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Title: A COMPARATIVE ANALYSIS OF NATIONAL INFORMATION POLICY IN SIX INDUSTRIALIZED COUNTRIES

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National information policy measures in Australia, Canada, the Federal Republic of Germany, France, Japan, and the United Kingdom are examined and compared. Each nation is considered individually in regard to its information resources and data protection, privacy and transborder data flow regulatory activities, as well as to its national information policy initiatives.

France, Japan, and the Federal Republic of Germany all have highly articulated national information policies. The goal of both France and Japan is the total "informatization" of their respective societies. Cultural and economic sovereignty is the concern of France, while Japan's desire is economic self-sufficiency and enhanced market opportunities in knowledge intensive industries. The policy focus is somewhat narrower in the Federal Republic of Germany, concentrating on development of the national information market and the information services sector.

The policies of Australia, Canada, and the United Kingdom are much less integrated. Australia is currently in the process of developing an overall national information plan which emphasizes information services. Canada's policy measures are primarily in the highly focused area of international transmission of information and concern economic and cultural vulnerability to the United States. Information policymaking in the United Kingdom is very fragmented, with a number of public and private bodies involved. The government views information as a tradeable commodity whose provision should remain in the private sector.

France and West Germany maintain the most stringent protective measures for data and privacy. Japan lacks any relevant legislation in this area, while the UK has only marginal measures. Australian and Canadian regulations fall somewhere in-between.

Development of long-range planning, creation of a productivity extension service, and establishment of a single governmental body to coordinate all information policy aspects are three concepts of great relevance to the United States.

A COMPARATIVE ANALYSIS OF NATIONAL INFORMATION POLICY IN SIX INDUSTRIALIZED NATIONS

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Introduction

> Geography and borders have always constrained everyday life. Today, the information revolution is undermining their ancient dictates. It is shifting the balance of wealth and strength among nations, challenging established institutions and values, and redefining the agenda of political discourse. (Shultz, 1986, p. 16).

Information policy has become a vital issue in today's world. Many nations are actively involved in the formulation of national information strategies. The purpose of this thesis is to examine and compare the information policy initiatives of the following six industrialized countries: Australia, Canada, the Federal Republic of Germany, France, Japan, and the United Kingdom. Source material was examined to determine the extent of national government involvement in comprehensive information planning in each of the six nations. These six were chosen because they represent freely elected democracies who are the primary trading partners of the United States. The intention was to study those nations closest in similarity to the United States so that implications could be drawn for developing U.S. information policymaking. Second World Socialist countries would lack relevant comparability due to their authoritarian governments and highly structured central planning. Developing nations would not possess the economic and industrial advancement necessary for consideration. A secondary purpose was to draw together in one place material about information resources in the six countries.

Information policy encompasses a very broad and diverse range of issues. These include government commitment to support information technology, libraries, databases, and other information services; guidelines for the direct development of resource sharing networks, holding facilities, and coordinating centers; radiofrequency spectrum allocation; geostationary satellite orbit slots; direct broadcast satellites and signal spillover; remote satellite sensing; personal privacy; data protection; freedom of information; transborder data flow; press and media censorship; standardization; copyright; free dissemination versus the protection of cultural, political, social, and economic sovereignty; and restrictions on information and technology transfer. Many of these issues are closely interrelated, meaning that policy initiatives in one area often have unintended effects elsewhere.

Because such a multitude of issues are involved, it will be necessary to focus on particular policy aspects in order to avoid a work of undo length and complexity. The topics that will be emphasized are national information resources, i.e. development of national information infrastructures and information industries, governmental support of information technology research, science and technology information policy, data protection, privacy regulation, freedom of information and transborder data flow. Oblique reference may be made to other issues, but they will on the whole remain beyond the scope of this thesis. Particular stress will be given to determining the extent of well-integrated and comprehensive national policy initiatives.

Policy will be defined as the basis for decisions on the allocation of resources, including the specification of objectives and of strategies to achieve them (Judge, 1987, p. 1). Policy formulation

involves a balance between the concerns, needs, and interests of individuals and those of the whole society. Nations create information policy based on their own history, values, prevailing social, cultural, political, and economic needs, the current state of technology, and last, but not least, in response to or in anticipation of other nations' information policy measures (Jacob & Rings, 1986, p. 119).

The six nations will be examined individually, in chapters that each employ the same format. A short introduction to the nation and its system of government will be followed by a section providing an in-depth look at current information resources within the country. This is considered important for it provides a background to the policy initiatives that are described in the middle section of each chapter, and also because many of the measures are related to the provision of information services. A final segment will discuss relevant data protection, privacy regulation, and transborder data flow aspects. Chapter VII will offer a summarization and analysis of each country's policies and a comparison of the six nations' initiatives. The final chapter will deal with some recommendations for U.S. information policy planning that are drawn from the preceding material. There is no particular significance for the order of examination of the countries, other than it being alphabetical.

Chapter I

Australia

Australia is a federal democracy with power divided between the Federal Government and the state and territorial authorities. A British governor general represents the Queen as head of state, but this role is largely ceremonial. The Federal Parliament is composed of two directly elected chambers, the Senate and the House of Representatives. Senators serve six-year terms and representatives three-year terms. Power is focused in the Cabinet which is headed by the Prime Minister. The prime minister is the leader of the majority party in the House. Australia has six states and two territories that cover an area of 2,966,200 square miles. Sixty-five percent of the 15,345,000 inhabitants live in just eight cities.

Information Resources in Australia

The National Library of Australia was officially established by an act of Parliament in 1960. Prior to that time it was that part of the Parliamentary Library that carried on non-parliamentary services. Its most significant duties include production of the Australian National Bibliography, maintenance of national union catalogs, provision of central cataloging services which include the Australian MARC Record Service, and operating the Australian Bibliographic Network (ABN).

Working with the Australian Department of Health, the National Library serves as the center for the Australian Medline Network, which includes the Australasian Medical Index. Australia is second to Japan as the most heavily utilized life sciences information center outside of the United States (Horton, 1987, p. 153). The National Library's collection is composed of some 3,400,000 volumes.

The state libraries were the most significant libraries prior to 1960, and still serve as the major research and reference collections for their respective areas. There has, however, been a shift toward more coordinating and supplementing of public library services within each state. The state libraries of New South Wales and Victoria each have holdings in excess of one million volumes (Bryan, 1986, p. 88).

There are 310 public library systems serving the country with some 1300 access points. Public libraries are supported primarily by local government authorities, though approximately one-third of the funding comes from the state governments. In 1957, there were nine universities whose total library holdings stood at 1,500,000 volumes. As a result of a Committee of Inquiry (the Murray Committee) set up by the government, federal funding was greatly increased. Now there are 19 universities with libraries holding some 16,000,000 volumes. In 1965, another governmental committee (the Martin Committee) recommended the founding of colleges of advanced education with libraries reflecting a practical and non-research orientation. There are presently 47 of these libraries. There are also some 10,000 school libraries (Bryan, 1986, pp. 89-90).

