

# National and International Information Policies

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## Introduction

INFORMATION IS INTEGRAL to all living organisms. How we use that information determines how we live and function and how our societies evolve. Information is essential to the operation and survival of national governments. Each nation has information policies that are supported by a web of laws, administrative regulations, customs, and beliefs. Within the past quarter century, many nations have developed increasingly explicit and restrictive information policies that are implemented in order to maintain their own political, cultural, and economic status. To understand the reasons for the formation and implementation of a specific nation's information policy we must, among other things, acquire a broad view of that nation's history and traditions. In short, we must know the context out of which specific policies arise.

But this knowledge alone will not be sufficient. Nations do not make information policies based solely on their own history and values. A nation's information policy is also made in response to and in anticipation of other nations' information policy; prevailing economic, social, and political conditions; and the current state of technology. In this overview we will explore the broader context from which information policies emerge by describing the important factors affecting information policy-making. First we will review the evolution and application of copyright law and the regulations affecting media and

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telecommunications. Next we will consider culture and language as they relate to information policy. Third, recent technological developments will be scrutinized, including the politicization of technology. Fourth, we will discuss economic aspects and privacy legislation. Finally, we will indicate the implication of these contexts for information professionals.

We tend to think of information policy as a recent phenomenon. We forget the history of previous attempts to restrict or promote the flow of information. In the West, elaborate systems of government regulation of information did not appear until the 1500s after the spread of printing technology.<sup>1</sup> For example, by 1559, when printing became sufficiently widespread to pose a potential threat to government policies and was centralized enough to present a target for control, the *Index Expurgatorius*, a list of books that gave titles of works forbidden by the church authority to Roman Catholics pending revision or deletion of some sections, was issued. This index was included in the *Index Librorum Prohibitorum* from 1571 until 1966.

More recently some U.S. library boards or local authorities have sought to have certain titles removed from library collections because of sexual, political, or philosophic views deemed offensive to those groups. The continuing discussion of the inclusion and exclusion of creationism in school texts is another aspect.<sup>2</sup>

In the late 1500s the British passed licensing acts which required licenses for printers to publish, imposed taxes on newsprint, advertisements, and on newspapers themselves, and prosecuted government critics. The rise of printing and increased literacy also led to changes in science, philosophy, and religion. The Reformation was fueled in part by the ability to mass produce books.

While the United States has enshrined freedom of speech in the Bill of Rights, the limits of this freedom have undergone continual tests and redefinition. The right to a free press, developed early in U.S. history, is a jealously guarded right. However, court rulings, while maintaining the basic right, have also drawn limits to publishers' and reporters' rights.

## Copyright

Property rights were firmly rooted in Western tradition and formed the basis for most wealth. Intellectual property rights were gradually seen as equally valuable as land and other tangible property. Copyright to protect such ownership rights was rooted in printing technology.

## *National & International Information Policies*

The printing press was a single point where copies could be examined and controlled. Authorities monitored the presses both to censor sacrilege or sedition and to protect the author's intellectual property. Copyright did not apply to verbal communication. The United States, for example, denied copyright protection to piano rolls because they were not "writings" in a tangible form readable by a human being. This concept of copyright originally excluded from protection many new communication technologies although more recently copyright has also been applied to computer software including software encoded on microchips. The international inconsistency in this area is illustrated in table 1 which provides an overview of the legal protection that different countries offer for computer programs.

The United States has exhibited a great deal of hypocrisy on copyright. During the nineteenth century, American publishers unabashedly pirated many British and European publications, particularly the works of popular authors such as Charles Dickens. The United States did not sign the Universal Copyright Convention until 1952 and still is not a participant in the Berne Convention endorsed by the World Intellectual Property Organization (WIPO). The Berne Convention is observed by most U.S. allies. An advisory committee is presently reviewing the major issues of the Berne Convention and the significance of U.S. participation in it. The lack of U.S. participation and the resulting incompatibilities of U.S. copyright law remain a sore point with other countries. Presently, U.S. publishers obtain protection under the Berne Convention by simultaneous publishing in the United States and in Berne countries.

### **Media and Telecommunication Regulations**

Media and telecommunication facilities have become essential to the information society. Radios appear even in primitive villages, and developing countries such as India have used satellite broadcasts to reach remote areas. Appendix A indicates the availability of these types of services for many countries. Regulation of these facilities has raised major concerns. The reasons are partly explained by the history of their development.

The telegraph was the first application of electrical telecommunications and Samuel F.B. Morse's invention coincided with and aided the rapid economic growth and expansion of the United States. During the 1800s the westward expansion of the railroads was paralleled by the telegraph's expansion west. The transcontinental telegraph was completed in 1861. Operating problems included poor insulation, wires that

TABLE 1  
LEGAL PROTECTION FOR COMPUTER PROGRAMS  
OCTOBER 1985

<i>Nation</i>	<i>Copyright</i>	<i>Trade Secret/ Unfair Competition</i>	<i>Trademark</i>	<i>Patent</i>
Australia	Yes*	Yes	Yes	Yes+
Austria				Unclear
Brazil	Maybe <sup>2</sup>	Very Limited		No
Canada	Yes	Yes	Yes	Sometimes
China			Yes	Unclear
Denmark	Maybe <sup>2</sup>	Limited		Unclear
Egypt	Unclear			
Finland	Maybe <sup>2</sup>	Yes		Unclear
France	Yes*	Unclear		Perhaps
German (Dem. Rep.)				No <sup>3</sup>
Germany (Fed. Rep.)	Yes	Yes		No <sup>3</sup>
Hong Kong	Unclear			
Hungary	Yes*			
India	Yes <sup>1</sup>			
Indonesia	No			
Italy	Yes	Yes		Unlikely
Japan	Yes	Limited		Sometimes
Korea	Unlikely	Limited	Yes	Sometimes
Malaysia	No	Maybe		Unclear
Mexico	Yes	Very Limited		No
Netherlands	Yes	Yes		Possibly
New Zealand	Probably	Probably		Unlikely
Nigeria	Maybe			
Norway	Maybe <sup>2</sup>		Yes	Unclear
Philippines	Yes*			
Poland				No
Singapore	Unclear	Probably	Limited	See U.K.
South Africa	Yes	Yes		—
Spain	<sup>1</sup>			
Sweden	<sup>2</sup>			No <sup>3</sup>
Switzerland	Unclear		Yes	Maybe
Taiwan	Maybe*		Pending	
Thailand	Maybe			
United Kingdom	Yes*	Yes	Yes	Sometimes
United States	Yes*	Yes		Sometimes

*National & International Information Policies*

TABLE 1 (cont.)

<i>Nation</i>	<i>Copyright</i>	<i>Trade Secret/ Unfair Competition</i>	<i>Trademark</i>	<i>Patent</i>
USSR				Unclear
Venezuela	No	Limited		
Yugoslavia				No

\* Special legislation passed

+ Update per Donald M. Lamberton, Queensland, Australia

<sup>1</sup> Legislation pending

<sup>2</sup> Special legislation proposed

<sup>3</sup> Perhaps, if included in process

Sources: Bigelow, Robert P. "Legal Protection of Computer Software." In *International Information Economy Handbook*, edited by G. Russell Pipe and Chris Brown. Springfield, Va.: Transnational Data Reporting Service, 1985, pp. 46-48 (chart is excerpted and updated from entire text). Update sources include: Authors' files; "International Software Protection," Fenwick, Davis, and West, 29 March 1985; Greguras, "International Software Protection," Practising Law Institute, June 1985; Borking, *Third Party Protection of Software and Firmware*, North Holland, 1985; Hanneman, *The Patentability of Computer Software*, Kluwer, 1985; Bernacchi and Deffense, "How to Protect Software in Venezuela," *Ten Selected Countries*, International Intellectual Property Alliance, Aug. 1985; Keplinger, *Copyright Aspects of the Protection of Computer Software*, WIPO, Dec. 1984; papers by D.S. Johnston, J.A. Connors, T.H. Lee, K.Y. Park, and S. Guo at the IBA Section on Business Law Conference, Singapore, Oct. 1985.

broke easily, and nonstandard equipment that made message exchange difficult between different telegraph companies.

Many of the present national telecommunications policies have their roots in historical events. The first significant military use of the telegraph occurred during the Crimean War of 1853-1856. News of the battles reached the public before hand-carried military dispatches reached government leaders—a situation that aided spies and jeopardized national security. This led directly to the government ownership of the national telegraph systems in all European countries by the end of the century.<sup>3</sup>

Development of the telephone stemmed in part from efforts to multiplex telegraph signals—i.e., to transmit different signals (and different messages) on the same wire. As more and more signals were multiplexed, some realized that voice tones could be approximated over a wire. Alexander Graham Bell applied for a patent on his telephone design in 1876. Two years later he drafted a prospectus to found the Bell Company. The Bell Company became a regulated monopoly in 1879, a status which continued unchallenged until the 1950s. In January 1982,

the Bell Company signed a consent agreement that made the divestiture of this company effective January 1984.

Among the more sensitive areas of information policy are media and telecommunications regulations. Trade barriers and other protectionist policies once reserved for traditional, labor-intensive, "smoke-stack" industries, are now becoming prevalent in the telecommunications and information industries.<sup>4</sup> Such practices include: denying or restricting access by U.S. firms to foreign telecommunications and information equipment and services markets; devising technical interface and equipment standards that needlessly preclude or hamper use of foreign-owned equipment in connection with domestic public telecommunications networks; subsidizing export financing for domestic firms; imposing local equipment purchase incentives, direct subsidies, or low-cost loans for research and development to local firms; restricting government procurements to domestic firms; and imposing higher rates for private-line services to exclude or hinder U.S. competition.

