanese engineering companies was willing to pay to understand what went wrong on Three Mile Island. They offered to contribute \$18 million to assist in the clean up in exchange for access to all of the pertinent documents and records related to the accident.⁴⁶ On a more routine basis, American business firms might pay \$800 per year for a monthly professional information service, or perhaps \$15,000 for a market research report shared by others in the industry.⁴⁷

Today even private information can have commercial value. The direct mail business is a good example. Packaging data about individual credit ratings, security clearances, and background checks together with demographic data, this \$13 billion industry sells individual names to magazine publishers and local service companies for prices as high as \$1 per name.⁴⁸

The new technologies provide new ways and new opportunities to meet these burgeoning information needs. They allow information to be processed in a whole variety of new ways, adding value to it from the point at which it is created or composed to the point at which it is assimilated or used. For example, a book may be produced with paper and ink, on audio cassette, or on optical disk; its content may be adapted into a television "mini-series" or an interactive game that can be distributed in a variety of forms.

As the opportunities for creating new information products and services have increased, so too has the number of commercial providers. Taking advantage of the increased demand for information, the new technologies have spawned a rapidly growing information industry, the

scope of which can be seen in figure 2-3. Developing hand in hand with the new technologies, this industry is relatively young. More than half of the companies that comprise it were formed since 1970. Nevertheless, it is one of the fastest growing industries in the economy. In 1984, there were nearly 2,500 online databases. Based on an Information Industry Association survey of 1982, it is estimated that these services accounted for revenue of \$3.6 billion.⁴⁹ By 1985, the number of data bases had grown by about 12 percent.

In addition to service providers, new industries have also been established whose sole purpose is to provide information-on-demand. With estimated revenues of \$660 million, this industry consists of small research companies and a few major libraries that have made a business out of finding documents and copying them for users. In the private sector, these are called "fee-based libraries," "on-demand companies, or sometimes 'information brokers.'" They also include 5,000 special research libraries in the United States supported by a few inter-library loan networks such as the Online Computer Library Center and the British Lending Library.⁵⁰

Given its increased value, information will most likely be exchanged less freely. Instead, it will be treated more and more like a commodity, to be bought and sold in the marketplace. In fact, the rush for profits in information products and services is so pronounced that it might reasonably be compared to the California Gold Rush, a metaphor used most effectively by the information industry as the theme for its 1985 annual conference.

New Opportunities in the Political Realm

The polity is the realm of power. It is the area of social activity where disputes are resolved and social justice is defined, and where resources and values are allocated in accordance with the general idea of justice. The basic

⁴⁶Christopher Bums, "Three Mile Island: Information Melt-down," *Information Management Review*, May 1985.

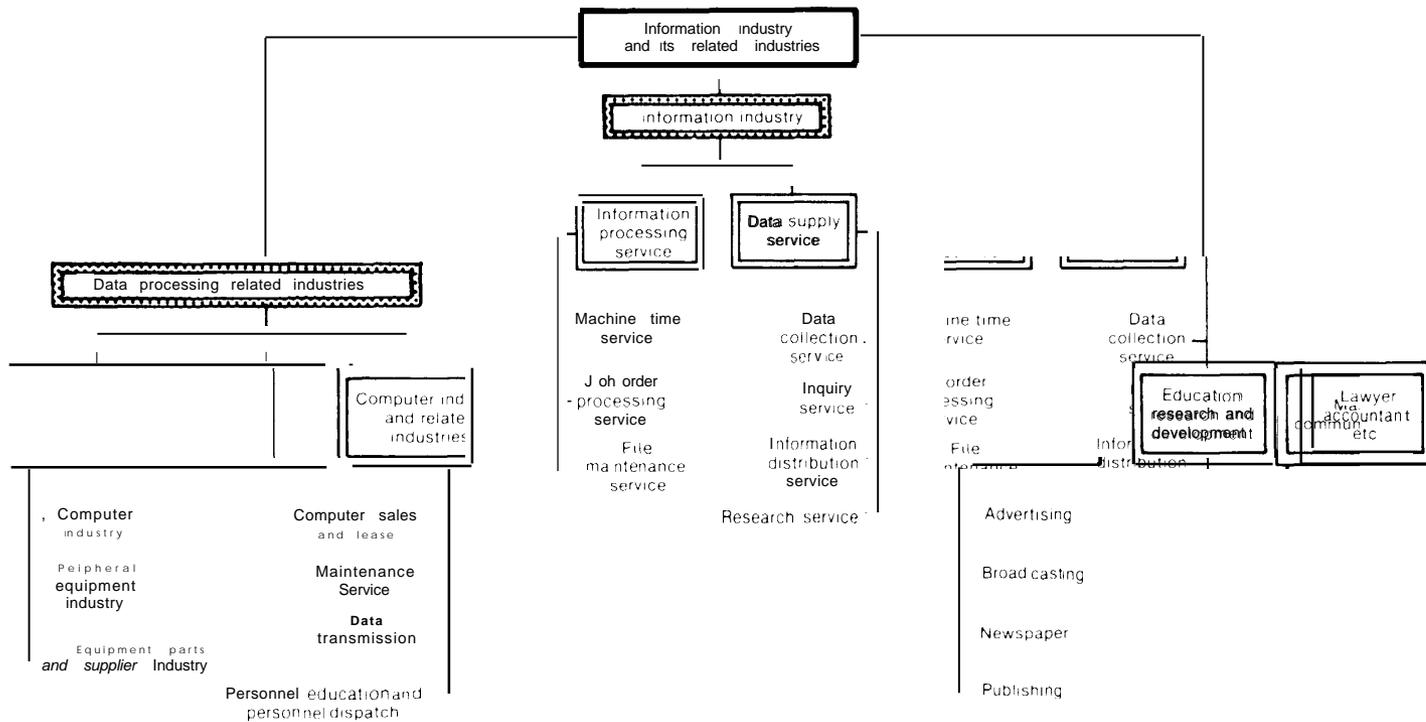
⁴⁷Christopher Burns, Inc., *The Economics of Information*, contract report prepared for the Office of Technology Assessment, U. S. Congress, 1985.

⁴⁸Ibid.

⁴⁹Ibid.

⁵⁰Ibid., p. II-8.