The Commonwealth Scientific, Industrial, and Research Organization (CSIRO) is the largest and most significant body carrying out research

and development in Australia and is one of the most important science and technology policy bodies. Its primary role is to plan and carry-out a comprehensive national program of general scientific research, mainly in the physical and biological sciences. It does not work in clinical medicine, nuclear energy, nor defense. It is very strong in the field of agriculture. CSIRO was founded by the Science and Industry Research Act of 1949 as an independent statutory corporation. Seventy-five percent of its funding comes through direct appropriations from the federal Parliament, which amounts to 30 percent of Australia's R & D budget. In addition to research its statutory functions are to encourage and facilitate the application and utilization of research results, to collect, interpret and disseminate scientific and technical information, and to publish scientific and technical reports, periodicals, and papers (Organisation for Economic Co-operation and Development [OECD] 1986, p. 51).

CSIRO's Central Library coordinates a network of some 70 branch libraries around Australia. Until the 1970s, it constituted the de facto national science library. In 1983, the National Library and CSIRO issued a joint statement acknowledging that overall authority lies with the National Library. CSIRO prepares the list of Scientific Serials in Australian Libraries, which is absorbed into the National Union Catalogue of Serials as the SSAL Supplement.

The Australian government has played an active role in developing information services. One example is the introduction of the `MIDAS' system by the Overseas Telecommunications Commission. Another is the development of indigenous databases. CSIRO has its own computer network, i.e. CSIRONET, which provides access to scientific and

technical databases developed within CSIRO or in cooperation with outside public and private bodies (Judge, 1985, p. 19). It also provides census and economic data covering the past twenty years (Blank, 1984, p. 51). CSIRONET provides Australian input into overseas databases from numerous Commonwealth Government agencies, e.g. the Australian Atomic Energy Agency, the Australian Council for Educational Research, the Australian Agricultural Council, and the Australian Road Research Board (Judge, 1983, p. 72). Australia's major commercial online service, AUSINET, also offers a great many databases that were originated by Commonwealth government departments, who receive royalties on their use. A third information network, INFONET, receives data from the Australian Bureau of Statistics, reformats it and then markets the results on a value-added basis (Judge, 1985, p. 91). (See Table 1: Distribution of Scientific and Technical Databases, and Table 2: Distribution of Economic Databases for a comparison of the number of Australian databases with those of other nations.)

Australia has also been quite active in inter-regional cooperation. The National Library has an ongoing program to promote cooperation among regional libraries. The Commonwealth Parliamentary Library is aiding the development of parliamentary libraries in ten Southwest Pacific nations. The International Development Program of Australian Universities and Colleges Limited (IDP) is funded primarily by the Australian Development Assistance Bureau. Among numerous programs to strengthen overseas universities, it places strong emphasis on providing long- and short-term upgrading of library services. In addition, IDP includes in its core program the Bibliographic Information on Southeast Asia project, which provides training for Southeast Asian librarians in

the area of database creation and information retrieval. IDP also supports the Australian Centre for Publications Acquired for Development (ACPAD). It provides for the shipment of crates of library materials to some 25 institutions in five priority areas: (a) food and agriculture, (b) basic science, (c) medicine, (d) educational technology and economics, and (e) engineering and applied science. Another example of co-operation between Australia and other nations in the region is the Commonwealth Regional Renewable Energy Resources Information System (Judge, 1985, p. 77-81).

Information Policy in Australia

> In Australia a "national information policy" is envisaged as: the basis for government actions aimed at the creation, promotion, support or co-ordination of information services, whether at Commonwealth, State or Municipal levels. The actions may be limited to statements of objectives, or of plans for future implementation, or they may aim to provide leadership and financial support in relation to specific kinds of services. (Judge, 1985, p. 99)

The creation of the Australian Advisory Council on Bibliographical Services (AACOBS) in 1956 would probably be considered the start of information policy work in Australia. Its purpose was to develop more effective national library resource sharing and to provide for `last resort' holding of material (Judge, 1984, p. 167). During the late 1960s, interest began to be focused on enhancing the nation's scientific

and technical information needs. In May of 1970, there was a meeting between Australian Government departments and agencies and the National Library to consider how to best meet these needs. A result of this was the establishment of a Scientific and Technological Information Services Enquiry Committee (STISEC). This Committee produced a report in 1973 that recommended the improvement of national Science and Technology Information (STI) resources and services and the formation of a national STI authority under the National Library of Australia. Though accepted in principle by the Federal Government, the proposal for an Australian Library Based Information Service failed to achieve concrete application in several years of committee discussions.

The Committee of Inquiry into Public Libraries presented to parliament in 1976 the "Public Library Report", also known as the Horton Report. It called for greatly increased funding for the promotion of public library and information services, and resulted in the convening of an Inter-Departmental Working Group to examine both its suggestions and the STI authority proposal. This in turn, caused the establishment of another Inter-Departmental Working Group which reported in 1980. It recommended national services for the handicapped, more study of school/community libraries, that the Commonwealth Government should have a stronger part in national library co-operation and co-ordination, and that no special funding be allocated to the States for public library services (Judge, 1985, pp. 43-44).

A Senate Standing Committee on Science and the Environment issued the Jessop Report (Industrial Research and Development in Australia) in 1979, which included the following recommendation:

the Government, as a matter of urgency, collate the information

> already obtained through committees of public inquiry into scientific and technological information services, bring it up to date, and present to Parliament a national information policy together with a scheme for the coordination and development of library based information services (Judge, 1987, p. 9).

As a result, serious consideration began for the establishment of an Australian Libraries and Information Council (ALIC). In 1981, the 'Cultural Ministers Council' unanimously supported a proposal for the formation of ALIC. The ALIC was formally established in February 1982 by a Cabinet decision (Judge, 1985, p. 46). The purpose of ALIC is to advise all levels of government on the development of library and related information services by formulating a national plan. It is also to develop nationwide co-operation, co-ordination and resource sharing (Judge, 1987, p. 3).

ALIC is composed of the National Library and Australian Archives Director Generals, the six State Librarians, the Directors of the Northern Territory and Australian Capital Territory Library Services, three nominees of the Minister for Education, and one nominee of the Minister for Science. It takes the premises that freedom of access is essential, library and information services in Australia are inadequate, co-ordination is vital, the private sector must be considered, and that information is to be viewed as a national resource (Judge, 1984, p. 166). Among other things, it has produced an Issues and Objectives paper to stimulate professional and public debate, released a Plan for Library and Related Information Services in Australia, examined public/private sector questions, published a national conservation program for library and archival materials, is currently examining

increased use of computers in schools and is studying interlibrary lending patterns (Judge, 1987, p. 3). Some are of the opinion that ALIC is doing too little, too late. Peter Judge, Officer-in Charge of the Central Information Library of CSIRO, believes that "ALIC has not appeared to be paying sufficient attention to the changing public perceptions of library and information services, nor to the identification of key issues" (Judge, 1987, p. 3).

An Information Technology Council was established within the Department of Science and Technology in 1978, and is still in existence today as the National Technology Council. Its purpose is to promote greater awareness of information technology at all levels. Among its accomplishments have been the publication of annual volumes of essays entitled Technological change: impact of information technology and the sponsoring and co-ordination of annual Technology Weeks which in 1984 became Information Technology Month (Lane, 1985, p. 37).