There is also a trend of increased politicization of telecommunications issues in international forums. The ITU (International Telecommunications Union) has become a focus for Third World efforts to gain assistance in the telecommunications field and to further other, often unrelated, political ends (e.g., the expulsion of Portugal and South Africa from the Torremolinos Plenipotentiary Conference). Other international organizations that have placed international information and telecommunications issues at the forefront of their agendas are the: Council of Europe (CoE), United Nations Center on Transnational Corporations (UNCTC), Intergovernmental Bureau for Informatics (IBI), United Nations Educational Scientific and Cultural Organization (Unesco), Organization for Economic Cooperation and Development (OECD), International Standards Organization (ISO), International Communications Satellite Organization (INTELSAT), and Communications Satellite Corporation (Comsat). Many of the present attitudes and concerns were first articulated in a Unesco report. After a review of this activity, the roles of the other international agencies will be discussed briefly.

In 1976, Unesco requested an independent commission to consider the problems of communication and its ramifications. The report, popularly known as the *MacBride Report*, describes many important aspects of the problems and includes value judgments related to cultural imperialism by the West but ineffectively tries to please everyone. The report provides a starting point for the long-term development of the

## *National & International Information Policies*

world communication system, but it does not provide a strategy on how to proceed.

Reaction to the *MacBride Report* has been mixed. The U.S.'s response, particularly by the journalistic community, has been negative and was a contributing factor that led to U.S.'s withdrawal from Unesco. A year later, 31 December 1985, Great Britain also confirmed its withdrawal. Other Western European countries have stated that they are reconsidering their memberships, and Canada and Japan said they are not satisfied with Unesco's reform.<sup>5</sup> In any event, the *MacBride Report* served notice to the Western world that developing countries had concerns that were not being addressed by existing mechanisms.

The report is the first international document to provide a global view of the world's communications problems and emphasizes the need to give communications issues high priority on the national and international levels. The commission itself states:

The recommendations and suggestions contained in our Report do not presume to cover all topics and issues calling for reflection and action. Nevertheless, they indicate the importance and scale of the tasks which face every country in the field of information and communication, as well as their international dimensions which pose a formidable challenge to the community of nations...Our study indicates clearly the direction in which the world must move to attain a new information and communication order—essentially a series of new relationships arising from the advances promised by new communication technologies which should enable all peoples to benefit...The objective should be to ensure that men and women are enabled to lead richer and more satisfying lives.<sup>6</sup>

If nothing else, the report raised expectations regarding information services and facilities in developing nations and notified the developed countries that the status quo was unacceptable. More countries wanted a share of the media and telecommunications resources. Newer forms of communication provide new facilities and have also raised governmental concerns over the problems of regulation and control and involve a number of agencies including intergovernmental organizations as well as national organizations.

The ITU coordinates communication, satellite orbital allotments, and communication frequency allocations to countries in order to avoid harmful interference to another country's radio communications. Without cooperation and agreements, frequency spectrum allocations are meaningless. Such allocations and their strict adherence are essential for communication facilities to operate and fulfill their function. Two groups trying to use the same frequency slot will result in garbled

messages. The ITU encourages countries to conform to internationally approved standards and works toward the adoption of one multilateral agreement, which avoids the complex negotiations that would result if each nation had to enter into bilateral agreements with every other nation. Compliance, however, is voluntary.

The ITU has numerous administrative bodies working to implement guidelines and recommendations such as: IFRB (International Frequency Registration Board), CCIR (Consultative Committee on Radio-Communication), and CCITT (Consultative Committee on Telegraph and Telephone). The CCITT deals with information services, teletext, and integrated services. It also is designing the intelligent global network—the Integrated Service Digital Network (ISDN). The ISDN will integrate most telecommunication and information systems into a global network. It can provide rapid, more cost-effective communication systems.

The OECD also negotiates voluntary international agreements and has developed guidelines on protection of personal data and investment. OECD studies include those of private industry perspectives on trade, transborder data flow, and economic issues such as unemployment resulting from the widespread use of electronic technologies. It encourages member nations to develop coordinated policies for information, media, and telecommunications regulations.

INTELSAT is a global satellite system used for international transmission of communications services. It was established to provide high quality, reliable telecommunications services and domestic services for nondiscriminatory international public use. INTELSAT is owned by the various signatories of the INTELSAT Operating Agreement. The amount owned depends on actual use. Earth stations, however, are owned by the individual administrations. A great deal of international technical cooperation is necessary. Member nations are concerned with U.S. policies on deregulation which, in their view, may threaten the economic viability of INTELSAT because of competition from commercial ownership and control of satellites.

Terminal equipment regulation was affected by satellite, computer, and facsimile communication improvements which began in the 1960s. The first of these—satellite communication—became an issue when AT&T wanted a monopoly in U.S. satellite communication. Instead, Congress passed a law in 1962 creating the Communications Satellite Corporation (Comsat). Comsat is 50 percent owned by the common carriers and 50 percent by the public. It had a governed monopoly on U.S. international satellite communications, but could

## *National & International Information Policies*

only sell bulk circuits to common carriers for resale. One of Comsat's accomplishments was the successful operation of a geostationary satellite which demonstrated the superiority of this type of satellite to low-altitude ones. Unfortunately, Comsat did not pursue research and development activities, but instead left these to NASA (National Aeronautics and Space Administration).

To interconnect networks requires common standards. Standards-making bodies include the CCITT, ISO, the American National Standards Institute (ANSI)—particularly Subcommittee X3—and the National Information Standards Organization Z39 (NISO). ISO is working toward compatible international technical standards for a wide range of equipment including computer and telecommunications equipment. ANSI is the U.S. representative to ISO. ANSI Subcommittee X3 is responsible for most U.S. standards related to computing and data processing while NISO is a private, not-for-profit organization in the United States and develops standards related to libraries, publishers, and information services. Both standards developed by Subcommittee X3 and NISO are issued by ANSI. NISO is currently the secretariat for ISO's TC46/Subcommittee 4 which is responsible for standards in the area of library automation.

### **Other Telecommunications Issues**

Two major concerns of other nations are remote sensing data and the economic base of services. Developing nations have been sensitive to the economic advantages others could gain by access to remote sensing—i.e., data gathered by satellite identifying their natural resources—and have demanded access to their own data and sought to restrict its use by others. The economic base of telecommunications for many European countries has rested on telex services. This reliance has made them reluctant to change their services and resistant to some of the new technologies. The recent positive experience in France, which provided broad services to telephone subscribers, may diminish this concern.

With the availability of hundred-channel cable systems, videocassettes, videodiscs, and network links to thousands of online information services, there is potential for a diversity of voices. In the United States and Great Britain, telephone monopolies are being broken up. Before computers, phone administrations refused connection of any "foreign attachment" to their networks. Today, in the United States, Japan, Great Britain, and elsewhere, customers may buy approved terminals and phone equipment and attach them to existing systems.<sup>7</sup>

How governmental policies will deal with such interconnections is still evolving and will be influenced by political, cultural, and economic conditions.

### Cultural Environmental Conditions

Environmental conditions that influence information policies include national security and ambitions, social and cultural perspectives, linguistics, legal and regulatory aspects, and technological development.

Edward T. Hall, in *The Dance of Life*, discusses time and the way it affects cultural perspectives. Complex societies organize time in different ways: (1) sequentially—i.e., events scheduled as separate items, one thing at a time, as in Northern Europe and America; (2) simultaneously—i.e., several things at once, following the Mediterranean and Latin American model of involvement; or (3) holistically—i.e., the view of time as an ocean, not a stream, as envisioned by some American Indian tribes. These systems are logically and empirically quite distinct. Like oil and water, they do not mix and they influence how each culture views information.<sup>8</sup>

In Western society, our view of time is so thoroughly woven into the fabric of existence that we are hardly aware of the degree to which it permeates everything including how we interact with others and how we make decisions and view information. Most of our activities are governed by the clock. By scheduling, we compartmentalize, making it possible to concentrate on one thing at a time, but also reducing our understanding of context and the possibility of several apparently separate factors interacting or having some dependence on one another. Scheduling, by its nature, selects what area or issues we will recognize and attempts to reduce, and limits, the number of events within a given period. Scheduling is a system for setting priorities; important things are taken upon first and allotted the most time; unimportant things are left to be done last or omitted if time runs out. This is both a strength and a weakness since it allows us to create manageable tasks but can cause us to ignore or miss the interactions of several apparently unrelated factors. This fragmented approach has been criticized by Representative Brown<sup>9</sup> as it applies to the U.S. attitude toward national solutions for and coordination of U.S. information policy.

In Latin America, the intelligentsia and the academicians frequently participate in several fields at once—fields that the average North American academician, business, or professional person thinks of as antithetical. Business, philosophy, medicine, and poetry, for

example, are common, well-respected combinations. Several Latin American countries, most notably Brazil, have also devised coordinated national information policies, as noted in appendix B.

Similarly, the Arabs and Turks operate in people-intensive environments, are almost never alone—even in the home—and use different “screening processes” than Europeans. They interact with several people at once and are continually involved with each other. Tight scheduling is difficult if not impossible. Their approaches and concerns for information systems are different, particularly regarding privacy issues.