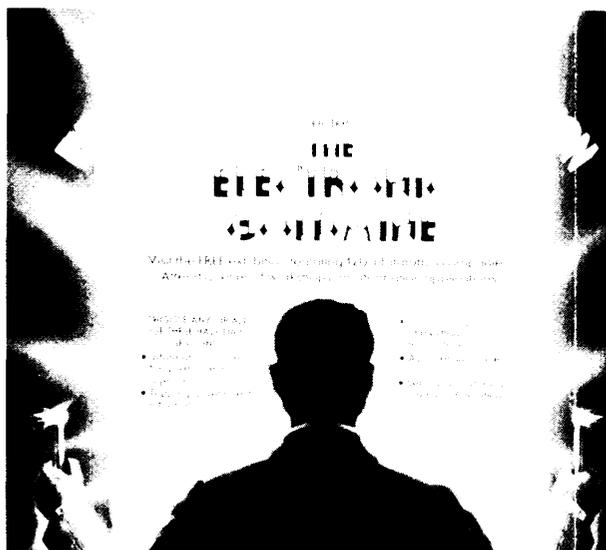
Figure 2-3.—Information Industry and Its Related Industries



Typology

	Information processor	Information producers	Information infrastructure	Information distributors
Sectors	Receive and respond to information inputs. The response may be to decide, to administer, or to perform some manipulative operation upon the information inputs.	Create new information or package existing information in a form appropriate to a particular recipient.	Install, operate and repair the machines and technologies used to support information activities.	Primarily concerned with conveying information from the initiator to the recipient.
Occupations	Administrative and managerial; Process control and supervisory; (Computer-related components).	Scientific and technical workers (components); Market search and coordination; information gatherers; Consultative services.	Information machine workers; Postal and telecommunication workers.	Educators; Communication workers.

SOURCE: H. P. Gassman, "Is There a Fourth Economic Sector?" *OECD Observer*, No 113, November 1981, pp 18-20, as cited in Magda Cordeil McHale (Center for Integrative Studies, SUNY at Buffalo), *Facts and Trends The Changing Information Environment An Information Chartbook* (Rome Intergovernmental Bureau for Informatics, 1985), p 32.



Courtesy of Information Industry Association

value that maintains the polity is “legitimacy”—the general adherence of the people to the conception of justice embodied in the society’s traditions or constitution, and acknowledgment of the authority that governs on its behalf.⁵¹ Whereas in the economic realm change takes place in a linear fashion through increased specialization and economization, in the political realm change comes about more haphazardly, through the competition for power and influence. In a democratic polity, the means of bringing about change is participation and persuasion; individuals and groups seek to gain access to resources and values by shaping attitudes and beliefs about what constitutes justice. To be effective, they must have access to both the means to influence as well as the means to be influenced. They must have the right to obtain information as well as the right to distribute it. In contrast to the bureaucratic structure of the economic realm, the political realm in a democratic society is decentralized and open.”

Communication and information pervade political life.” Without them there can be no na-

⁵¹Bell, *Cultural Contradictions*, p. 1.

⁵²Ibid.

⁵³In the discussion that follows, the term communications refers to both the information and the process by which information is shared and exchanged.

tion. For it is through the process of communications that people first develop a sense of community and a shared set of values that legitimize political authority.⁵⁴ By magnifying and amplifying some actions, the communications process, moreover, distinguishes between what is a private act and what is a public affair. It organizes what may seemingly be random activities to show how individuals and groups are related to one another in the pursuit of power, providing individuals who want to influence the course of political events a road map to guide them.⁵⁵ Citizens rely on the communications process to gather information, to identify like-minded people, to organize their forces, and to articulate their political preferences. Furthermore, because it generates a common fund of knowledge and information, the communication system facilitates productive and rational debate. Without some knowledge and understanding of how others are informed, and of what they believe, individuals could not make reasoned and sensible arguments and decisions.⁵⁶ The communications process also provides guidance to political leaders. Because communication channels flow in two directions, communications serve not only to inform citizens about political events, they also provide feedback to political leaders about the values and attitudes of their constituents.⁵⁷

Given this intimate relationship between the communications and political processes, it is not surprising that, just as the new technologies afford opportunities in the economic realm, so they create new political opportunities. Capable of sending a vast amount and a

⁵⁴Karl Deutsch, *Nationalism and Social Communication* (New York: Free Press, 1963).

⁵⁵Lucien W. Pye (ed.), *Communications and Political Development*, Studies in Political Development [Princeton, NJ: Princeton University Press, 1965], p. 6.

⁵⁶Ibid.

⁵⁷Mass media communicators, for example, interpret public attitudes. They adjust their materials to take into account how the public reacts to their descriptions of news and events. Those in position of political power, in turn, adapt their behaviors to conform to the media’s portrayal of the public’s mood at any one time. For a discussion of this theory see, Elihu Katz, “The Two Step Flow of Communications: An Up-To-Date Report on the Hypothesis,” *Public Opinions Quarterly*, vol. 21, spring 1957.

wide variety of information long distances at unprecedented speeds, these technologies allow entire populations to experience major public and political events in common, thereby fostering a sense of national community. Because they are also interactive, these technologies can play a greater role in helping political leaders to communicate to the public and to assess its mood, thus helping to reinforce the legitimacy of the political system. Moreover, given the decentralized distribution of many of the new technologies, and their capacity to store, copy, manipulate, retrieve, and send information, they can be used to foster participation, helping individuals to gain access to information and other political resources, to locate parties holding similar positions, to articulate and widely disseminate their views, and to more effectively and efficiently organize their political involvement. Already we see evidence of the new technologies being used in several of these ways.