The Australian Labor Party is presently the political party in power in Australia. During the past two national elections it has given concrete expression to its commitment to national information planning in its party platform. In the 1986 Platform, Resolutions and Rules, the Australian Labor Party "recognises 'information' as a resource, a critical factor in production and economic growth". Section M of the Platform is devoted to National Information Policy. It states that "in an era of rapid technological change access to information is a precondition to national or personal autonomy" (Australian Labor Party, 1986, pp. 10-12). It refers to the questions of privacy and freedom of information, and the importance of free access to information and library services by all people. The expansion of these services is to

be achieved through cooperation and the formation of library systems and networks. Public libraries are the collective responsibility of the Commonwealth, state, territory, and local levels of government, with funding provided by each. Public libraries should also place greater stress on non-book materials. "Information problems should not continue to be treated in the narrow perspective of science and technology, ... but should be considered in the broader context of knowledge and social welfare in which information is a fundamental resource". It states that "Governments must plan for the new technologies and ensure that information systems are not developed in chaotic fashion for exclusively commercial reasons", yet also stresses the importance of public-private sector interaction (Australian Labor Party, 1986, pp. 10-12).

In 1984, the Department of Science and Technology produced a Discussion draft of a national technology strategy which listed as one national priority, "improved overseas and local science and technology information gathering and dissemination" (Lane, 1985, p. 38). In December 1985, the same department issued a discussion paper entitled: A National Information Policy for Australia. Its purpose was to stimulate debate on the such a policy's social, economic and legal implications (Kirby, 1986, p. 203).

Other bodies actively involved in the area of national information policy are: ASTEC, (the Australian Science and Technology Council), CSIRO, the Department of Industry, Technology and Commerce, the Australian Advisory Council on Bibliographical Services (AACOBS), and the Library Association of Australia (LAA). ASTEC is the principal independent source of strategic policy advice to the government on science and technology matters, reporting directly to the Prime

Minister. It develops and presents its own policy initiatives as well as examining and commenting on those arising from other governmental departments and agencies (OECD, 1986, p. 49). In the report Science and Technology in Australia 1977-78, ASTEC recommended, among other things, that "CSIRO take a leading role in the provision of information services in science and technology; that the information services at present provided by CSIRO be expanded; and that a policy for charging the users of such services be developed" (Judge, 1985, p. 49).

About the same time, (1977), CSIRO was the subject of a major independent review: the Birch Report of the Independent Inquiry into the Commonwealth Scientific and Industrial Research Organization. This resulted in a reorientation toward enhancing the transfer of technology and other research results to the private sector. One of the most significant outcomes was the founding in 1984 of SIROTECH Ltd., a non-profit commercial company, set up by CSIRO. Its purpose is to promote CSIRO innovations and technology in industry and to identify and undertake research needed and required by industry (OECD, 1986, p. 57-58).

The Department of Industry, Technology and Commerce is moving toward the establishment of a National Industry Extension Service (NIES). It is intended to be an independent, non-profit cooperative venture with the States that will "promote employment and prosperity in Australian manufacturing industry through the development of internationally competitive products and services" (Judge, 1985, p. 54). It will be modeled somewhat on Australia's excellent agricultural extension service, providing 'field officers' (extension agents) recruited from private enterprise. They will understand and 'speak the

language' of industry. NIES's activities would be concentrated on small- to medium-sized manufacturing and service enterprises that wish to expand and export. It would provide subsidized consultancy services and management and support of national industry/product/market databases (Judge, 1985, 55-56).

Both AACOBS and LAA have prepared, and are continuing to up-date, national information policy statements. Both organizations have focused on resource sharing, have examined the procedures of interlibrary lending, and have discussed some sort of national plan for subject specialization by libraries (Judge, 1987, p. 8). The LAA has also expressed the need for more indigenous data and information services, rather than relying on foreign services containing little information dealing with the unique problems of Australia (Ibid, p. 17).

The National Library has developed a national bibliographic utility called the Australian Bibliographic Network (ABN). It utilizes Australian National Library enhanced Washington Library Network software. ABN has 108 libraries inputing original cataloging while another 320 libraries use the dial-up query and location finding services (Horton, 1987, p. 152). U.S., Canadian, and British union catalogs are available through ABN (Blank, 1984, p. 48). A second national bibliographic network provides automated cataloging and authority control to schools throughout the country. It is called the Australian Schools Cataloging Information Service (ASCIS).

Private professional bodies concerned with information policy issues are: The Australian Database Development Association, the Australian Telecommunications Users Group, and the Agricultural Information Association for Australia.

Data Protection, Privacy Regulation and Transborder Data Flow

In March 1982, an Australian Freedom of Information Act became law. It was the end result of a decade of discussions and debate. A Royal Commission on Australian Government Administration was established in 1974 by the Whitlam Labor government. Two years later it issued the Coombs Report, which made recommendations on various aspects of governmental information collection and use. It proposed the establishment of a Commonwealth Information Advisory Council to "advise the Commonwealth government on the development of a comprehensive information policy, to review significant technological developments, and to provide a forum for consultation between specialist information agencies" (Lane, 1985, p. 37). The recommendations came to naught, because the government had gone to the Liberal Party in 1975.

The Liberal Party Fraser Government in-turn set up a Task Force on Departmental Information in 1978, to examine public dissemination of governmental information. After referring the legislation to a Senate Standing Committee for debate and modification, it was eventually introduced as a Freedom of Information bill in April 1981. It was amended and passed that same year and was implemented in 1982. The Freedom of Information Act (FOI) provides for the right of access for natural persons (both Australian citizens and certain resident aliens) to name-linked data held by government ministers and agencies. This includes both manual and automated data processing (Wigand, Shipley, & Shipley, 1984, p. 167).

An individual can request amendment of government-held records that are incomplete, incorrect, out of date, or misleading. If a request is

rejected, there are fairly strong rights of appeal. These include the Commonwealth Ombudsman, the Administrative Appeals Tribunal, and ultimately the Document Review Tribunal. There are however, extensive exceptions. Some 24 Commonwealth agencies are exempted, as well as numerous classes of documents, including national security, defense, public safety, internal working documents, and materials affecting national financial and economic matters. Information Access Offices were established throughout Australia to facilitate ease of access. An individual has the right to require that the documents be made available at the closest such office (Missen, 1983, pp. 46-48). The FOI Act also requires governmental agencies to publish information concerning their organization, function, and the types of documents they possess, as well as to make available the manuals and guidelines that they use when making internal decisions affecting the public (Lane, 1985, p. 38).

Australia offers no specific constitutional guarantee for privacy protection, for the Australian Constitution has no bill of rights and freedoms. In 1983, the Australian Law Reform Commission, at the request of the Federal Government, published a major report on privacy protection entitled Privacy. It recommended a draft comprehensive Privacy Act which would include the adaptation of information privacy principles derived from the OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data. The Commission also recommended the appointment of a `Privacy Commissioner' with the power to investigate privacy complaints. This Privacy Commissioner should be a member of the Australian Human Rights Commission and cooperate with the Federal Ombudsman. There is currently a proposal to enact privacy legislation along the lines of the Law Commission Report (Kirby, 1986,

p. 201-203).