The Japanese are highly context-dependent. While many Westerners focus on ensuring the rights of individuals, the Japanese and other Oriental cultures are more concerned with group rights and with societal values. However, the goals of Japan and Hong Kong to become the data-processing and data-handling centers of the world have raised concerns regarding privacy and personal data. These concerns have been heightened in Hong Kong with the approach of the 1997 turnover of Hong Kong to mainland China. Security for computer processing has also added impetus to developing data-protection laws in both countries.

## **Language**

Another aspect of cultural differences is language and how it affects information availability and use. J. Michel, director, Centre de Documentation du CNRS, discusses the linguistic barriers to the free flow of information and indicates that the number of people who are fully bilingual or multilingual is low. In scientific and technical literature, only five languages play a significant role: English, Russian, German, French, and Japanese (see table 2).

English is most often used for primary publications in the basic disciplines: physics, chemistry, biology. But in applied sciences—such as earth sciences, engineering, and medicine—the authors generally use their mother tongue. Michel indicates that this trend is accentuated in technical information such as reports, patents, standards, technical journals and newsletters, and state-of-the-art reviews. Therefore, in many areas the main losers of information through written communication are English-speaking people because only 12 percent are able to read French documents and 4 percent German, whereas 97 percent of all French and German scientists are able to read English.

In oral communication, however, the linguistic barrier becomes a tremendous obstacle for non-English-speaking people. They are the losers when attending a meeting or conference because they do not

TABLE 2  
DISTRIBUTION OF LANGUAGE FAMILIES IN 1975—4 BILLION PEOPLE

<i>Languages</i>	<i>Millions</i>	<i>Percentage</i>
Indo-European languages		
Indo-Aryan (Hindi, Bengali, etc.)	590	15
Germanic (English, German, Scandinavian, Dutch)	490	12
Romance (French, Spanish, Italian, Portuguese, Romanian)	490	12
Slavic (Russian, Polish, etc.)	300	8
Other	80	2
TOTAL	1950	49
Sino-Tibetan languages		
Chinese	800	20
Other	200	5
TOTAL	1000	25
Japanese	120	3
Others	930	23

Source: Michel, J. "Linguistic and Political Barriers in the International Transfer of Information in Science and Technology." *Journal of Information Science* 5(1982):131.

understand half of what is said and are unable to participate in any discussions or cannot seek clarification of ambiguous points.

This situation is clearly reflected in the citation behavior of scientists. It takes five times longer for an article written in any language other than English to have an impact equivalent to that of an English article. Measuring outside-of-country citations, the United States is most highly cited by the outside world. The next five countries cited in order are the United Kingdom, West Germany, Japan, France, and the USSR. The USSR receives the fewest citations by far from the outside world. This may relate not only to lack of knowledge of Russian but also to the use of a non-Roman alphabet which requires transliteration or translation. In addition, the nature and content of the literature cannot be ignored. It is likely that, in spite of character set and language, increasing access will be provided to Japanese literature as the Japanese continue their development of fifth-generation computer systems.

According to Michel, the *Science Citation Index* is introducing a significant distortion in depicting science and in measuring the impact of scientific work because the selection criteria used for this database are strengthening the linguistic barrier. It is a vicious circle. The best publications are the most-cited articles; the most-cited publications are

## *National & International Information Policies*

articles that are the most read; English is the most common language in the scientific community; so to be cited, it is better to publish in English and publications in English are probably the best ones and will receive top priority in selection.

This position is very dangerous and is progressively creating a kind of English speaking community ghetto, in which many people determined to get the most valuable information are very reluctant to take into account any non-English written documents. We are far from scientific objectivity.<sup>10</sup>

Michel indicates "the first step in solving the problem of the linguistic barrier is to recognize its existence."<sup>11</sup> In addition, terminology should be addressed; multilingualism of journals and abstracting and indexing services should be encouraged; more people should learn several languages; and translation activities, both man-made and computer-aided translation, should be promoted.

### **Technology**

Technology has strongly influenced information policies and continues to raise concerns. The early influence of printing and telecommunication technology was discussed earlier. This section will identify recent trends and their effects. The rapid advances and convergence of computer, communication, and media technologies allow us to acquire, store, manipulate, and transmit information with incredible speed.

Ithiel de Sola Pool has described the trends we are facing in communications technology. The public networks are moving toward digital and broadband capabilities that will allow every household and workplace two-way transmission of high-definition pictures and text in bulk, along with voice, videotext, and other low-speed services.<sup>12</sup> Digital transmission—the translation of information into coded pulses of ones and zeros—allows rapid transmission and reduces error rates. Broadband capabilities, as opposed to narrowband transmission that is normally used for most voice signals, are required for image transmission. Digital broadband transmission of pictures requires many more combinations of ones and zeros than do voice signals.

Millions of offices and homes will have computers needing broad bandwidth for a variety of tasks. Individuals at home or work using high-definition moving pictures; two-way video for teleconferencing, teleshopping, or browsing in libraries will create the demand for end-to-end broadband networks. The business community will be the driving

force in such networks. Some private networks already exist and AT&T's strategy for building telecommunication systems is focusing on these private networks.

The trend is toward increasingly sophisticated equipment on the user's own premises. While the costs of computer logic, memory, and long-distance communication are falling, the uses for these are expanding. Not long ago it would have taken a million-dollar computer to do what a \$2000 microcomputer can do today. American industry is anticipating that the percentage of disposable income spent on information activities will grow and major U.S. firms are seeking companies and services in that industry. American Express and Westinghouse are investing in cablecasting; Boeing is selling time-sharing services as General Electric has for years; and retailers like Sears Roebuck are experimenting with videodisc catalogs. Investors see the biggest dollar growth not in transmission or its hardware but in software and the equipment located on the customer's premises. This conclusion led AT&T to accept divestiture of its local phone companies in exchange for the freedom to sell information services and equipment to end users.<sup>13</sup>

Big customers will benefit and decentralization will become easier from the development of more elaborate terminal equipment. Companies with information service and carrier billings in the millions will invest in their own networks, leased circuits, compression devices, and other technology designed to help them operate efficiently or cut costs. Depending on the structure of the vendors' and carriers' tariffs, different alternatives will provide greater benefits. One trade-off will be between buying communications capacity to improve management control, and buying local processing power to cut communication costs. Switching between such centralizing and decentralizing choices may alternate as technological and tariff changes affect relative prices, but the costs of computing equipment used to store data locally, to compress it, and to process it will probably fall farther and faster than the costs of transmission. The development of CD ROM (Compact Disc Read-Only Memory) and optical storage units will also influence these trade-offs.

### **Potentials of Networks**

As Pool indicates, the communications network of the future does not have to be provided by a single large organization with central control.<sup>14</sup> Having a hierarchical structure governed by central control is only one way to organize complex systems. For a decentralized system to function, there must be mutually agreed upon ways of interconnecting

## *National & International Information Policies*

the parts other than by central command; the interconnections may be managed by conventions, habits, or formal standards. As he notes, property rights are enforced by laws while language is enforced by custom and usage. In the technical areas one partner may dominate (such as IBM) establishing de facto standards, or a more formal process may be used coordinated by ISO and ANSI.

A decentralized set of communications systems can function as a single system only if traffic on each network can move from one network to another. There are three critical requirements: (1) the right to interconnect, (2) conformity to technical standards defining interfacing, and (3) a directory system.

There will be many networks offering many services, some public, some private, some specialized, some general-purpose. Most of them will interconnect with each other. Some of these networks will have their own central directory or controls, others will not. Video, voice, and text, information and entertainment—public and personal—will be mixed but may each have special requirements and even differently designed networks, but most will be interconnected.

Digital technology promotes the trend toward distributed processing throughout the system and reduces or eliminates the need for central control. It is easier to convert one system of zero-one pulses into another such digital system than it is to interface the analog memoryless communications systems of the past. Using intelligent digital devices that scan associate data structures at nanosecond speeds and communicate at light speed, a directory search without a universal list, can make distributed systems work effectively.

Future communications will be radically different from those of the past because of artificial intelligence. Computer-composed messages sent from computer to computer may never be seen by a person at all. In an electronic funds transfer, only a few bits are needed to debit an account by \$102.60. Most traffic involves checking and rechecking to validate the signature, determine if sufficient funds are available, and the remaining balance.

Heuristically programmed computers will give particular readers information based on what they chose last time. Computer-aided instructional programs will assess students' past performance before providing the instruction they need. Dialogue will be with machines as well as with people. The ability to capture and store the decision base of experts will broaden access to experts and even extend their influence beyond their own life spans. All of these will affect what and how we communicate. As a result, telecommunication facilities will become increasingly important.

Telecommunications and information sectors are seen as the future for economic well-being. Everyone wants a piece of the pie. Competing national interests are distorting—and in some instances reducing—the effectiveness of international organizations.

Telecommunication technology is shrinking the effect of geographic distances. Most costs are incurred in the local loops and switches—for setting up the call and for billing—and only a small amount for the long-distance portion. The variable cost of extra microwave links is a minor item and, with satellite transmission, distance becomes unimportant. The ability to communicate at will and at low cost will change the patterns of communication and interaction. This will foster a trend toward pluralistic and competitive communication systems.<sup>15</sup>

Electronic technology can promote freedom, encourage diversity, and provide broader access. Computerized information networks of the twenty-first century can provide the same freedom as the printing press, but just as the printing press offered a central point for censorship, so can centrally-controlled communication systems provide for central control. The recent attempts by the National Security Agency (NSA) to ensure all networks use NSA encryption programs could provide such control.<sup>16</sup>

### **International Politics and Technology**

Although national borders have lines on maps, signals don't stop at national borders. The lack of respect for national border policies in telecommunications has prompted international meetings dominated by questions about the freedom of information flow. Various points of view have surfaced. The Socialist countries are concerned that their governments might be subverted by ideas not compatible with their own ideology. The Western world has been concerned about government domination of the information flow. Third World countries feel restricted in developing an approach of their own, seeing themselves dominated by the overwhelming forces of the Socialist and Western countries.