In the past few years, for example, a growing number of political leaders are beginning to use the new technologies to communicate more effectively with their constituents. A number of senators and representatives now produce their own news clips and interviews, which they transmit via satellite to their local television stations. This technique allows them to speak directly to the public, without others commenting on, or interpreting, their remarks.⁵⁸

Computer technology also provides new ways to enhance the efficiency of political communications. Using the mass media, for example, politicians have to spend considerable money and effort to send a message that will have enough overall appeal to pay for the effort. Using the new electronic media, on the

⁵⁸Paul West, "The Video Connection: Beaming It Straight to the Constituents," *Washington Journalism Review*, June 1985, pp. 48-50. Congressmen have always appealed to the public directly through newsletters, questionnaires, and other franked materials. However, some observers consider the use of satellite technology as a different kind of development, which may give cause for alarm. Unlike the previous kinds of appeals, which were sent to individuals and which were clearly identified as being politically oriented, the new video materials are often distributed as part of local news broadcasts, and thus their origin and intent might be misconstrued.

other hand, whether it be cable, teletext, or the computer, politicians can "custom target" their messages to those who are the most likely to be responsive to it. In this manner, they can more efficiently allocate their time and resources, focusing them on those voters who are the most likely to give them support.⁵⁹

The new technologies, moreover, have potential to aid citizens in acquiring the information about government that they need in order to participate effectively in political life. A growing number of communities and government agencies, for example, now allow individuals to access their computerized records using public terminals.⁶⁰ Moreover, some people hope that, in the future, individuals will not only be permitted to access an agency's data but also the computer software used to analyze this data. With such information, citizens would be able to rerun agency decisionmaking models, using their own assumptions or data.⁶¹ In addition, cablecasting⁶² and teletext⁶³ provide

⁵⁹Kevin L. Kramer and Edward J. Schneider, "Innovations in Campaign Research: Finding the Voters in the 1980s," Robert G. Meadow (ed.), *New Communication Technologies in Politics: The Papers for a Conference, The Washington Program, Annenberg School of Communications*, 1985. See also William C. Paley and Shelly Moffett, "The New Electronic Media-Instant Action and Reaction," *Campaigns and Elections, C. 4, 1984*, pp. 4-12.

⁶⁰The idea of government databases, accessible to the public, has existed since the 1960s and early 1970s. At that time, many people hoped that the automation of government operations would produce vast stores of information about the government and community which could be made available to interested citizens through remote computer terminals. Although the ideal of remote access never materialized, today use of public terminals for access to these databases within government agencies is common, and becoming more so. Kenneth L. Kraemer, John Leslie King, and David G. Schetter, *Innovative Use of Information Technology in Facilitating Public Access to Agency Decisionmaking: An Assessment of the Experience in State and Local Governments*, final report prepared for the Office of Technology Assessment, March 1985, pp. 35-36.

⁶¹Ibid.

⁶²Utilization of these channels by local government is generally low. Most cities have only about two cable applications for governmental affairs programming. These have mainly been limited to a variety of one-way services that require a minimal production effort, such as for broadcasting city council meetings, for community bulletin boards, and for calendars and short local news items. Ibid., p. 35.

⁶³There is considerable potential to provide public access to information related to government decisionmaking via teletext and videotex services. At present, the kinds of information provided generally are limited to such things as notification about schedules for hearings, meetings, etc., or to the posting of the results of such activities. Ibid.

new channels for public access to governmental decisionmaking by increasing the levels of public awareness, interest, and knowledge about governmental affairs.

To effectively champion one's views, individuals, however, do not just act alone; they act in concert. The new technologies, with their capabilities to store, manipulate, retrieve, and network are optimally suited to help them in this regard. With a personal computer and a modem, individuals can collect and store information related to their concerns; they can maintain lists of potential supporters and contributors and target specific messages to them; they can match organizational resources with organizational needs; and they can gain constant feedback about the progress being made. Figure 2-4 below illustrates, for example, how the new technologies can manipulate and structure information in a way that will improve both the efficiency and effectiveness of a political campaign.

Clearly one need not be a seasoned political activist to take advantage of these new capabilities. Acting on his own, one man in Colorado Springs, for example, led a successful campaign to block a local ordinance placing restrictions on home-based entrepreneurial activities. Surprised that he was the only citizen to attend the first hearing on the ordinance, he brought the issue to the community's attention by publishing it together with a list of his concerns on his computer bulletin board. A small notice in the local newspaper helped to advertise his plan. A number of people contributed their comments via the computer network. When, several weeks later, a second hearing was held, 175 people appeared to defeat the ordinance.⁶⁴

Information technologies can even be used to lobby. Lobbyists for the Environmental Fund, for example, carry a personal computer when visiting congressional offices. Their specially designed interactive software allows congressmen to look at population projections

using a range of different assumptions. According to lobbyist Casy Dinges, this kind of interaction is not only effective in informing congressmen of an organization's point of view; it also provides them with a memorable experience, thereby engaging their interest in the issues over the long term.⁶⁵

Because of their effectiveness as political tools, the new technologies are becoming essential to all those who aspire to influence the political process. For, just as these tools are often the critical competitive factor in the economic realm, so too are they in the political realm. Thus, politicians and politically active citizens, like their businessmen counterparts, are hurrying to establish their own information bases. This move towards technology is very apparent, for example, at the level of national politics. Trying to catch up with the Republican Party, which began very early to incorporate technology into its campaign operations, the Democratic National Committee is now endeavoring to equip itself with an information infrastructure that will include a national bulletin board, that is capable of trading political information between the national office and key House candidates.⁶⁶

With the numerous possibilities that the new technologies afford, attention is becoming, focused on the politics of information. In the international arena, for example, Third World countries now assert that the control over information within their national boundaries is vital to their economic, political, and social well-being. To achieve their ends, they are calling for a new World Information Order, that would allow them to select the information that enters their nations and that would assure them access to the information they require for development.⁶⁷