Australia is seriously considering instituting a national identity card, i.e. the "Australia Card", to deal with tax evasion and welfare exploitation. As part of these discussions, the creation of a data protection agency (DPA) has been proposed to protect against human rights abuses and invasion of individual privacy. It is also proposed that once a year every individual shall receive without cost, a record of the personal data relating to him or her (Kirby, 1986, p. 204-205).

Privacy protection legislation has been enacted by one Australian State, i.e. New South Wales. In 1975, its Parliament established a State Privacy Committee with the authority to investigate privacy invasion complaints (Kirby, 1986, p. 201).

The Federal Department of Communications has responsibility for national policy in regard to broadcasting, postal, telephone and telegraph services, satellite communications, and technological developments such as videotex, through its function as the agency providing policy advice to the Minister of Communications. The Department of Communications also has planning, licensing and management responsibilities in regard to the administration of the radio frequency spectrum (OECD Australia, 1986, p. 93). There are six statutory authorities in the Communications Ministry, two of which are concerned with the provision of telecommunication services: the Australian Telecommunications Commission, (or Telecom Australia), for domestic services; and the Overseas Telecommunications Commission, or (OTC), for international services.

Telecom Australia is the largest public business enterprise in the country (Ibid., p. 94). Telecom Australia was established by the

Telecommunications Act of 1975 to provide telecommunications services to the people of Australia and to develop and operate the national telecommunications network. Telecom Australia has in the past had a monopoly on the provision of services as well as the exclusive right to authorize the equipment to be attached to the network (Eward, 1983, p. 23). In October 1982, the Davidson Committee Report was released that called for restructuring toward a more competitive policy, in particular the deregulation of customer premise terminal equipment and relaxed entry criteria for private networks (National Telecommunications Administration, 1984, p. 337). However, due to considerable opposition and the election of a Labor Government, there has been little action to implement its findings (Eward, 1983, p. 12).

The Overseas Telecommunications Commission was formed in 1946 by an act of the Commonwealth Parliament. The OTC set up the `MIDAS' system in 1979 to serve as a data link between the telephone and telecommunication networks of Australian Telecom and overseas database services. This had the result of greatly reducing the communication costs for Australian access. The negative side is that Australia became highly dependent on these foreign databases for a great deal of its scientific and technical information. This was perhaps partially relieved by 'reverse MIDAS', two-way communication with the U.S., the U.K., Singapore, and Hong Kong, allowing access to Australian databases. The Australian Packet Switching Network was introduced in 1982, making connection into the telephone network unnecessary (Lane, 1985, p. 34).

The Department of Communications is also involved in AUSSAT, the Australian Communications Satellite System. One of its many uses is the Homestead and Community Broadcast Satellite Service, which provides

telephone, radio, and television services to remote areas previously without access (Lane, 1985, p. 34). Australia is the fourth largest user of the global communications satellite system (Blank, 1984, p. 51).

Chapter II

Canada

At 3,851,790 square miles, Canada is the second largest country in the world in area. It is a confederation of ten provinces and two territories with a parliamentary democracy form of government. Legislative responsibility is divided between the Federal Parliament and the provincial legislatures. The official head of state is the Queen, represented by a governor general who has a largely ceremonial role. Real power is held by the Cabinet and Prime Minister. The prime minister is the leader of the majority party in the House of Commons. The other chamber of the bicameral Parliament is the House of Lords. Canada has two official languages, English and French. The population is 25,400,000.

Information Resources in Canada

Prior to 1953, there was no National Library in Canada. The Canadian Library Association was formed in 1946 and urged the formation of a national institution. As a result, the Canadian Bibliographic Centre was established in 1950 with a mandate to begin a national union catalog and a national bibliography. The National Library of Canada came into being under the National Library Act of 1952. It was given the responsibility for continuing the National Union Catalogue and Canadiana, the national bibliography. The National Library operated out of temporary quarters until 1967, when a new facility was constructed.

It presently has some 912,000 volumes and 2,200,000 microforms in its collection (Rothstein, 1986, p. 157). Since its founding, the National Library has stressed bibliographic services, particularly by providing access to the nation's published heritage through the national bibliography and union catalogs for monographs, periodicals, newspapers, and sheet music (Scott, 1985, p. 166).

The federal government of Canada has no department specifically concerned with libraries (Scott, 1985, p. 164). As mentioned previously, the National Library of Canada developed rather recently, as a result of the National Library Act of 1952. A new National Library Act was passed in 1969 that extended the responsibilities of the National Library to coordinate the services of all federal governmental libraries (Organisation for Economic Co-operation and Development [OECD], 1971, p. 89). It was also given the mandate to establish a national network of bibliographic systems and services.

A review of the National Library's services occurred in 1977-78 which resulted in the government report, The Future of the National Library of Canada, in 1979. The report stressed the library's objectives as support of Canadian studies through the acquisition and preservation of the country's recorded heritage, enhancing bibliographic and physical access to collections throughout Canada, and coordination of national planning for library services (Scott, 1985, p. 165). One of the library's main aims was to achieve these objectives by using computer technology to establish a decentralized bibliographic network. An integrated, automated bibliographic system, (DOBIS - Dortmunder Bibliothekssystem), was acquired and developed to use for the Canadian Union Catalogue of Monographs and the Canadian Union Catalogue of

Periodicals (Rothstein, 1986, p. 158). DOBIS is an online bilingual database also containing bibliographic records of other countries and the catalog records of some Canadian federal libraries (Scott, 1985, p. 166).

The Library of Parliament dates back in one form or another to 1792, and served as the major national collection until the founding of the National Library. It had responsibility for copyright deposit and international exchange agreements. When the National Library was established, 250,000 volumes and deposit and exchange duties were transferred to it from the Library of Parliament. The Library of Parliament now functions primarily as the legislative reference service for the House and Senate (Rothstein, 1986, p. 158).

The Bibliotheque Nationale du Quebec was established in 1968 under a Quebec law. The Bibliotheque Nationale du Quebec has a scope much broader than any of the other provincial libraries, seeking to acquire all materials relating to Quebec and French Canada. It maintains the right of legal deposit for materials published in Quebec. A large part of its collections are derived from its predecessor, the Bibliotheque Saint-Sulpice. The Bibliotheque Nationale du Quebec issues the Bibliographie du Quebec, maintains a union catalog of all important holdings in the province, and publishes a Quebec periodical index. A strong exchange program is maintained with the Bibliotheque Nationale de France (Rothstein, 1986, pp. 158-159).

In Canada, "academic libraries" refer to those serving publicly supported universities. There are only a small number of undergraduate institutions in Canada, none of which are private in funding. A third of the universities were founded after the Second World War.