Sarah Goddard Power, former U.S. deputy assistant secretary of state of human rights and social affairs, recognizes that no country wants to be manipulated by, or to be dependent upon, another nation for its development and future survival.

*Either we design, produce, market and distribute the most advanced products and services spun off by the communications*

## *National & International Information Policies*

revolution—and, in so doing, reinforce our economic as well as political, social and cultural advantage—or we will increasingly find ourselves in the position of consumer and debtor to those who do....The question of how the world adapts to the communications revolution has been steadily moving up the list of international concerns over the last decade, and it has now emerged as a major point of contention in East-West and North-South relationships.<sup>17</sup>

In the developing countries, information policies need to be made according to the priorities each country sets for the internal development of its own information technology. In the developed world, economic factors and industry trends—as well as changing user capabilities—will have an effect on a country's policy-making decisions.

The growing number of international organizations involved with these issues increases the likelihood that any international "rules of the game" developed governing the activities of nations and private entities may directly, and possibly adversely, affect U.S. interests.

The U.S. government has not given the telecommunications and information issues adequate high level attention. Jurisdictional disputes are responsible for a lack of coordination among departments and agencies involved in these areas. Political leaders such as Representative George Brown remain pessimistic about our ability to ensure that the United States is not excluded from partnership in developing international policies. Some changes are evident including the appointment in April 1983 of Diana Dougan, assistant secretary of state and coordinator for international communications and information policy, with the rank of ambassador. The United States must recognize that the present fears of other nations are rooted in national and economic survival issues and, as a consequence, elicit highly emotional responses to what, from the U.S. perspective, are reasonable recommendations or demands.

### **Economic Aspects**

Nations are passing data-protection laws, increasing tariffs, and creating various nontariff barriers to regulate the flow of information processed by machines. They argue that these steps are necessary to protect individual privacy, to promote data security, and to preserve national sovereignty. They say they need time to develop their own strategies for information and communications development. They believe multinational corporations (MNCs) from the United States impede development. European countries fear the loss of domestic

revenues and jobs for the local work force when information is transmitted by, processed and stored in, foreign telecommunications and computer centers.<sup>18</sup> Ironically, many of the recent takeovers of U.S. information companies have raised similar fears in the United States.

C. Jansen van Rosendaal, in his paper "European Information Policy Situation," defines the information market as "the market for value-added information services." He also states:

Information is one of the few non-scarce raw materials for the economy of Western Europe, with the information industry one of its few sunrise sectors. The timely and inexpensive availability of information makes it a motor for innovation and therefore a driving force for economic and social development.<sup>19</sup>

He describes the barriers that are preventing greater European involvement in the new electronic information services as: the respective roles of the public and private sectors in information supply and dissemination, the physical infrastructure, differing national rules and regulations, and the impact of technology. Awareness of the economic value of information is growing, but there is insufficient agreement on whether the true value and price of information will be recognized under market conditions and what role the public sector should play. He urges clarification of rules of the game and a measure of agreement on those rules throughout the (European economic) community as essential to encourage private-sector investment in new information services.

Most countries regard telecommunications as a "natural monopoly." Developments in computing and telecommunications technology are causing monopolies to be questioned. The developments in Britain with the sale of telecommunications facilities to the private sector are one example. Appendix A gives an overview of a number of communications and media in different countries. It also compares the number of information services in use with the size of each country's population.

Present regulations are being reviewed in areas such as: (1) access rules for the private information providers, (2) level and structure of tariffs, (3) consistency of tariffs throughout Europe, and (4) standardized interface equipment. Differing national rules and regulations also act as indirect barriers to information flows within the European Community. There are differing privacy protection regulations, copyright laws, taxation practices, and rules on establishment of services. Technological developments are decreasing the distinction between the different types of services and potentially increasing the competition between them. The different practices in the European Economic Community

## *National & International Information Policies*

also lead to different solutions to the same problems. The Organization for Economic Cooperation and Development, and Council of Europe are trying to bring about more uniformity and consistency.

Economies of scale for the European market require a balanced development of the market in all member states. The more widely accessible services are, the greater their economies of scale and financial viability, although new technology can change these. Different schedules for introducing new services can create inequities and restrict growth. DIANE (Direct Information Access Network for Europe) was to provide a means for European information providers to develop services and markets. It has been a mixed success. It is not yet clear whether such services can compete in the broader world market without subsidies or protective policies.

SWIFT (Society for Worldwide Interbank Financial Telecommunication) is an example of a successful, largely unsubsidized electronic system. It is a successful network used for international banking communications. SWIFT is a cooperative nonprofit society owned by its member banks and operating in Europe, North America, South America, and the Far East.<sup>20</sup> SWIFT was conceived in the late 1960s by a small group of European banks seeking to rationalize international banking operations.

The primary objective of SWIFT is to provide a standardized, available, auditable, secure, and private system for its member banks to complete international financial transactions between themselves. The SWIFT message text-standards allow banks throughout the world to communicate directly using a common language. To SWIFT security means safety, accuracy, privacy, reliability, and timeliness. Security is inherent throughout SWIFT from its physical aspects to software features. The principle of dual responsibility is essential to access, operation, and authorization policies and procedures. Operating centers and regional processor centers are limited-access areas where strict entry procedures are enforced.

All transmissions over international lines are encrypted. Encryption keys at the ends of each line are changed at random intervals. If no live traffic is on the line, pseudo-traffic is generated to prevent anybody from establishing traffic patterns. Banks can, if they wish and if the PTTs (Post, Telegraph and Telephone Administration) permit, use cryptographic equipment on their national lines. Messages held for retrieval at the operating centers are also stored in encrypted form.

SWIFT accepts financial liability for direct loss or interest losses arising out of delayed transactions incurred by a user as a result of

negligence, error, omission, or fraud within the limits of its responsibility. Unlike DIANE, SWIFT is truly international in scope rather than regional. It is offering essential financial services to support international trade and provides strong incentives for participation by international banking agencies.

### **Transborder Data Flows**

The OECD issued a press release stating the member countries adopted the "Declaration on Transborder Data Flows" on 11 April 1985.<sup>21</sup> This declaration is the first international effort to address economic and social issues and the benefits resulting from access to a variety of sources of information and effective information services. It also recognizes that each member country has its own national policies and goals which may affect the flow of information across borders.

The members who have signed this declaration believe that all can work for international development of the information industry and reduce the economic dependence on developed nations by developing nations, accelerate the development of the economies of developing countries, and establish control over domestic resources. No one network of information goods and services will dominate many nations' economies and international trade. The developing nations will develop their information technologies depending upon their own cultural, economic, and political needs and abilities.

There is an increasing awareness that the U.S. principal information policy goals include assuring free flow of information and free markets. The free flow of information worldwide, subject only to the most compelling national security and personal privacy limitations, remains a cornerstone for American policy but has been tempered lately in regard to high technology and supporting areas. Promotion of U.S. interests is seen as essential to our leadership role in the world.

Information flow to developing nations should contribute to the elimination of hunger, poverty, disease, and ignorance and assist developing nations' sound economic development. We continue to believe in and strive for a free and competitive marketplace for telecommunications and information services, equipment, and facilities. Nonpolitical international organizations can efficiently develop, manage, expand, and provide nondiscriminatory access to international telecommunications facilities and networks. Human well-being and understanding can grow and be promoted through international telecommunications services.<sup>22</sup>

## *National & International Information Policies*

Some of the problems in applying these goals and policies are resistance to free-market operation and different definitions of *free flow*. Many foreign economies are focused toward centralized or government planning rather than the U.S. free market concept. There seems to be almost a deliberate misunderstanding of the word *free* by foreign nationals. They are quick to point out that U.S. firms barter, trade, and charge for access to information and so question the use of the word *free*. The United States and United Kingdom use this word as meaning "without unnecessary restrictions."<sup>23</sup>

Most objections arise in relation to telecommunications where control of the media is seen as a powerful force for promoting governmental views. Developing countries oppose the allocation of radio spectrum frequencies and orbital positions on the basis of economic efficiency. They claim that the United States, Western, and Soviet countries, with access to technology, are usurping what should be a common resource.

Economic and industrial policies of some foreign governments focus on industry—targeting policies, including use of subsidized export financing and the erection of protectionist nontariff trade barriers that prevent and distort international trade. United Nations (UN) organizations have drafted proposed codes of conduct in support of more restrictive policies for mass media and information policy than are acceptable to the United States and U.S. citizens. Greater government control of transborder data flows of both commercial and personal information among computers located in different countries is now a fact. Numerous examples are shown in appendix B including those of Canada and Sweden.

The United States has urged that services, including information services, be discussed in the next round of General Agreements on Tariffs and Trade (GATT). Some developing nations are adverse to this because they do not feel they have sufficient data or knowledge to negotiate agreements on services. This is a two-part problem involving the definition of services and the identification of which arenas or organizations are the most appropriate in dealing with agreements, guidelines, treaties, or regulations on information services.