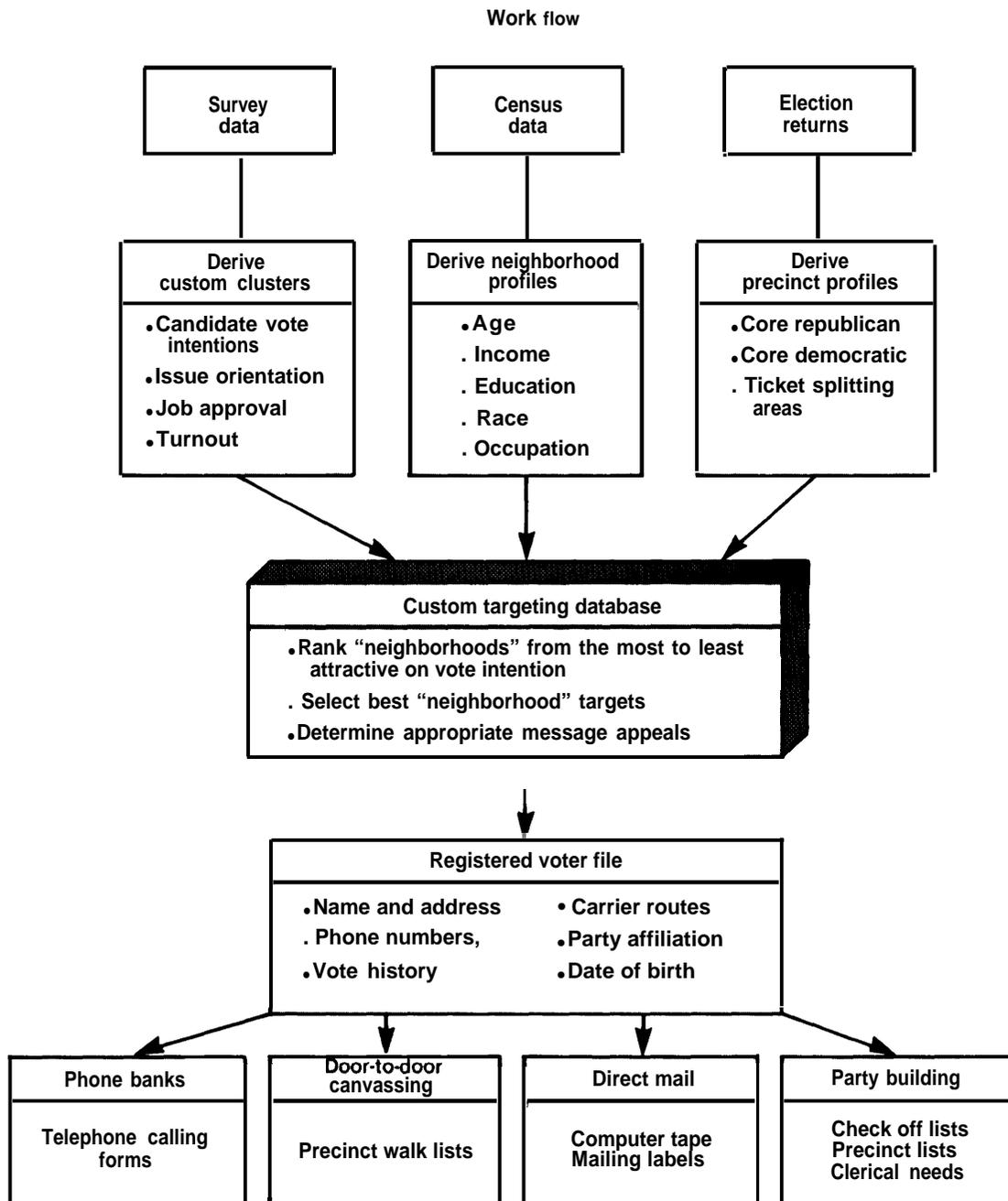
⁶⁴Dave Hughes, "The Neighborhood ROM, Computer-Aided Local Politics," 45, *Whole Earth Review*, March 1985, p. 89.

⁶⁵Interview with Casy Dinges, Lobbyist, Environmental Fund, April 1985.

⁶⁶David Burnham, "Democrats Chase Dollars With Computer Aid," *The New York Times*, Feb. 5, 1986, p. B6.

⁶⁷Joge Becker, *Information Technology and A New Information Order*, Information and Society Series (Amsterdam: Chartwell-Bratt Ltd., 1984).

Figure 2-4.— Development of Custom Targeting Database



SOURCE Kevin L. Kramer, Edward J. Schneider, "Innovations in Campaign Research, Finding the Voters in the 1980s," *New Communications Technologies in Politics*. The Washington Program, Annenberg School of Communications, Robert G. Meodans (ed.), Washington, DC, 1985, p 24 Used with permission

Political observers in advanced industrialized societies are also considering how the new technologies might affect political life. Among them, they have developed two quite distinct and contradictory scenarios. One of these posits “the rise of the computer state.”⁶⁸ According to this scenario, government and large corporations will use the centralized storage and processing capabilities of computer technology to consolidate their control and to monitor and manipulate behavior. The second scenario, in contrast, envisions the opposite state of political affairs. Characterizing the new technologies as “technologies of freedom,” this view of the future postulates that, given their decentralized use and increased availability, these technologies will lead to a dispersal of political power and permit enhanced participatory democracy.”

Evidence can be found to support both of these contentions. As has already been pointed out, some local communities are taking steps to increase the public’s access to information. On the other hand, taking advantage of the monitoring and processing capabilities of the new technologies, government is looking more favorably at the prospects of employing such devices as electronic surveillance, computer matching, and polygraph testing.⁷⁰ In the long run, the political outcome will depend less on the technology itself and more on the legal and social structure that determines how the new technologies will be used.

Opportunities in the Cultural Realm

Culture is the realm of “sensibility of emotion, moral temper, and of the intelligence [that] seeks to order these feelings.”⁷¹ Providing a consistent moral and aesthetic frame of reference, it serves to develop and sustain the

identities of both individuals and societies.⁷² This realm comprises all of those imaginative and spiritual activities—such as painting, poetry, or music, as well as litany, liturgy, and ritual—whereby men and women seek to understand their natures—who they are, their relationships to others and to God.⁷³ Although the ways that people have dealt with these existential concerns have changed considerably over time and in different eras, the themes that have preoccupied mankind—death, tragedy, love, sacrifice, heroism, obligation, and redemption—have remained constant. Thus new art forms and new ideas do not replace old ones; they become apart of an ever expanding source on which individuals can draw to recreate and reinterpret aesthetic and religious experience. The cultural realm, then, is governed by the principle of communal sharing and exchange.⁷⁴

Communication is the process by which culture is developed and maintained. For it is only when people develop language, and thus a way of communicating, that a culture can, in fact, emerge and be imparted.⁷⁵ Information, the content of communications, is the basic source of all human intercourse.⁷⁶ Over the course of human history, it has been embodied and communicated in an ever expanding variety of media, including among them spoken words, graphics, artifacts, music, dance, written text, film, recordings, and computer hardware and software. Together, these media and the channels through which they are distributed, constitute the web of society, which determine the direction and pace of social development. Seen from this perspective, the communication of information permeates the cultural environment and is essential to all aspects of social life.⁷⁷

Linked as they are to all social activity, the new information and communication technologies provide endless opportunities to enhance the cultural realm. Given their networking ca-

⁶⁸See, for example, David Burnham, *The Rise of the Computer State: The Threat to Our Freedoms, Our Ethics, and Our Democratic Process* (New York: Random House, 1984).

⁶⁹Ilarlan Cleveland, “The Twilight of Hierarchy: Speculations on the Global Information Society, Bruce R. Guile (ed.), *Information Technologies*, p. 61.