Consequently, a great deal of growth occurred in academic libraries during the post-war period. There are currently 108 university libraries and 140 college (i.e. non-degree granting two and three year institutions) libraries (Rothstein, 1986, pp. 159-160). The University of Toronto Library Automation System (UTLAS), was originally created in 1973 as a part of the University of Toronto Library, but expanded to all Ontario and eventually to a great portion of the rest of the country. It is now an independent utility providing computer-based cataloging products and services to some 350 direct and 2000 indirect users. It also serves customers in the U.S. and Japan.

Canada has 1,005 public library systems with 3,179 service points. Legal responsibility for public libraries rests with the provincial governments, but local authorities in reality handle the greatest portion of the operation and financing of the libraries (Rothstein, 1986, p. 160).

The institution concerned with the provision of scientific and technical information services is the Canada Institute for Scientific and Technical Information (CISTI). It began in 1924 as the library of the National Research Council of Canada (NRC), but nonetheless from its inception assumed responsibility for serving all scientists in Canada. The library thus became a de facto national science library. This was legally recognized in 1966 when it was named the National Science Library. At the dedication of a new building in 1974, the National Research Council announced a reorganization of its information services. It combined the National Science Library with the NRC's Technical Information Service, which had provided information and advice to Canadian industry. From that time it has been known as the Canada

Institute for Scientific and Technical Information (Rothstein, 1986, p. 158).

A 1959 agreement between the National Library and CISTI defined their respective responsibilities. The National Library of Canada supports services in the social sciences and humanities while the Canada Institute for Scientific and Technical Information is concerned with services in the natural and applied sciences, health sciences and technology. CISTI has responsibility for developing a national network of scientific and technical information through its Advisory Board for Scientific and Technical Information. It also operates the Resource Centre for the Health Sciences. The library maintains a collection of 700,000 volumes which serves as a "backstop" for the fields represented. A selective dissemination service (CAN/SDI) provides its subscribers with bibliographic citations from regular database searches (Rothstein, 1986, p. 158).

CISTI also maintains an online database service called CAN/OLE. The system has 31 database, of which 14 are Canadian. These include Canadian government documents databases, Canadian transportation, Canadian sports, registers of research and researchers, union lists of serials in Canadian libraries, Canadiana records, and CISTI's own catalog (Scott, 1985, p. 166). (See Table 1: Distribution of Scientific and Technical Databases and Table 2: Distribution of Economic Databases.)

Information Policy in Canada

The national government of Canada has had a strong interest in

information issues and though it has not taken a holistic national approach, it has passed some significant legislation concerned with the transborder flow of information. However, before discussing these policy initiatives, library related legislation will be briefly considered.

Canadian libraries are at this time actively involved in a policy initiative to develop a nationwide, decentralized and voluntary library and information network to facilitate resource sharing. A decentralized system was felt necessary because Canadian libraries function within a number of political jurisdictions, lacking one centralized national library system. The National Library thus undertook a four year Bibliographic and Communications Network Pilot Project with Telecom Canada, CISTI, and several other institutions and universities. Telecom Canada is a consortium of major telephone companies operating in the provinces. Some of these companies are owned by the provincial governments and some by private enterprise (Eward, 1983, p. 73).

The feasibility of such a network was tested by participation in Telecom Canada's iNet field trial in 1982 and 1983. The technology tested allowed access to multiple autonomous systems using the Open Systems Interconnection (OSI) model to interchange data between these systems. Participation in the field trial was subsidized by both the National Library and the data communications arm of Telecom Canada. The project results showed that it was indeed feasible to have "an open, decentralized, voluntary library and information network, operating nationwide" (National Library of Canada, 1984, pp. 5-9).

As a result of the pilot project, the National Library has been actively involved in developing the necessary standard protocols based

on the OSI model. Among these protocols are ones dealing with file transfer (batch online transfer of MARC records), interlibrary loan messaging, and book order messaging, all of which have undergone testing in Canadian libraries during the mid-1980s. Because these protocols allow interconnection of independent and diverse systems, any library with a microcomputer will eventually be able to obtain bibliographic data, order books, perform interlibrary loans, or handle reference requests from multiple sources of their own choosing. Through the network, libraries will be able to give or take according to their needs and capabilities from anywhere within the nation (Scott, 1985, p. 168).

Scientific and technical information policy in Canada was discussed in the preceding section in regard to the Canada Institute for Scientific and Technical Information. The Canadian federal government has also been concerned with data processing and transfer issues and has passed some significant measures within those areas. One of the first important pieces of legislation was the 1976 Tax Law Amendment (C-58). This denied Canadian businesses tax deductions for advertising broadcast time purchased on foreign stations but directed primarily at Canadian audiences. This measure resulted in a significant decrease in the revenues of U.S. broadcast stations near the border.

An important report was issued in 1979 by the Canadian Department of Communications titled Telecommunications and Canada, but better known as the "Clyne Report". It was quite similar to France's "Nora/Minc Report", issued the previous year, expressing Canadian concern for erosion of cultural sovereignty and loss of control over its economy. "of all the technologies that are developing so rapidly today, that of informatics (computer communications) poses possibly the most dangerous

threat to Canadian sovereignty in both commercial and cultural aspects" (Jussawalla & Cheah, 1987, p. 35). Anxiety was expressed that processing data abroad leaves Canada vulnerable to technical failures or political sabotage that it has no control over. The "Clyne Report" also voiced disquiet about the inability of Canadian children to identify Canadian political leaders, public figures, and folk heroes (Sterling & Thompson, 1984, p. 10). The report made 26 specific recommendations, including, the limitation of foreign competition in the information and communication industries, stricter regulation of transborder data flows, encouraging Canadian businesses to use Canadian broadcast and data-processing firms, and urging more Canadian-produced television programming (Sterling & Thompson, 1984, p. 8 & Reynolds, 1984, p. 33). The report concluded that "the government should act immediately to regulate transborder data flows to ensure that we do not lose control of information vital to the maintenance of national sovereignty" (Nat. Telecom. Admin., 1984, p. 201).

The Banks & Banking Law Revision of 1980, also known as the Canadian Banking Act of 1980, requires the processing of all bank data demanded by banking authorities to be carried out in Canada. Data may be transmitted out of Canada, but only after the Inspector General of Banks has been notified. It applies to all banks operating in Canada, be they Canadian or foreign-owned. Banks are also barred from selling time-sharing services which are unrelated to their own clients' banking activities (Jacob & Rings, 1986, p. 157). The act puts restrictions on the processing of copies outside the country and gives the Canadian Minister of Finance the power to suspend processing outside the country if he believes that "such processing is not in the national interest"

(Buss, 1984, p. 113).

These measures were taken in part because information processed outside a country must be imported, adversely affecting the importing nation's balance of payments. Claims were also made that 25,000 Canadian jobs would be lost by 1985 in the data-processing area, along with another 100,000 supporting positions. In addition, it was estimated that Canada would spend $1.5 billion importing data processing and storage products between 1980 and 1985, the greater portion of it from the United States (Jussawalla & Cheah, 1987, p. 38).