Information is seen in different ways. Some see it as an intangible commodity with market-determined value with intermediate resources applied at various stages in the process of producing other goods and services. The United States espouses fundamental beliefs in basic ideas to which economic value cannot be objectively assigned and, if subjected to regulation, to achieve economic goals, may clash with the basic rights of free thought and expression. The United States has urged the

least possible control of information by governments for any reason. Others believe that no information is free of bias or is fully objective and thus must be regulated, modified, suppressed, or have information added to provide a more balanced perspective.

A conference on transborder data flows policies was held 23-27 June 1980 by the Intergovernmental Bureau for Informatics. A major issue before this conference was the prospect of increasing international interdependence without sacrificing national independence and sovereignty. Interdependence suggests to many a potential for vulnerability and national subordination. However, Computer and Business Equipment Manufacturers' Association (CBEMA) argues the opposite should be true.<sup>24</sup>

According to CBEMA this perception of vulnerability is tied to the notion of information or informatics as a "national resource" akin to food, water, energy, minerals, and environment. Total national independence of supply, desirable in theory, is rarely possible in reality. When possible, indigenous sources of supply are developed to lessen international dependence for certain resources. Yet no nation can be totally independent; all remain vulnerable and interdependent in varying degrees.

CBEMA acknowledges that while information has value and limits in the free world, its limitations are different from those of other resources or commodities and should not be treated by the rules or regulations for commodities. Its principal limitation is the variable perishability over time. Sometimes perishability is desirable—at other times information must be preserved. Information doesn't disappear with consumption; it may instead be enhanced in the act of consumption. It is, however, susceptible to accidental and deliberate debasement, distortion, and destruction.<sup>25</sup>

### **Innovation and Information Flow**

Some see technological leadership as essential to a successful information-based economy. Representative Ed Zschau<sup>26</sup> indicates that the technological leadership in the United States has eroded in recent years through neglect. He states that in the 1950s, the United States was credited with 80 percent of the major inventions made, but in the 1970s the U.S. share of major inventions dropped to 60 percent. Over the past twenty years, research and development expenditures have declined in the United States while its two most aggressive trading partners, Japan and West Germany, have increased their research and development expenditures during the same period.

## *National & International Information Policies*

While it is reassuring that high technology is finally getting proper attention, all this new-found enthusiasm may be a mixed blessing. Many of those who have jumped on the high technology bandwagon have been exaggerating its capabilities for restoring our economic growth. They suggest, for example, that high technology can create enough jobs to replace all those that are being lost in our so-called "smokestack" industries...government should play a positive role in promoting high technology. But the Republican Task Force on High Technology Initiatives, which I chair, believes that rather than "targeting" specific technologies for industries, the proper role for government is to target the process by which they are developed—the process of innovation. That is, our government should focus on creating an environment in which high technology, innovation, new ideas, and new companies are likely to flourish. Making sure that such an environment exists is the best way to help America maintain its technological leadership.<sup>27</sup>

Zschau has identified four essential conditions to promote technological innovation: (1) a strong commitment to basic research; (2) incentives for investors, entrepreneurs, and innovators; (3) a strong educational capability; and (4) expanding market opportunities.

A proper high technology industrial policy is one that focuses on these prerequisites for innovation. It consists of specific legislative and regulatory initiatives that foster these conditions and avoids government actions that would weaken them.<sup>28</sup>

Recent attempts by some U.S. agencies to restrict the distribution of high technology information and products to Soviet Bloc countries have raised a threat to the U.S. position on "free" flow of information.<sup>29</sup> Another view is proposed by Alan I. Rapoport who argues:

The United States is not the only industrial country with a large research and development infrastructure generating scientific and technological discoveries which may ultimately be exploited for commercial purposes. Those presuming that U.S. international competitiveness is harmed by outflows of scientific and technological information often fail to take into consideration that competitiveness of other countries generating scientific and technological discoveries should then be equally adversely affected by the outflow of such information.<sup>30</sup>

Rapoport discusses many channels through which scientific and technical information may be dispersed: journals, education and training, exchanges of personnel, normal cooperative research and technical assistance programs, direct foreign investment by a multinational parent firm to its foreign subsidiaries, licensing agreements, and the sale of turnkey plants. It can also be embodied in final or intermediate products

which are exported, and it can be acquired through industrial espionage. He has found that it has become difficult to determine the origin of a particular piece of scientific and technological information or the location(s) of its use because of the number of joint ventures between firms or subsidiaries based in different countries, and because many individuals study and teach in universities and work in laboratories outside their own country. These mechanisms have been exploited, particularly by the Japanese and the Koreans.

The transfer of scientific and technical information is difficult to track and nearly impossible to regulate without eroding the free market concept of the United States. Rapoport explains that "no country presently appears to have enough scientific and technological power to unilaterally restrict its transfer of scientific and technological information without some kind of effective retaliation from other countries."<sup>31</sup>

Rapoport emphasizes that if U.S. firms develop technology, transfer it abroad, and maintain their research and development to continue to improve and develop technology, they can commercialize their efforts and never lose their edge. Firms might lose their edge because they fail to realize the commercial potential of their efforts or they neglect to continue their research and development work. Bobby Inman, director of the MCC (Microelectronics Computer Technology Corporation), has repeatedly reiterated this problem of American firms in commercializing and bringing rapidly to market new products. Rapoport concludes:

It is difficult to find any real evidence to substantiate the claims that the unrestricted flow of scientific and technological information is detrimental to U.S. international competitiveness. Simple logic combined with available evidence strongly suggest that the free flow of scientific and technological information is not a significant factor in any loss of U.S. competitiveness, but in fact may serve to advance rather than hinder such competitiveness.<sup>32</sup>

Since information grows primarily through cooperative research, analysis, combination, and synthesis, free flow is the strongest means of ensuring new indigenous information sources. No one would seriously suggest that a nation could actually supply 100 percent of its own information. There is, however, a corollary that has been pursued through history—that a national government controlling 100 percent of incoming and outgoing information may actually retard development. Technology control has led to retarding advances, the Chinese self-imposed isolation and the resulting technology gap confirms the negative effects of such controls.

## *National & International Information Policies*

CBEMA believes that all national and international efforts should be aimed at reducing direct and indirect government control of information content and flow. Control should be limited only to those isolated instances affecting national security.

For information science and technology the application of the "national resource" concept can be misleading and destructive. It can lead to an undue concentration on the technology, development, and production of equipment and the measuring of a nation's information processing strength by its production of microelectronics and its associated hardware. This emphasizes the importance of only one component of information processing, encouraging a false reliance on vertical integration and may use scarce capital unwisely. Information processing is a people-intensive activity depending on the availability of skills and the "soft" sciences—i.e., systems analysis, database management, application analysis and development, and programming.

Information generation, handling and processing, analytical data gathering, and program development methodologies are largely equipment independent and more easily transferable than direct hardware technology. This "soft" technology is the real determinant of information processing progress. The medical, agricultural, financial, manufacturing, or educational expert skilled in the use of fundamental information-processing techniques will be the true keystone to the growth of national information process success.

CBEMA believes the growth of these skills requires a free and open interchange of information data and technology, and there is an international interdependence in which *all* the partners grow mutually. Information skills thrive in the information exchange process, and the depth and breadth of the skills acquired is directly related to the richness of the exchange.

Technological application rests on a relative rather than an absolute scale. There are only a few advanced and strategic applications which are entirely dependent for their existence on state-of-the-art technology. There are broader sets of applications that are enhanced and made more cost effective by the newest technology but which may still be developed on older devices that often become obsolete, not because of their inability to perform the desired tasks but because of the increasing cost of maintenance, lack of spare parts, and lack of knowledgeable staff to apply them.

The computer industry is one of the rare industries where the costs have decreased over the last decade and the equipment's capacity, efficiency, and ease of use has increased. In an economic sense, the computer industry is a classic example of elasticity of demand. With the advent

of new technology, the cost has decreased thereby making it attractive to a larger marketplace. Computing technology availability is becoming increasingly international and diverse. The growth of the Japanese and Korean computing sectors are ample evidence of new participants. CBEMA believes the dramatic scenario of one nation or group of nations bringing others to their knees through information technology deprivation is illusory.

Information policy should be viewed broadly in its support role to the fundamental programs for international cooperation.

We, the member companies of CBEMA, encourage each nation to consider information in the perspective of its needs, its social problems, its goals and priorities. Clearly, these will not be the same in all cases. Just as each tree in a forest has a unique requirement for nourishment and environment, each society has different needs for infusion of investment, technology and conventions of control. To erect a structure to govern the use of information technology that is common to all, at this point in history, might be equally as irresponsible as to ignore the matter entirely.<sup>34</sup>

This view does not appear to be shared by many foreign governments as evidenced by the growth of privacy legislation and telecommunications regulations.

### **Privacy**

Foreign data-protection laws are increasingly prevalent as automatic data processing technologies develop. The telecommunications industry is subject to new protectionist policies and anticompetitive practices by countries trying to maximize their role in the dissemination and supply of information. The same basic issues recur as new technologies and market developments occur in the information industry. Table 3 shows a summary of the major players and the current status of data-protection laws.<sup>35</sup> Appendix B contains an inventory of the legislative actions that many countries have enacted or are proposing for data protection.