⁷⁰U.S. Congress, Office of Technology Assessment, *Federal Government Information Technology: Electronic Surveillance and Civil Liberties, OTA-C IT-293* (Washington, DC: U.S. Government Printing Office, October 1 985).

⁷¹Bell, *Cultural Contradictions*, p. 12.

⁷²Without a cultural tradition, individuals interactions would be meaningless. For, in order to define themselves and to take purposeful action in different situations and in relationships to others, individuals need reference to a relatively stable construct of shared symbols. Talcott Parsons, *The Social System* (Glencoe, IL: Free Press, 1964), pp. 11-12.

⁷³Bell, *Cultural Contradictions*, p. 12.

⁷⁴Ibid. p. 15.

⁷⁵Ibid.

⁷⁶Pye, *Political Development*, p. 4.

⁷⁷Ibid.

pabilities, they provide an expanded infrastructure for information sharing and exchange. They can be used, moreover, not only to generate greater amounts of information and new kinds of cultural forms, but also to make this knowledge more accessible and to provide it in more convenient and suitable ways. In addition, because they are decentralized and widely available, they open the way for many new people to become actively involved in creative activities. Finally, given their ability to store and retrieve vast quantities of information, they can serve as a storehouse of cultural resources, making them accessible and available for generations and civilizations to come.

Many of these opportunities are already being developed. Most prominent is the opportunity to provide more and more information. Between 1960 and 1977, for example, the words supplied in all media grew at a rate of 8.7 per year, which is 5 percent faster than the rate of growth of the the GNP (measured in constant dollars). The total number of words produced has increased from 1.07×10^9 in 1960 to 3.36×10^9 in 1977.⁷⁸ And individuals are consuming, on the average, 1.2 percent more words each year. As already noted in figure S-3, the largest proportion of this growth is attributable to electronic media.

Moreover, this information can now be provided in a much greater number of forms, giving people the opportunity to have more control over, and choice about, the kinds of information and cultural works that they enjoy. One new technology that will increase information channels, for example, is videotex. By taking advantage of television's full channel capacity, this technology can augment the number of information outlets 100-fold.⁷⁹ Other new technologies that increase the available sources of information are videocassette recorders, optical disks, direct broadcast satel-

⁷⁸Ithiel de Sola Pool and Roger Hurwitz, "Methodological Issues in the Measurement of Information Flows," Workshop on Measurement of Information Flows, " Workshop on Measurement of Information, Sponsored by the National Science Foundation, Research Program on Communications Policy, Massachusetts Institute of Technology, July 1982, p. 8.

⁷⁹Irving Louis Horowitz, "New Technology, Scientific Information and Democratic Choices," *Information Age*, vol. 5, No. 2, April 1983, p. 69.

lites, and computer bulletin boards, to name but a few.

The new technologies also allow people to receive information specifically tailored to their needs. Today many newspapers, for example, use computer technology to create and distribute special editions for different geographical audiences.⁸⁰ Similarly, community, religious, and citizen-based organizations use technology to select the audience for whom their messages would be most relevant. Using home technologies, people can also select the information they desire. They might, for example, choose bibliographic data or financial information from on-line databases such as the Source or CompuServ. Or, they might just place a query on their electronic bulletin boards.

With the new technology, people can, moreover, use information at times and under conditions that are most convenient for them. With an audio or video recorder, they can listen to or watch programs at a time other than when they were originally aired. Moreover, they can rent or buy an ever growing number of tapes and programs to enjoy at their leisure in their homes. Such flexibility not only allows viewers the choice of when and what to watch; because it permits them to record programming for later viewing, it also allows them to expand their repertoire of home entertainment.

The power of the new technologies to enhance the cultural realm are evident not only with respect to the quantity, variety, and accessibility of the information that individuals can receive in their homes. Of equal, if not more, significance is the fact that these technologies are interactive. As such, they encourage active, not passive, behavior.⁸¹ Moreover, given their ability to copy, store, and reprocess information, and to transmit it to large audiences, they make it possible for ordinary individuals to carry out activities that once required the skills of a specialized elite.⁸² Now conceivably, everyone can be a creator

⁸⁰Anthony Smith, *Goodbye Gutenberg: The Newspaper Revolution in the 1980s* (Oxford: Oxford University Press, 1980), pp. 51-61.

⁸¹Horowitz, *Information Age*, p. 69.

⁸²Ibid.

and a publisher. Each person can actively contribute to his culture, and not just partake of it.

The ability of technologies to help individuals reach out to the community is no where better illustrated than in the case of videotex. Although this technology has not yet taken hold in the United States, the French experience with it provides a clue about what a national system such as this might entail. Established by the French Government in 1981, the French system, Teletel, now consists of 1.4 million terminals—called Minitels—operating in households and businesses throughout the country.⁸⁴ Using le *Kiosque*, Teletel's most popular feature, the French people can select from over 200 different kinds of information services. Many use the system simply to "chat" with Minitel friends. Farmers rely on it for information about the weather and commodity prices. In addition, the government is now beginning to expand the system to provide human services. Already, pilot programs are underway to develop networks for such groups as diabetics, victims of AIDS, parents of epileptic children, and battered wives.⁸⁵

Although the use of videotex has been much less popular in the United States than in France, Americans are also reaching out to others on electronic bulletin boards. Becoming increasingly popular among the public, bulletin boards not only allow individuals to access information from their homes; they also help them to contact others in similar situations or with similar needs, to discuss and share information, or even to collaborate with them on-line. Groups, such as the disabled, who have traditionally been isolated from society, have found in networking a new way of socializing."

The new technologies also serve as catalysts for social action. Still eager to learn, many elderly people have found computing to be a very engaging past time. In fact, because computing is an activity that does not require phys-

"Nadine Epstein, "Et Voila! Le Minitel," *The New York Times Magazine*, Mar. 9, 1986, pp. 48-49.

⁸⁴ Ibid.

⁸⁵ Sherry SonLag, "For Disabled, Computers Are Creating New Lives," *The New York Times*, vol. 134, p. 1(n) and 1(l).

ical prowess, and which can be done at home, a number of senior citizens are thinking about using their newly acquired skills to begin a second career. Recognizing this potential interest, some communities have begun programs to get the elderly more involved." The Little House Senior Adults Center in San Mateo, California, for example, has been so successful with its computer programs that its directors are now thinking about building a computer network for the elderly.