The 1983 "Broadcasting Strategy for Canada" called for expanding of programming choices, strengthening of Canadian programming, having the Canadian Radio and Television Commission co-ordinate policy matters, and abolishing satellite dish licensing requirements (Jacob & Rings, 1986, p. 157). Direct satellite broadcasting is particularly important in both Canada and Australia, with their immense remote and sparsely populated areas lacking in adequate coverage by their national television services. Canada was the first nation to launch a direct broadcasting satellite, the "Hermes" (Nat. Telecom. Admin., 1984, p. 389).

Canada's concern with cultural and economic sovereignty was also expressed in the mid 1970s in a joint declaration by Canada and Sweden on direct satellite broadcasting. There was no attempt to prohibit any specific program content, but the declaration did require that "direct television broadcasting by satellite to any foreign state shall be undertaken only with the consent of that State" and that a consenting State "shall have the right to participate in activities which involve coverage of territory under its jurisdiction and control" with

participation "governed by appropriate international agreements...". The United States, standing behind the principle of free flow of information, strongly opposed the declaration (Ibid., p. 388).

Canadian Federal Government policy statements relating to private sector information services in Canada have on the whole favored the growth of the Canadian private sector information industry. The 1977 Policy and guidelines on contracting-out the government's requirements in science and technology states:

> The government has...provided, subject to overall financial constraints, that its mission-oriented, science and technology requirements in the natural sciences and human science fields of urban, regional and transportation studies be contracted-out to the private sector, and especially to Canadian industry... (Canadian Association for Information Science, 1981, p. 4).

The Guide on EDP administration for departments and agencies of the Government of Canada, released in 1974 states, "the government will meet its needs for EDP services from the private sector, except when it is in the public interest or is more economical to provide those services internally" (Ibid., p. 7).

Data Protection, Privacy Regulation, and Transborder Data Flow

Part IV of the Canadian Human Rights Act of 1977 deals with the protection of personal data held by the Federal Government. It gives natural persons the right to know what records the government maintains and how the information is being utilized. Individuals are given the right to challenge the correctness, relevance, and currency of that

information (Jacob and Rings, 1986, p. 157). Only Canadian citizens are protected, not aliens (Wigand, Shipley & Shipley, 1984, p. 166). The act created the office of Privacy Commissioner who is granted powers to investigate complaints, call for information or documents, and to inspect systems. However, his actions are limited to making recommendations, publishing findings and compelling government bodies to reply to criticism. Ultimate powers of decision are held by a government minister. Both manual and computerized systems are covered, and the storage or transfer abroad of personal data about Canadian nationals is prohibited (Martyn, 1985, p. 334). There are sixteen classes of exemptions with half of them not subject to a test of potential harm if the document is released. Instead, the authorities must only show that the material falls within an exemption class to refuse access to it (Rowat, 1983, p. 38).

Between 1977 and 1982, four of the provinces, i.e. Nova Scotia (the first in the entire British Commonwealth), New Brunswick, Newfoundland, and Quebec, passed freedom of information legislation. Simultaneously, increased interest began to stir at the federal level. The result was the Canadian Access to Information Act, also known as the Canadian Privacy Act of 1983. This act was quite similar to Part IV of the Human Rights Act, except that it contained a notable addition of right to judicial review for decisions of access denial. Requests for access must receive a reply within a stipulated time limit, and access is to be granted in either of Canada's official languages. An office of Information Commissioner was created along much the same lines as the Privacy Commissioner of the Human Rights Act. The Commissioner has the authority to review request denials and investigatory powers to examine

all records. If the Commissioner's investigation does not result in disclosure, appeal to the Federal Court of Canada is possible (McCamus, 1983, pp. 55-58).

There are a considerable number of exemptions, including measures related to government proprietary information. It is interesting that Canada maintains one of the most secretive executive privilege rules in the Western World. The act has a comprehensive exemption of all cabinet records. A related piece of legislation gives the government an unreviewable right to deny disclosure of cabinet records to a court. The Canadian Privacy Act also requires federal agencies to make available any internal manuals used to carry out programs, as well as to publish a listing of all records under their control "in sufficient detail to facilitate the exercise of the right of access under this Act" (McCamus, 1983, pp. 55-58). Data subjects are to be consulted in respect to proposed "non-derivative uses" of personal data for administrative purposes (Jussawalla & Cheah, 1987, p. 85).

The telecommunications industry in Canada is composed of a mixture of private, governmental and joint public-private bodies. There is no state controlled Post, Telephone and Telegraph. Telecommunications regulation is likewise a mixture, involving a federal agency, the Canadian Radio-television and Telecommunications Commission, provincial government utility boards and occasionally a municipal council (Eward, 1983, p. 71). Telecommunications policy is determined within the respective jurisdictions of the federal and provincial governments. Telecommunications services are fairly competitive, with the federal government staying away from the restrictive measures used in its data transmission and information processing policies.

Chapter III

Federal Republic of Germany

As its name implies, the Federal Republic of Germany is a union of eleven separate, self-governing states called "Bundesländer" or simply "Länder". Deputies are elected directly to the Bundestag, the nation's parliament. The governments of the states appoint delegates to the Bundesrat, (federal council). A federal chancellor is elected by the Bundestag for a four year term. The Federal Republic has a population of 61 million and an area of 95,975 square miles.

Information Resources in the Federal Republic of Germany

In the Federal Republic of Germany, responsibility for science, cultural affairs and education lies primarily with the Länder, which therefore have authority over the universities and university libraries. In each Bundesland there are ministries for Cultural Affairs and for Education and Scientific research (Kultusministerium and Wissenschaftministerium), one of which has legal authority for the academic libraries and the other for the public libraries of the region. For public libraries, the ministry can in general only give guidance on acceptable standards and promote cooperation. The budget for public libraries comes from local authorities (Gattermann, 1985, p. 13). The Federal Republic has the largest total collection and the highest budget for libraries in Europe (Neubauer, 1984, p. 124).

Before and through World War II, Germany had two National Libraries: the Deutsche Bűcherei at Leipzig, the copyright depository library collecting all newly-printed books in the German language and producing the German National Bibliography; and the Deutsche Staatsbibliothek at Berlin, the largest library in the country. World War I and its economic consequences hindered collection building and during the Second World War many libraries were destroyed and millions of books lost. After the war the country was divided into two separate states. The "Iron Curtain" cut off access to the two national libraries, and two additional National Libraries had to be established in the West (Gattermann, 1985, pp. 13-14).

The Deutsche Bibliothek in Frankfurt am Main is the national copyright depository, the national bibliographic center, and is producer of the 'Deutsche Bibliographie' and its database version BIBLIODATA. One of its tasks is the comprehensive collection and bibliographic registration of all German-language publications, not merely the publications of the Federal Republic (Pflug & Kaegbein, 1986, p. 307). The Staatsbibliothek Preussischer Kulturbesitz (State Library of the Prussian Cultural Foundation) in West Berlin is a comprehensive collection of German and foreign literature and a co-producer of the Zeitschriftendatenbank ZDB (national serial database) (Gattermann, 1985, p. 14).