Privacy has become an international problem and the international dimension has revealed some of those issues behind privacy and data protection. Rules and regulations for transborder data flows were implemented with data-protection agencies to monitor them. The examples in table 3 show how regulations differ in strictness and content in different countries.<sup>36</sup>

In some countries, transborder data flow has to be licensed, in others organizations register with their government, and in others there

*National & International Information Policies*

TABLE 3  
COUNTRIES INVOLVED IN DEVELOPING DATA-PROTECTION LAWS

<i>Country</i>	<i>Information Policy</i>	<i>Legislation</i>	<i>Areas</i>
Australia		Proposed	
Austria	Implicit	Yes	Privacy
Belgium		Proposed	
Brazil	Explicit	Yes	Technology
Canada	Explicit	Yes	Privacy, broadcasting, banking
Denmark	Explicit	Yes	Privacy
Federal Rep. of Germany	Implicit	Yes	Privacy, telecommunications
Finland		Proposed	
France	Implicit	Yes	Privacy
Iceland		Proposed	
Israel	Explicit	Yes	Privacy
Italy		Proposed	
Luxembourg	Implicit	Yes	Privacy
Netherlands		Proposed	
New Zealand	Implicit	Yes	Privacy
Norway	Implicit	Yes	Privacy
Portugal	Explicit	Yes	Privacy
Spain	Explicit	Yes	Privacy
Sweden	Explicit	Yes	Privacy
Switzerland		Proposed	
United Kingdom	Explicit	Yes	Privacy
United States of America	Implicit	Yes	Telecommunication, privacy, national security
Yugoslavia		Proposed	

are only regulations to be observed. In all instances the general criterion seems to be that transborder data flow is permitted if the recipient country provides data protection that is equivalent to that of the sender. National legislation in these countries has created an indirect but strong demand for legislation in other sovereign countries generating a growing concern in the international business community and in international organizations of increased restrictions, complexity, and administrative overhead in dealing with a variety of legislation in different countries.

Agencies of data protection may become more than just internal implementation agencies for data protection. They can become an integral part of state information policy by influencing, preparing, and to some extent, executing these policies. Experience and knowledge accumulated within these institutions provide an ideal opportunity for influencing government policies. Private institutions must consider and consult officials of these agencies when establishing new information systems. Influence of the data-protection administrations extends beyond actual data-protection issues, to microprocessing and its effect on employment, and to new media and their effects on society.

Privacy and confidentiality are not the only considerations related to data protection. The distribution of political and economic power is equally important. The rights and limitations to develop and apply information technology; to collect, process, and distribute the information; and to develop and apply decision-making algorithms are of increasing concern to all nations.

Developing countries have to be prepared for the broader issues arising with data protection—even if privacy has a different meaning in their cultural environment—or they may inadvertently restrict their country's growth. Hall, as discussed earlier, has some interesting observations on different cultural perspectives and the resulting concerns with and view of privacy. Each developing country must develop its own policy for the implementation and the priority assigned information technologies. There are many issues raised by such needs and views.

In 1977 at the OECD conference in Vienna, P. Walckiers presented a project to process and control customs information. Such a system could help to reduce importation and allocation time, cut down on warehouse space, and facilitate trade; and it could also provide governments with exact information on internal and external trade and information needed to develop and monitor economic policies. At the same time such a system evokes questions of confidentiality, the use of economic power, and national sovereignty.

The data-protection laws and their administration, like copyright and early British licensing laws related to print technology, have created an atmosphere suited to information control. Information has economic value and can be used for or against the individual citizen or for or against government positions. Concerned government officials believe that it can no longer be left to a free market of conflicting interests but requires various checks and balances managed by the state. These agencies accumulate knowledge and expertise important for national and international information systems. Developing nations

## *National & International Information Policies*

want to share in this knowledge and become participants in the information economy.

While not strictly related to privacy legislation, the United States has also acted to restrict information flow. Mostly this has been related to efforts to reduce the flow of high technology to the Soviet Union. More recently, information flow has also been raised in relation to our competitive position. U.S. officials have acted to restrict export licenses on some goods such as magnetic tapes that contained bibliographic information. Both Chemical Abstracts Service and the Institute for Scientific Information were affected, but such restrictions were removed. During the hostage crisis in Iran, the export of MEDLARS tapes to that country was briefly halted. Questions have also been raised about the access of foreign nationals to supercomputing facilities funded by the federal government.

These incidents, while of concern to U.S. citizens and to foreign governments, are not really indicative of government policy. Rather they represent the efforts of various individuals or agencies and while annoying and disruptive, do not represent a change in U.S. information policy. They do give credence to concerns of foreign nationals that the United States will use its considerable powers to restrict information access from those countries who do not support U.S. policies. Unless we remain vigilant, such restrictive acts could become official policy.

Because modern society is becoming more dependent on the new information systems, attempts to regulate or modify information flow through any means, including privacy legislation, must be scrutinized carefully and avoided when possible. This dependency can be seen in the reliance on the safety and reliability of the air traffic control system; the reliability, security, and controllability of military command and control systems; the security of large-scale electronic funds-transfer systems; and the reliability, accuracy, and responsiveness of the social security information system.<sup>37</sup> Society has a vested interest in the reliable technical operation of each of these systems and the cost of failure is high. It requires the cooperation of international agencies, national governments, and private organizations to see that information required by these systems continue to flow freely.

### **Public/Private Sectors**

The public and private—including commercial—sectors sometimes conflict in their view of the value of information. The private sector is concerned with personal privacy either because individuals and organizations want to be left alone, or they feel information about

themselves could be exploited to cause personal harm or intrusion if disclosed without their permission. The public sector in the United States views information as essential to the public's well-being and the support of democratic institutions and has consequently supported the free flow of information except in technical information. This can be seen in the support of schools, public libraries, museums, and First Amendment guarantees, although support of the 1974 Privacy Act has been weak. The commercial sector recognizes that information is a valuable commodity to be used, manipulated, repackaged and sold in newspapers, books, computerized mailing lists, in broadcasting, in databases, or as consulting services.

The differences in value systems between the sectors raises a variety of policy issues. Computer-based information systems increase the quantity of information collected, the ease of collection and dissemination, its usefulness, and its ease of storage which can affect the behavior of government, individuals, and organizations and the very nature of some traditional differences which are discussed later. Automated information systems may affect, both directly and indirectly, policy problems that, while exacerbated by technology, were longstanding and not caused by technology. Because much more can be obtained, handled, processed, and distributed so much faster, old problems are made worse and new ones are created.

The increased scale and efficiency of computerized criminal justice record keeping heightens the conflict between the needs of law enforcement agents and the individual rights of citizens. Similarly, the tendency of the technology to support centralized record systems creates jurisdictional problems in federal-state relationships and state-local relationships. Some experts believe this centralization trend could reverse through the use of smaller computers with distributed databases. Who is responsible for the data in such systems and who has access to it?

The NCLIS Task Force report, *Public Sector/Private Sector Interaction in Providing Information Services*,<sup>38</sup> and the Library of Congress Network Planning Paper, *Public/Private Sector Interactions, The Implications for Networking*,<sup>39</sup> consider other aspects of public and private roles. More recently the move by the Reagan administration to privatize information services has been the source of increasing debate and concern in the library and information science community. There are fears that depository programs could be restricted or curtailed, that archival or preservation responsibilities may be ignored, and that access to information may become too expensive for many citizens.

ALA (American Library Association) created the ALA Commission on Freedom and Equality of Access to Information to:

## *National & International Information Policies*

Define and find synthesis in issues (social, economic, political, and technological) arising from the ability of modern technologies to enhance and extend the production and dissemination of information; (2) identify those particular issues in which near-term decisions as to public or private sector policy may be needed to assure the level of access to information required for economic growth, for effective citizen participation in public affairs, and for individual self-fulfillment; and (3) consider the role of libraries in relation to freedom and equality of access to information, evaluate the challenges to the American ideal of individual freedom and equality of opportunity, and recommend courses of action.<sup>40</sup>

This report has become known as the Lacy Report after Dan Lacy, the chairman of this committee. At recent ALA hearings on the Lacy Report, Jeanne Isacco commented on chapter four of the report.

These pages suggest that the private sector should be the primary information vehicle and that government information in electronic format should be disseminated by the private sector unless it doesn't want to. This philosophy is best manifested by the Commission identifying the critical question concerning access as: "What government publishing activities, by preempting or limiting private publishing activities, may actually limit the kinds of access and the freedom of independent access to information." That is a backward question. The question I wish they had asked concerning access is: How can we assure the unimpeded flow of information which is the lifeblood of research and development progress and a free democratic society?<sup>41</sup>

She also wondered why the commission failed to ask: "Can private sector dissemination be priced and transacted in such a way as to serve the public interest?" She said if the broadest range of public usage could not be served by the private sector, "then reliance on the private sector must be limited, reduced or waived in favor of a more broad dissemination through the non-profit sector, the government."<sup>42</sup>

These issues will continue to be debated as will the lobbying efforts to influence congressional and administration officials. The citizens' right to information and who pays the cost of providing access are among key concerns.

This overview has considered many areas and identified a variety of problems and concerns. There are no easy solutions. We are moving, and will continue to move further, toward an information based economy. The United States faces major challenges on the underlying technological base—i.e., semiconductor technology and computer systems—from others, particularly the Japanese and now the Koreans. Telecommunication spectrum allocation and privacy legislation will continue to be international issues with the real focus on national

sovereignty. Inevitably the United States will have to become more flexible and find ways to become more effective—e.g., to make better use of telecommunication frequencies it is able to retain. The future lies in improving both research and the ability to bring products to market more quickly.

All nations are going to have to recognize and live with their interdependencies and seek niches each can exploit effectively. We cannot sell services and goods unless the nations wanting these have something of value to trade. All countries will become more, not less, dependent on others. The United States will probably have to moderate its free market concepts and recognize that individual rights will have to give way in certain instances to the greater good. Our challenge is how to preserve the best of our societal values while continuing to provide an economy where all can prosper.