In the same way that individuals benefit from the new technologies, so too will cultural institutions such as libraries, schools, and museums. Using technology, these institutions will be able not only to reach out into the community to provide information and cultural works to those who would otherwise not have access to them, but also to help people to participate in cultural activities. Thus they serve to replenish the cultural store.

As documented in a previous OTA study, *Informational Technology and Its Impact on American Education*, the computer and other information-related technologies can help educational institutions play a major role in providing people with the knowledge and skills they need to participate in and enjoy the benefits of an information age.⁸⁶ The interactive nature of computer technologies allows students to become actively involved, and thus, more engaged, in their own learning process. Using a videodisk to simulate laboratory experiments, for example, students can view on a monitor the explosion that would take place if they were to mix incompatible chemicals.⁸⁷ Videocassettes are also being successfully used for educational purposes. The film company, Education and Learning, for example, has re-

⁸⁶ Kathy Chin, "The Elderly Learn To Compute," *Infoworki*, May 7, 1984, pp. 24-29.

⁸⁷ U.S. Congress, Office of Technology Assessment, *Informational Technology and Its Impact on American Education*, OTA-CIT-187 (Washington, DC: U.S. Government Printing Office, November 1982). This study found that information technology is already beginning to play an important role in providing education and training in some sectors, and that it is likely to become a major vehicle for doing so in the next few decades.

⁸⁸ Jim Bartimo, "Classrooms To Utilize Videodisc Technology," *Infoworld*, Mar. 12, 1984, p. 40.

cently compiled a Video Encyclopedia of the 20th century, comprising 75 one hour videocassettes that cover major events from 1893 to 1985. Students can randomly access these tapes to witness famous historical events, such as the Scopes trial, or to view periodic pieces describing such things as the costumes of a particular era.⁹⁰

Universities, too, are also taking advantage of new technologies. Over the past few years, for example, many universities and colleges have been experimenting with ways of integrating computers into their course curricula. At Stevens Institute of Technology, for example, interactive calculus programs are used to assist students in learning to do mathematical analysis. In chemistry, computers are used for graphic simulations and for drill and practice. In introductory computer graphics courses, computers serve as electronic drawing boards, and in the labs they are being used to assemble data, provide interface with equipment, and stimulate experiments that might otherwise be unfeasible, too expensive, or too dangerous.⁹¹

Of particular benefit to universities will be the development of computer networks, which can connect students and faculty members to a wealth of information, both on and off campuses. These networks, still in their infancy, are modeled after ARPANET, the research network developed by the Department of Defense. Carnegie Mellon University in Pittsburgh, Pennsylvania, has already taken major steps to develop such a network. By the end of this year, they plan to link all of their students' personal computers into a time-sharing file system. This system will not only provide for point-to-point communication and electronic mail; it will also allow the user to browse through all of the databases on campus.⁹² Other universities such as MIT and Rensselaer Polytechnic Institute are following suit.⁹³ Most im-

⁹⁰Fred M. Hechinger, "Video Cassettes Bring History to Life," *The New York Times*, Jan. 14, 1986.

⁹¹Donna Osgood, "A Computer on Every Desk," *Byte*, June 1984.

⁹²Ibid.

⁹³MIT network system is being developed through Project Athena, a \$70 million effort to create a single operating system

portant of all, universities are now thinking about expanding their networking efforts to link their own systems to those that connect researchers and research throughout the United States.⁹⁴

As institutions that acquire, store, manage, and disseminate information, libraries are also well suited to take advantage of the opportunities that new technologies afford. And, in fact, these technologies have affected all aspects of library services. Software is now commercially available for practically all library operations: circulation, inventory, acquisitions, periodicals, cataloging, and reserves. Moreover, using these technologies, libraries have developed networks that can access national databases, allowing users faster and more efficient access to information.

Considering all of these opportunities together, the new technologies would appear to have been designed especially for a modern age such as ours, which seeks self-fulfillment and self-realization. They offer convenience and personal choice. They can promote self-discovery. And with them, people can enter new realms, mental as well as physical.

Whether or not these opportunities are fully exploited is, of course, uncertain. For just as there are two opposing scenarios about political life in an information age, so too are there two visions of the impact of technology on the individual, one more favorable than the other. While acknowledging their potential, some people, for example, are concerned lest these technologies serve to further divide the world between the information rich and the information poor, reinforcing or even exacerbating existing social and economic differences. In fact, the more powerful the technology, the wider the gap might be.

that will allow programs available on one part of the system to be available on all others. Similarly, Rensselaer Polytechnic Institute is planning a system that will not only be geared to problem-solving and calculations, but that will also serve to provide electronic mail, word processing, on-line libraries, and communication among faculty and students. Ibid.

⁹⁴Dennis M. Jennings, Lawrence H. Landweber, Ira H. Fuchs, David J. Farber, and W. Richards Adrion, "Computer Networking for Scientists" *Science*, vol. 231, Feb. 28, 1986, p. 950.

Those who are concerned fear that the poor will be unable to afford the products of the information age if they are distributed primarily in the market.⁹⁵ They worry, moreover, about the possibility that only those who are already skilled will be able to take advantage of the highly differentiated and individualized services offered by the new technologies.⁹⁶

⁹⁵See, for example, Carol A. Tauer, "Social Justice and Access to Information," *Minnesota Libraries*, vol. 27, No. 2, summer 1982, pp. 39-42; see also, Stephanie Siegal, "The High Cost of Information," *Freedom of Information Center Report, No. 489*, School of Journalism, University of Missouri at Columbia, March 1984, pp. 1-7.

⁹⁶Edward Plowman, "The Communications Revolution," *ASLIB Proceedings*, vol. 33, No. 10, October 1981, p. 377.

They fear too that, given the growing market value of information, information providers may increasingly focus on producing high cost and highly profitable information products and services and cut back on their efforts to meet the information needs of the poor.⁹⁷ Where, they ask, in the midst of the information revolution, is the information that ordinary people need to solve their everyday problems.⁹⁸

⁹⁷Ibid.

⁹⁸Eugene Garfield, "Society's Unmet Information Needs," *ASIS Bulletin*, October November 1985, p. 6.

THE POTENTIAL FOR CONFLICT IN THE USE OF NEW TECHNOLOGIES

The new communication and information technologies will play a greatly enhanced role in all aspects of life. In fact, as we have seen, their availability and use may, in many cases, be the critical factor for success. The enhanced value of these technologies is reflected, first of all, in the growing number of people who, from whatever realm of life, are striving to integrate these technologies into their daily activities and operations. It is reflected, moreover, in the greatly increased market for information-based products and services, and the flourishing of new industries to provide for these burgeoning information needs.