The Deutsche Bibliothek (German Library) is funded 100% by the Federal Government. It has 3,350,000 monographs and some 57,000 current periodicals. The Staatsbibliothek Preussischer Kulturbesitz is funded 75% by the Federal Government and 25% by the Bundesländer. It has some 3,560,000 monographs, and 31,600 current periodicals (Federal Minister

for Research & Technology, 1985, p. 101).

After the war the public libraries became oriented to the Anglo-American library system (Pflug & Kaegbein, 1986, p. 307). There are several regional state libraries, among the larger and more renowned being the Bayerische Staatsbibliothek in Munich, the Württembergische Landesbibliothek in Stuttgart, and the Niedersächsische Landesbibliothek in Hannover. There are about 50 University libraries, funded by the Bundesländer, and also about 60 non-university college libraries, i.e. "Fachhochschule" (professional universities), Polytechnics, and Colleges of Education (Gattermann, 1985, p. 14).

The Deutsche Forschungsgemeinschaft (German Research Society) is jointly supported by the Federal Government and the Länder, and takes care of the supra-regional provision of library material for scientific research, coordinates cooperative planning, and gives financial support to all corresponding recommendations and measures. It is the only institution since 1949 in which planning, coordination and financial support of library services all lie under one roof (Gattermann, 1985, p. 16). In order to assure that the required literature for research was available in the Federal Republic of Germany, the German Research Society founded a system of special collections in German academic and research libraries whereby some 40 libraries collect newly published foreign literature relevant for scientific research in their specific field of science (Pflug & Kaegbein, 1986, p. 307). This is known as the "Sondersammelgebietsplan" and utilizes cooperative purchasing for the de-centralized collections. Basic and frequently used books are to be provided by local resources, while specialized, particularly foreign material is to be collected in at least one copy by an academic library

and made available to any researcher through inter-library lending. Participating libraries are to achieve complete coverage of those subjects that they have responsibility for (Gattermann, 1985, p. 15). In 1983, the German Research Society provided about eight million DM to finance the acquisition program (Neubauer, 1984, p. 122).

There are four back-up central libraries to take the some of the burden of the special subject collections in medicine, economics, agriculture, and engineering. The Zentralbibliothek der Wirtschaftswissenschaften in Kiel (Central Library for Economics) is funded 50% by the Federal Government and 50% by the Bundesländer. It has 1,606,000 books and 18,400 current periodicals. The Technische Informationsbibliothek in Hannover (Technical Information Library) is funded 30% by the Federal Government and 70% by the Länder. It maintains 712,000 monographs and 20,200 current periodicals. The Zentralbibliothek der Medizin in Cologne (Central Library for Medicine) is funded 30% by the Federal Government and 70% by the Länder. It has a collection of some 616,000 monographs and 6,600 current periodicals. The Zentralbibliothek der Landbauwissenschaft (Central Library for Agriculture) is in Bonn. It has some 309,000 books and 4,150 current periodicals (Fed. Minister for Res. & Tech., 1985, pp. 102-105).

Seven regional union catalogs were established in West Berlin, Frankfurt, Göttingen, Hamburg, Cologne, Munich, and Stuttgart to serve as steering tools for the "Deutsche Leihverkehr" (inter-library lending service). The country is therefore divided into seven lending areas (Gattermann, 1985, p. 16). Orders are first searched in local libraries. If this proves unproductive, the request is sent to the regional union catalog in that region. Only if this too fails to locate

the item, will the request be sent to another regional union catalog (in a prescribed sequence). To speed interlibrary loan delivery of journal articles, a national serial database was established called the Zeitschriftendatenbank. If a serial title is found in the database, it can be ordered directly from a library (Neubauer, 1984, p. 108). In 1983, a new project financed by the Federal Government was begun. It established an online ordering system, whereby orders are transmitted directly to the holding library after a search of a database. The patron will have a choice between document delivery systems of different speeds and costs (Ibid., p. 123).

Online information services in German libraries were subsidized by the government in the beginning, but now each library is expected to handle its own costs. The Federal Government originally promoted the introduction of a standard terminal set for online database searches. However, it was not as successful as expected, and other types of terminals are now being introduced (Neubauer, 1984, p. 125).

Three specialized information computing centers were set up under the Information and Documentation Program 1974-1977 to provide access to data bases: INKA (Informationszentrum Karlsruhe), a scientific and technical information network, the German Institute for Medical Documentation and Information (DIMDI), and a legal information system called JURIS (Fed. Minister for Res. & Tech., 1985, p. 14).

The two largest German "hosts" (computer centers offering online databases) for scientific technical information are: DIMDI and INKA. DIMDI (Deutsches Institut fur Medizinische Dokumentation und Information) is the biggest German host, offering more than 30 databases with twenty-two million records in the field of biosciences. Some 85%

of its funding comes from the Federal Government, the remainder being collected from users. INKA offers 21 databases from the Information Center for Energy, Physics, and Mathematics, six databases from the Information Center for Materials, seven databases from the Information Center for Civil Engineering, seven databases in various fields of technical engineering and technical sciences from the Fachinformations Zentrum (FIZ) Technik, and one database from the Information Center for Raw Material and Geosciences. The five information centers using INKA as a technical computer center offer together some twelve million records. The FIZ for Energy, Physics, and Mathematics has also linked its online computer information services with the Chemical Abstracts Services (CAS) of the American Chemical Society in Columbus, Ohio. The German Federal Government paid for the several million dollar contract signed in 1983 (Neubauer, 1984, pp. 110-111). (See Table 1: Distribution of Scientific and Technical Databases and Table 2: Distribution of Economic Databases for comparisons of German databases with those of the other five nations.)

Information Policy in the Federal Republic of Germany

During the early 1960's, interest began to grow in the German government for information related issues. In 1962, an investigation of the Federal Audit Office recognized the significance of information and documentation for the improvement of efficiency in science, industry and administration (Fed. Minister for Res. & Tech., 1985, p. 13). Information began to be seen as a public concern which could be promoted by scientific libraries (Abbel, 1986, p. 193). The recommendations of

the Federal Audit Office led to the establishment of the Institute for Information and Documentation (IDW) whose function was to coordinate public activities, to give advice to governmental and private institutions, and to provide financial assistance in the establishment of new documentation centers and other projects such as the development of thesauri, classification schemes or the introduction of modern techniques for the recording, storing, and printing of data. A special Center for Mechanization in Documentation (ZMD) was an offshoot of the Institute created to help German information centers become familiar with data processing methods (Abbel, 1986, pp. 193-194).

The Federal Government created a program for the advancement of Information and Documentation in 1974, the I & D Program 1974-1977. The program was developed as a concrete plan to solve scientific, economic, technical, governmental, and social problems (Sugimoto, 1984, p. 149). It provided a completely new structural concept for the provision of scientific and technical information services in West Germany. The program provided for the creation of specialized information systems in twenty subject fields, each with a central organizational center called a Fachinformations Zentrum (FIZ). It served as an attempt to integrate the heretofore largely dispersed information and documentation activities into one structural concept. The program gave consideration to the total information infrastructure, i.e. research, education, training, and standardization issues.