Appendix A

Distribution of Media Services

Country	Telephones per 100 population 1981 (a)	Daily Newspaper circulation, copies per 1000 population 1979 (b)	Television receivers per 1000 population 1981 (c)	Radio receivers per 1000 population 1981 (d)
Algeria	3.3	22	61	204
Argentina	9.8	(NA)	197	748
Australia	48.9 (e)	336	380	1112
Austria	42.1	351	298 (f)	466
Bangladesh	.1	5	1	8 (f)
Belgium	38.7	228	300 (f)	466
Bolivia	(NA)	39	59	547
Brazil	7.2	44 (g)	122	308
Bulgaria	17.0	234	187 (f)	238
Burma	.1 (h)	10	11 (i)	22
Canada	69.3	241	489	1149
Chile	5.2	87	111	297
China				
Mainland	.4	(NA)	5	60
Taiwan	23.6	(NA)	267	376
Columbia	6.5	48 (j)	87	120
Costa Rica	10.9	70	72	82
Cuba	4.2	91	154	309
Cyprus	20.2	108	243 (f)	628
Czechoslovakia	21.0	304	281 (f)	316
Denmark	67.4	367	364 (f)	381 (f)
Dominican Republic	3.0	42	71	42
Ecuador	3.3	49	61	318
Egypt	1.2	(NA)	40	150
El Salvador	2.2	(NA)	63	324
Ethiopia	2.8 (e)	2	1	8
Finland	52.2	480	414	875
France	49.8	205 (l)	361	927
German Dem. Rep.	19.4	517	349 (f)	386

*National & International Information Policies*

Germany, Fed. Rep. of	48.8	423 (i)	348 (f)	383
Ghana	.6	31 (g)	6	166
Greece	30.2	(NA)	160 (f)	350
Guatemala	1.2 (i)	(NA)	24	43
Honduras	.8 (h)	63	13	47
Hong Kong	35.0	(NA)	225	505
Hungary	12.1	242	262 (f)	257
Iceland	48.0	557	288 (f)	584
India	.5	20	2 (f)	59
Indonesia	.4	(NA)	21	120
Iran	2.9	(NA)	53	178
Iraq	(NA)	(NA)	51	166
Ireland	20.8	229	241	436
Israel	31.3	(NA)	240	253
Italy	36.4 (k)	97 (g)	390	243
Jamaica	6.2	59	82	383
Japan	47.9	569	551	688
Kampuchea	(NA)	(NA)	4	77
Kenya	1.3	10	4	33
Korea, Rep. of	7.7 (h)	197 (i)	175 (f)	413
Kuwait	15.9	159 (i)	257	286
Lebanon	(NA)	(NA)	279	744
Luxembourg	62.6	358	250	618
Madagascar	.4	(NA)	7	201
Malaysia	5.3	(NA)	85 (h)	405
Mexico	7.7	(NA)	111	288
Morocco	1.2	(NA)	40	155
Netherlands	53.9	325	301 (f)	315
New Zealand	55.0	345	285	890
Nigeria	.2 (i)	(NA)	6	73
Norway	48.5	456	298 (f)	329
Pakistan	.4	14	11	71
Panama	9.5	79	120	157
Paraguay	1.9	(NA)	23	73
Peru	2.7 (e)	51 (i)	49	159
Philippines	1.5	(NA)	22	44
Poland	9.7	237	228 (f)	243 (f)
Portugal	14.9	(NA)	141 (e)	162

Appendix A (cont.)

Country	Telephones per 100 population 1981 (a)	Daily Newspaper circulation, copies per 1000 population 1979 (b)	Television receivers per 1000 population 1981 (c)	Radio receivers per 1000 population 1981 (d)
Puerto Rico	22.0	139	234	585
Romania	(NA)	181	170 (f)	143 (f)
Saudi Arabia	17.2	(NA)	248	295
Singapore	31.7	249	170 (f)	197
South Africa	11.8	66 (1)	70	275
Soviet Union	9.3 (1)	396 (1)	306	504
Spain	32.9	128 (1)	254	260
Sri Lanka	.7	(NA)	3	107
Sudan	.4	1	6	74
Sweden	82.8	526	387 (f)	847
Switzerland	75.1	395	365	363 (f)
Syria	4.6	12	43	193
Thailand	1.1	(NA)	17	125
Trinidad and Tobago	(NA)	171	224	338
Tunisia	3.0	44	51	161
Turkey	4.7	(NA)	110	95
United Kingdom	49.7	(NA)	411	963
United States	78.9	282	631	2110
Uruguay	10.1	(NA)	125	564
Venezuela	5.8 (h)	176	126	405
Yugoslavia	10.2	103	195 (f)	209 (f)
Zimbabwe	2.9	16	10	33
World Total	11.5 (e)	(NA)	(NA)	(NA)

## National & International Information Policies

(Statistical Abstract of the United States 1985, United States Department of Commerce, Bureau of the Census, 105th Edition, page 849, Washington, D.C.)

- (NA) - Not Available
- (a) - Comprises public and private telephones installed which can be connected to a central exchange.
- (b) - Publications containing general news and appearing at least 4 times a week, may range in size from a single sheet to 50 or more pages. Circulation data refer to average circulation per issue or number of printed copies per issue and include copies sold outside the country.
- (c) - Estimated number of sets in use, except as noted.
- (d) - Data cover estimated number of receivers in use, except as noted, and apply to all types of receivers for radio broadcasts to the public, including receivers connected to a radio "redistribution system" but excluding television sets.
- (e) - For 1980.
- (f) - Number of licenses issued.
- (g) - For 1978.
- (h) - For 1979.
- (i) - For 1977.
- (j) - Refers to circulation of 33 out of 38 dailies only.
- (k) - Includes San Marino
- (l) - Excludes telephone systems of the military forces.

## Appendix B

### Information Policies

COUNTRY	POLICY/DATE
Australia	Government report in preparation.
Austria	Creates a right to data protection for individuals, associations, & corporations with respect to data maintained by both the public & private sectors. 11/28/78.
Belgium	Proposed legislation in Parliament.
Brazil	Normative Act 22/82. For Registration of All Computer Software. 12/7/82.
Canada	Canadian Human Rights Act 1977
	Banks & Banking Law Revision 1980 (Bank Act) 1980
	Tax Law Amendment 1976 (C-58)
	Broadcasting Strategy for Canada 1983
Denmark	Public Authorities & Private (Enterprises) Acts 1978
Germany, Federal Republic	Act on the Misuse of Personal Data in Data-processing, January 1979.

Applies to data on Austrians whether living in Austria or abroad & whether data is held by the public or private sector. Data Protection Council is a political observer. Data Protection Commission enforces the Act in the public sector, acts as administrative court, investigates data-processing transactions, & approves transborder data flow for public & private sector records.

Creates three categories of computer programs: 1) Programs developed in Brazil by Brazilian persons or corporations physically resident & domiciled in Brazil; 2) Programs developed outside of Brazil with no national alternatives, & of relevant economic interest to the country whose program technology & economic exploitation rights have been effectively transferred to a national company specializing in & capable of developing new programs & services; 3) All programs not in categories 1 & 2. Requires government agencies, state enterprises & foundations supported by the government to use category 1 programs whenever possible. Bars companies using unregistered programs from selling services to government & from taking advantage of lowered income taxes.

Enumerates private information rights of individuals with respect to Federal Government records, including the right to know: what records the government maintains, how the information is being used, & the right to challenge the correctness, relevance, & currency of the information.

Requires all processing bank data which may be required by banking authorities to be carried out in Canada. Data may be transmitted out of Canada, but the Inspector General of Banks must be notified. Prohibits banks from selling time-sharing services which are unrelated to their own or clients' banking activities & applies to all banks operating in Canada, whether Canadian or foreign-owned.

Denies Canadian advertisers business deductions for broadcast time purchased on U.S. television stations if advertising is directed primarily at Canadian audiences.

Policies: 1) Expand programming choices; 2) Strengthen Canadian programming; 3) Direct Canadian Radio & Television Commission (CRTC) on policy matters; & 4) Abolish satellite dish licensing requirements for individuals.

Private Sector Act concerns data in manual & electronic record systems & both personal data & financial data about corporations.

Protects personal data in public files & files of physical or legal persons maintained for their own purposes or for transacting business with others. Covers manual & automated files with slightly different provisions.

## Appendix B (cont.)

17th Order for Amending the Telecommunications Regulations. With regard to introduction of usage-based tariffs for fixed connection & a system surcharge for PBX's.

Finland	Government report in preparation.
France	Data Processing, Data Files, & Individual Liberties Act 78-17. 1/78
Iceland	Proposed legislation drafted.
Israel	Protection of Privacy Law (5741-1981) 1981.
Italy	Government report in preparation.
Japan	Government report in preparation.
Luxembourg	Law Regulating the Use of Personal Data in Data-processing. 3/79.
Netherlands	Proposal currently in Parliament.
New Zealand	Human Rights Commission Act 1977.
Norway	Personal Registers Act

Changes tariffs for fixed connections based exclusively on distance to usage-based tariffs. Brings tariff basis for fixed connections in line with existing policy for switched connections. Prevents realization of special interests of specific user groups at the cost of the majority of customers of the Deutsche Bundespost. Harmonization of tariffs is oriented toward anticipated new regulations for digital C facilities & their analogue connections.