Not all of these technological opportunities, however, will be exploited. In fact, taking advantage of some opportunities may preclude the development of others. The potential for conflict in the use of new technologies can be seen most clearly by contrasting how information is valued in the realms of economics, politics, and culture. Conflicts are likely to be most pronounced when the economic value of information is very high. For it is under such circumstances that the discrepancy between the need for exclusion, and the need for distribution, sharing, and use is the most starkly drawn.

From the perspective of the economic realm, the value of information is in its exclusivity—that is to say, in the ability of its owner to be able to exploit the difference between what he knows and what other people do not know.⁹⁹ In a horse race, for example, the value of an accurate assessment of the horse's chance increases directly with the exclusivity of that wisdom, and the value is obviously decreased by sharing. Similarly, an important factor in encouraging investment is the presumption that the investor is better informed than others about the outcome of the enterprise. To the degree that all investors have equal access to information this potential for difference is reduced, along with the incentive for investment.¹⁰⁰

To be supportive of democratic values, information, on the other hand, *cannot be* exclusive. It must be plentiful, varied, and the channels of access to it must be open. Politicians and political advocates, for example, seek to influence through persuasion. To be successful, they must disseminate their views as widely as possible. In contrast to the business-

⁹⁹Burns, *The Economics of Information*, p. III-3.

¹⁰⁰Ibid.

man who seeks to maintain his trade secrets, the politician benefits when his cause becomes the subject of widespread discussion. And if they are to be politically responsible and to hold legislators politically accountable, citizens also need to become acquainted with and discuss a wide range of political points of view.

In the cultural realm too, information is made more valuable not by its exclusion, but rather by its perpetual use and reuse. To understand a thought or an idea, people must process it together with the information that they already have. In making use of information, therefore, they do not diminish it. They enhance its value.¹⁰¹ Moreover, even the individuals who are involved in cultural activities can benefit from the repetitive use of their works. For a scholar's reputation and prestige will be more rapidly enhanced the more often his works are cited, and will dwindle if his works are ignored. Similarly, a recording artist may seek to have his records broadcast as widely as possible, just to establish a widespread reputation and a loyal following.¹⁰²

Concerned primarily with the use and flow of information in society, intellectual property law has historically served in the United States to decide which technological opportunities would be developed, and thus which values would be served. For example, the granting of an exclusive right to the creator or provider of an intellectual work changes the basis on which it is made available to society. The criteria to use the work becomes the ability to pay. The granting of such a right, therefore, can favor the values of the economic realm over those of the political and cultural realms. On the other hand, the *fair use doctrine*, which provides exceptions to what would otherwise be considered a copyright infringement, has the

¹⁰¹(Harlan Cleveland, "Information as a Resource," *The Futurist*, December 1982, p. 37.

¹⁰²Harlan Cleveland, "The Twilight of Hierarchy," pp. 186-187. Gossip, for example, spreads rapidly among family members, friends, and neighbors. Books and magazines, and now records, tapes, software programs, and films are commonly passed along from one person to the next. Ideas are discussed and debated at social gatherings, among scholars, and in the press. And by making information more available, and more easily accessible, the new technologies will foster these practices even more.

express purpose of fostering the values of the cultural and political realms. In like fashion, the *first sale doctrine*, which limits the proprietor's control of a work once he has sold it, is designed to ensure public access to works. However, neither of these doctrines are supportive of the value of exclusivity.

In resolving these issues, policy makers have sought to strike a suitable balance between the needs of creators, producers, and distributors of intellectual property and the social, economic, and political needs of the nation as a whole. In such a fashion, intellectual property law has been able to simultaneously serve a wide variety of social and economic public policy goals.

The ability of intellectual property law to strike such a balance was not particularly difficult in the past, when the social and economic stakes in information were lower than today and when relatively few and well-defined players were involved in the intellectual property process. Information-based products and services were peripheral to the performance of many social and economic activities, and people had lower expectations about their use and the level of profit that might be derived from them. As a result, issues involving the granting of intellectual property rights could be worked out among the major players without much public involvement or concern.

The resolution of these issues in an information age, however, will be more problematic, requiring that more stakeholders be taken into account and that decisions be made about the distribution of incentives and rewards. Given the variety of opportunities that the new technologies afford, the increased value of information, changing relationships among the traditional participants in the intellectual property system, and rising expectations about the benefits of these technologies, the number of stakeholders with disparate interests and competing claims on the system will be greater than ever before. In such a context, the granting of intellectual property rights, instead of mutually serving a variety of different stakeholders may actually pit one against another.

The problem is exacerbated by the fact that, as the market value of information increases, so does the pressure to treat information activities in economic terms alone. Today, for example, there are a growing number of people engaged in information activities, which were once clearly considered to be outside of the realm of economics, who are now aggressively competing to economically exploit their works. And, to assure that they can do so, they are avidly seeking intellectual property rights.