Regulates the collection, registration, addition to, storage, & destruction of personal data in both the public & private sectors. Covers the use of automated databases & files, & the interconnection referral, & communication of personal data. Certain provisions apply additionally to non-automated personal information. Excludes legal persons from the scope of the Act. Gives CNIL power to regulate or prohibit transborder data flow of name-linked data. CNIL has the power to ensure compliance by making spot checks of data facilities, & by refusing to authorize data-processing or transfer which it feels would violate the law.

Requires the Minister of Justice to make regulations to implement the law, including establishing conditions of keeping & safeguarding information in electronic databases, rules of conduct & ethics for persons in possession of employee databases, & conditions of transmitting or restricting transmission of database information outside of the state. Data protected by the law includes data on personal status, personality, intimate affairs, state of health, economic position, vocational qualifications, opinions, & beliefs.

Provisions include: obligation to obtain authorization for all databases containing personal data; creation of a national directory of databases; rights of data subject regarding access to the database & correction of incorrect data; regulation of data collection; surveillance of databases; & rights & duties of data-processing specialists.

Incorporates the United Nations International Covenants on Human Rights. Gives the Human Rights Commission several privacy functions which are not defined or delineated with respect to data-protection as such, except for a reference to the privacy of records in the Wanganui Law Enforcement Computer Center which maintains a computer based information system to aid the Departments of Police & Justice & Ministry of Transport in carrying out their duties.

Covers the systematic collection of personal information by the public & private sectors. Establishes general rules for collection, use & dissemination of personal & corporate information together with a licensing system for certain registers. The Data Inspectorate has jurisdiction over all computerized files & manual records, which include sensitive information as defined by the Act.



Legislation guarantees right of privacy proposal currently in Parliament.

The right of honor, personal & family privacy, & identity is guaranteed. The secrecy of communications particularly postal, telegraphic & telephone communications, is guaranteed, except by judicial order.

Applies to personal information maintained in both public & private sectors. Limits the formation & use of "personal registry" systems to data that: 1) contain personal information that identifies the individuals concerned; & 2) are made by automated data processing. Provides that all data processing must be authorized & licensed by the Data Inspection Board, that personal information cannot be sent abroad without special prior licensing, & that citizens have right of access to files concerning them. The March 1980 amendments include measures to tighten up on tax evasion & to restrict information on government activity available to individuals.

Concerned only with computer-based information systems. Creates a Registrar of Data Protection appointed by the Crown, who is responsible for the creation & maintenance of a registrar of data users & may encourage trade associations or other bodies representing data users to prepare & disseminate to their members, codes of practice for guidance in complying with the data protection principles. A person holding data is defined as a data user if: 1) data is a part of a collection of data processed, or intended to be processed by or for the person, on equipment operating automatically; 2) person controls the contents & use of the data; 3) data must be in the form in which they will be, or have been processed.

Amended section 222 of the Communications Act of 1934 to repeal the limitation upon Western Union which prevented it from providing international communications services in competition with the international record carriers.

Prohibits using appropriated funds to pay the U.S. contributions to UNESCO if UNESCO implements a policy to: 1) license journalists or their publications; 2) restrict the free flow of information; or 3) impose mandatory journalistic codes. Exempts private sector representatives from conflict-of-interest requirement when serving on U.S. delegations to international telecommunications meetings. This provision applies to meetings of the ITU & its consultative committees, as well as any other international telecommunications meetings or conferences designated by the Secretary of State.

Authorizes appropriations for the National Telecommunications & Information Administration FY '83 & '84. Directs the Administration to conduct a study of the long-range telecommunications & information goals, policies, & strategies of the U.S. Directs the Administration to review the manner by which the U.S. develops its telecommunications & information policy.

Title VII - Requires that tax returns & return information be made available to officers & employees of the General Accounting Office (GAO) for the purpose of any audit authorized by law with respect to any program or activity carried out under the Social Security Act. Prohibits the disclosure of methods for the selection of tax returns for audits.

## Appendix B (cont.)

Public Law 97-90, Department of Energy National Security & Military Applications of Nuclear Energy Authorization Act of 1982. 12/4/81.

Public Law 97-145, Export Administration Amendments Act of 1981. 12/29/81

Public Law 97-364, National Driver Registration Act of 1982. 10/25/82.

Public Law 97-326, Consolidated Federal Funds Report Act of 1982 10/25/82.

Public Law 97-369, Department of Transportation & Related Agencies Appropriations Act, 1983. 12/18/82.

Public Law 97-33, A bill to amend the International Investment Survey Act of 1976. 8/7/81.

Public Law 97-35, Omnibus Reconciliation Act of 1981. 8/13/81.

Amends the Atomic Energy Act of 1954 to direct the Secretary of Energy to prescribe regulations prohibiting the dissemination of specific unclassified information concerning atomic energy defense programs which could have significant adverse effects on the health, safety, & security of the public. Directs the Secretary to prepare a quarterly report detailing the application of such guidelines.

Requires all information regarding export controls to be made available upon request to the appropriate Congressional Committee & to the GAO. Prohibits such committee & the GAO from disclosing, except under specified circumstances, any such information that was submitted confidentially.

Title II - Eliminates the register in the Department of Commerce that lists the names of persons who had their motor vehicle operator's licenses revoked. Directs the Secretary of Transportation to establish and maintain a National Driver Register to assist chief driver licensing officials of participating states in exchanging information regarding the motor vehicle driver records of individuals. Prohibits Secretary from keeping information in Register for more than seven years.

Amends the Legislative Reorganization Act of 1970 to direct Comptroller General of the U.S. to promulgate standards for the collection & reporting by all Federal agencies of information on the geographic distribution of Federal funds & to review agency compliance with standards. Directs the President to designate a Federal agency to: 1) receive & review agency reports of Federal funds, 2) establish & maintain an information system on the geographic distribution of funds, & 3) generate reports for users of such systems. Requires President to designate a Federal agency to create & operate five regional data analysis centers which shall provide public policy analyses of information on distribution of funds.

Requires the Inspector General, or comparable official of the Department of Transportation, to submit to Congress, with a budget justification, an evaluation of the agency's progress to institute effective management controls & the accuracy & completeness of data provided to the Federal Procurement Data System regarding consultant service contractual arrangements.

Amends the International Investment Survey Act of 1976 to require benchmark surveys of foreign direct investment in the U.S. covering 1980 & 1987 & every fifth year thereafter. Requires an annual compilation of currently available data on U.S. portfolio investments abroad. Directs the Secretary of Commerce to report on the estimated cost of compiling data on legislation enacted by major U.S. trading partners & other foreign nations which regulated foreign inward investment in such nations. Deletes the requirement that the President report to Congress on any studies conducted pursuant to the Act

Amends the Older Americans Act of 1965 to eliminate the National Information Resource Clearinghouse for the Aged.

## Appendix B (cont.)

Public Law 97-98, Agriculture & Food  
Act of 1981. 12/22/81.

Public Law 97-113, International  
Security & Development Cooperation  
Act of 1981. 12/29/81.

Public Law 97-219, Small Business  
Innovation Research Act of 1981.  
7/22/82

Public Law 97-292, Missing Children  
Act. 10/12/82.

Public Law 97-300, Training for Jobs  
Act. 10/13/82.

Public Law 97-290, Export Trading  
Company Act of 1982. 10/8/82.

Public Law 97-215, A bill to amend  
the manufacturing clause of the  
copyright law.

Yugoslavia      Government report in preparation.

Title XIV - Department of Agriculture should establish working relationships with foreign information and data systems. Revises specified notification responsibilities of the National Agricultural Library's Feed & Nutrition Information & Education Resources Center. Title XV, Subtitle I - Department of Agriculture in connection with other Federal agencies should develop a farmland protection policy, & criteria for identifying the effect of Federal programs on the conversion of farmland to non-agricultural uses. Directs the Secretary to develop agricultural land resource information.

Title I - Requires the President to report to Congress within 48 hours of the existence of, or a change in status of, certain hostilities or terrorist acts (currently after the outbreak of significant hostilities) involving a country in which U.S. personnel are performing certain defense services. Requires such report to include the country's identity, description of such hostilities or terrorist acts, & the number of U.S. armed forces & civilians who may be endangered.

Amends the Small Business Act to direct the Small Business Administration to: 1) maintain an information program to provide small business an opportunity to participate in Federal small business innovation research (SBIR) programs; 2) coordinate a schedule for release of agency SBIR solicitations & prepare a mater release schedule; 3) monitor SBIR programs with Federal agencies; & 4) & 4) report annually to the Congressional Small Business Committee on SBIR programs.

Requires the Attorney General to acquire & exchange information to assist Federal, State, & local officials in the identification of certain deceased individuals & in the location of missing persons (including unemancipated persons).

Secretary of Labor is to reserve from specified set-aside funds, sums necessary to operate a Federal/State cooperative statistical labor market information program. Directs Secretary to maintain on a national, state, local, & other appropriate basis: 1) a comprehensive national system of labor market information; & 2) household budget data reflecting differences in location. Directs Secretary to publish an annual report linking labor force status with earnings & income. Directs Secretary, in cooperation with the Secretaries of Commerce, Defense, Treasury, Education, & the Director of the Office of Management & Budget, to review & integrate national information systems, maintain standardized definitions, & provide technical assistance to the States for an occupational supply/demand information system.

Title I - Directs the Secretary of Commerce to promote export trading companies by providing information & by facilitating contacts between producers of exportable goods & export trading companies.

Amends the copyright law to extend through July 1, 1986, the requirement that imported non-dramatic literary works in English be manufactured in North America.

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