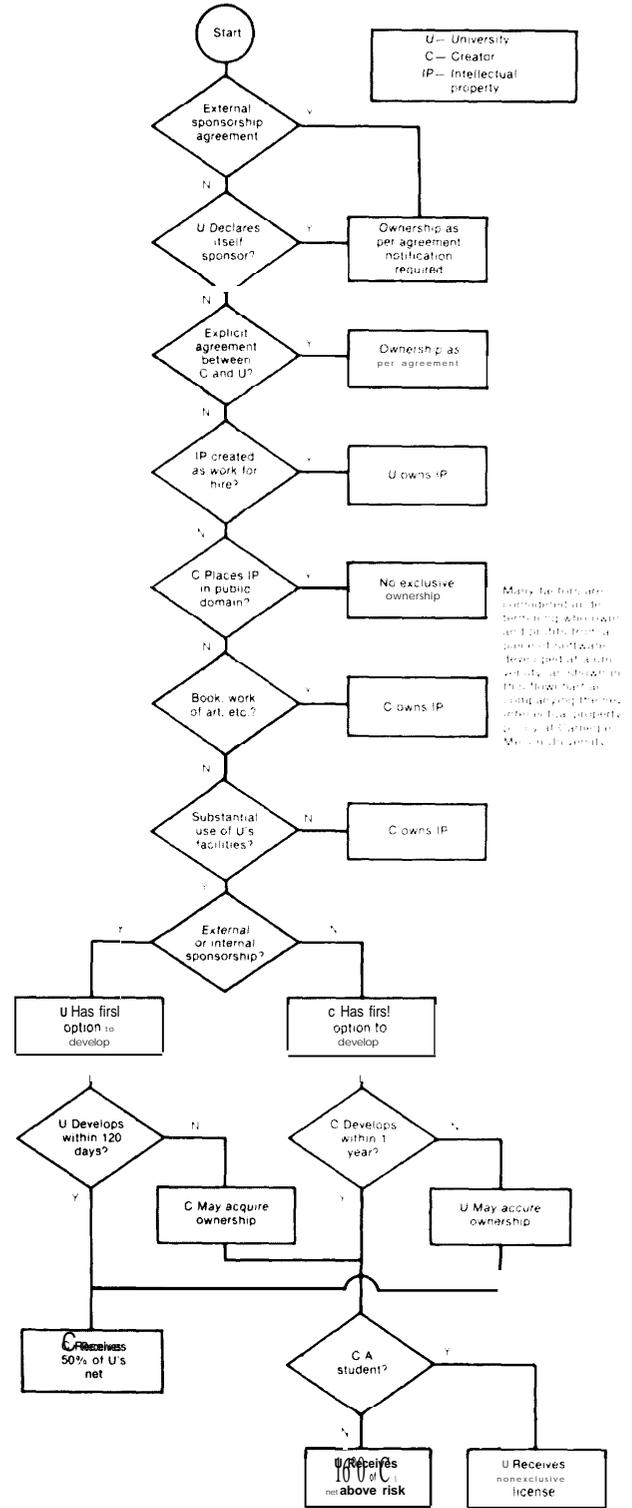
Not surprisingly, such rivalry for ownership is becoming common in institutions of higher education and research, where the potential for profits is high. Here the claims and counter-claims of ownership are continually multiplying: claims of students against students, students against faculty members, faculty against faculty, and the university against students and faculty. '03 A particularly contentious issue in this regard is "work-for-hire." Some university administrators now argue, for example, that, just as companies automatically own the copyright on works done on company time and with company resources, so too universities should have the rights to everything created in conjunction with their facilities¹⁰⁴ These issues of ownership will not be easily resolved. For, as the Carnegie Mellon University flowchart illustrates, there are a wide variety of ways in which rewards can be distributed. (See figure 2-5.)

As the rush to make a profit in information becomes increasingly prevalent, many people are less willing to share their ideas and exchange their views. Some teachers report, for example, that they are unwilling to use computer software that they have developed in

¹⁰⁴ Dorothy Nelkin, *Science as Intellectual Property: Who Controls Scientific Research* (New York: Macmillan Publishing Co., 1984), pp. 1-8.

¹⁰⁵ Just beginning to grapple with these issues, universities vary considerably in their work for hire policies. Brown University, for example, follows a relatively liberal policy, allowing faculty, students, and staff to share rewards. In contrast, at Virginia Polytechnic Institute lawyers for the university have recently concluded that students' assignments are the property of their professors. Ivars Peterson, "Bits of Ownership: Growing Computer Software Sales Are Forcing Universities To Re-think Their Copyright and Patent Policies," *Science News*, Sept. 21, 1985, pp. 189-190.

Figure 2-5.—Carnegie Mellon Flowchart



SOURCE Richard Stern, Carnegie-Mellon University

their classrooms. Because of its high market value, they fear that their local school district will try to copyright it.¹⁰⁵ Similarly, many people who participate in joint projects, such as electronic conferences, are becoming more hesitant about what they say. Because their ideas bring a high price, they want to reserve for themselves the right to profit from them.¹⁰⁶

The growing focus on protection and securing ownership rights is also evident in the fields of art and entertainment. One extreme, but perhaps highly illustrious, example is the recent case in Seattle, Washington, where the estate of a well-known songwriter sued a church for singing the benediction to the tune of a copy-

¹⁰⁵Discussion with participants, Workshop on Educational Policy, National Educational Computing Conference, summer 1984.

¹⁰⁶Ma rguerite Zientara, "Watch Your Words: Who Owns Information in an Electronic Conference?" *Infoworld*, Aug. 6, 1984, pp. 333-334.

righted melody. Protesting the profit-oriented climate of the times, one outraged churchgoer protested saying:

Well, we do understand that the copyright law becomes involved. However, to us simple folk, it would seem that both creator and owners of [the tune] could very easily waive their rights and by doing so enjoy a sense of great honor and deep gratification that their song is now a beloved hymn sung in chorus by many thousands of good people during church services, rather than to threaten and crush their own beautiful song into near oblivion.

In these times, these fearful, unruly, egotistical and utterly selfish times, this action to stop the singing of a hymn in our churches is surely the ultimate low.

¹⁰⁷Harry A. MacLaren, "Letter to the Editor," *Seattle Times*, July 26, 1985, p. A-20.

IMPLICATIONS FOR THE INTELLECTUAL PROPERTY SYSTEM

To the Founding Fathers, the design of an intellectual property system appeared a relatively simple matter. Building on a long tradition, and on years of European experience, they simply followed the British model, which was equally well suited to meet both countries' needs. This model assumed that, by granting economic rights to the creator of intellectual works, information would be created and disseminated, and thus a number of other social and economic objectives would be achieved. In this model, not only were other societal goals understood to be furthered by fostering the learning environment, these goals were also seen to be mutually compatible and self-enforcing.

In an information age, the situation is more complex. Information is central to all aspects of society. Moreover, the new information technologies provide new opportunities to move ahead in almost all areas of activity. With these opportunities, however, will also come new conflicts. For, given the pivotal role that informa-

tion will play in the future, its enhanced value will give rise to a greater number of competing claims on its use.

Given this potential for conflict, a key assumption on which the Founding Fathers established the intellectual property system may no longer be valid in an information age. Instead of equally fostering a number of diverse political, economic, and cultural goals, the granting of economic incentives may, under some circumstances, pit one kind of goal, or one societal purpose, against another. In an environment such as this, it is more essential than ever to remember that in making decisions about the intellectual property system, we are making decisions about the nature of society itself. Therefore, in addressing the question of what are the most appropriate goals for the intellectual property system in an age of information, we must ask ourselves first, given all of the opportunities that the new technologies afford, what kind of a society would we like to live in.