The I & D Program also laid the foundation for the Society for Information and Documentation (GID) (Fed. Minister for Res. & Tech., 1985, p. 13). GID incorporated the IDW and ZMD together with institutes dealing with systems analysis and non-numerical data processing. In

addition it took over the library and documentation center of the German Society for Documentation (Abbel, 1986, p. 196). Among its objectives, GID is to conduct applied research and development in information and documentation, to give advice to corporate members and other information centers, to provide technical services such as data processing, to manage research grants given by the federal and state governments for information and documentation, and to support international cooperation with respect to information and documentation (Abbel, 1986, p. 196).

The GID and the Ministry for Research and Technology handle scientific and technical information policy. The governmental role includes improvement of the communications infrastructure, promotion of research and development, promotion of education, promotion of international co-operation, subsidizing scientific and technical database development, and enacting a "user-friendly pricing structure" (Judge, 1985, p. 71).

The I & D program was hailed internationally as a long-range information policy. As a rule, the FIZ were to be based on already existing I & D centers. They were to cover the I & D activities within their scope "from literature and data evaluation to the offer and dissemination of various information services including online retrieval" (Abbel, 1986, p. 194). They were also to have the responsibility of cooperation with other centers, and with foreign and international partners. The existing information centers are involved in practically all stages of information provision, from creation to transmission, and act therefore as both databank producers and hosts. Greatest emphasis is placed upon the analysis of published literature, though "grey" or unconventional literature and documents not readily

available also play a significant role. The databases created by or in cooperation with the FIZ have between 20 and 40 percent of their references to this grey literature. The acquisition and distribution of information is seen as "a prerequisite for the application of new technologies and new technical and scientific information in trade and industry" (Grewen, 1983, p. 17).

The purposes of the program were to increase German input into databases, to support export of information services, to establish information services for all subjects, to improve and make commonly available all kinds of information services, and to establish an information network between information centers, libraries and publishers. A large amount of money was spent on this program. Of the twenty information centers planned in the original program, only twelve exist. The plan was only partially realized in the ensuing years, primarily because of a changing economic climate but also because of rapid developments in information technology and changes in the specialized information market. Private industry resistance to participation in a national information system dominated by the government also played a role. According to Canisius (1982), the responsible government ministry never succeeded in convincing the other ministries of the overriding importance of information. "Planning was overdone, resulting in enormous needs for personnel and funds just at a time when the budget began tightening up" (Canisius, 1982, p. 16).

The main tasks of the twelve functioning FIZ institutes is the "development, production and distribution of literature reference services as well as data and fact corpuses". Their work leads to printed bibliographies and tabular material which are generally

distributed by publishers via the book trade (Fed. Minister for Res. & Tech., 1985, p. 14). It was the intention that the FIZ become self-supporting by selling their products and services at adequate prices, but to date all still rely on governmental support. The German language probably plays a large role in this problem, for though information is needed by many user groups in German, databases in the German language have only limited appeal internationally (Abbel, 1986, p. 195). At the end of the 1970s the government also tried to establish a national information network called ODIN, but it never came into existence (Neubauer, 1984, p. 112).

Academic institutes for information science were established by state governments at the Universities of Berlin, Dusseldorf, Constance, and Saarbrucken. They are engaged in research activities and the instruction of students for work in private and public information organizations (Abbel, 1986, p. 196).

A Federal Auditing Office (Bundesrechnungshof) report in April 1983 urged the government to give up some parts of the original program. The government was simply not able to coordinate, regulate, and organize the whole market for information and documentation. It was recommended that the government determine which subjects and which parts of the market should be left to private initiative, and which areas it should directly finance and operate. The report also proposed that the government not offer information services where foreign services were already available.

The federal government responded in October 1983 and defined a new policy for information and documentation. The Specialized Information Program 1985-88 is built on three main principles. First, as a rule,

the production and dissemination of information should be an activity of private enterprise. Second, public promotion could be considered in selected areas where the market regulation is not or not yet sufficient. Third:

> for the performance of public functions and requirements it may be necessary for the governmental bodies to produce, store and disseminate information. But it has to be decided in each case, which of these functions government should perform and which should be given to private enterprise. (Abbel, 1986, p. 197)

Specialized information is that part of knowledge which is useful for dealing with specialized tasks. It is a "production factor" or a "raw material" which is viewed as a major prerequisite for maintaining and improving the international competitiveness of the West German economy and the performance of science and research. Specialized information exists in both printed and electronic forms and enables timely and selective utilization of knowledge to occur, so that superfluous research and development and costly duplication of inventions can be avoided (Fed. Minister for Res. & Tech., 1985, p. 9).

Specialized information is also concerned with information about the economy and utilized in the economic process. "High innovative capacity in the economy is an important factor for competitive ability, especially in the area of high quality and technically sophisticated products. It depends on the efficiency of research and of technological development, on functioning competition, on sufficient provision of capital, entrepreneurial willingness to take risks and, not least, on the accessibility of the necessary specialized information". (Fed. Minister for Res. & Tech., 1985, p. 10).

The objectives of the 1985-88 Program are, to improve the information market by removing obstacles and bottlenecks; to improve German information services within international cooperation and competition; to increase the use and acceptance of specialized information in science, industry, the media, state administration, and society in general; to strengthen the transfer of information from science and research into industrial applications; and improve Germany's market opportunities. The large-scale concept of establishment of twenty specialized information centers was dropped.

The Specialized Information Program 1985-88 takes a general free market economy realignment. The state should be subordinate to private ventures and when possible, private enterprise should be called upon to fulfill state interests and public services in the specialized information areas. Specialized information should be offered on the market or at a price in line with market conditions. The main direction will now be to charge the user for output costs. The government is however, still willing to support activities that are necessary to avoid too much dependence on foreign information industries.

The program will try to improve the conditions of the German information market and will concentrate its efforts on information systems in the natural sciences, engineering, and biosciences. Closer cooperation between libraries and information services will be stressed, as well as the development of online services in libraries. The 1985-1988 Program will continue to subsidize the two main hosts (INKA and DIMDI) as well as the FIZ produced databases (Neubauer, 1984, p. 114). The government has earmarked DM 939 million to carry out the 1985-1988 Program (Bundesminister, 1987, pp. 154-155).

The basic structural questions concern production and distribution of specialized information, the supply of electronic specialized information, utilization of specialized information, information science, and international cooperation. Among the measures taken in reference to production and distribution are the building up of factual, fulltext and reference databases and the extension of existing reference databases. An important measure under the supply of electronic specialized information is the promotion of an integrated international system for scientific and technical specialized information, the Scientific and Technical Information Network (STN-International), in which the computing center of the FIZ Energy, Physics and Mathematics in Karlsruhe is linked with the computing center of the Chemical Abstracts Service in Columbus, Ohio and other computing centers, particularly in Japan (Fed. Minister for Res. & Tech., 1985, pp. 20-24).

Under the utilization of specialized information, the measures include, improvement in participation in electronic publishing, increased public relations work, and more incorporation of awareness of specialized information into the educational curriculum of schools and universities. Measures falling under information science encompass investigations of product and process innovations and computer-facilitated translation systems. International and European cooperative ventures in the development and supply of databases come under international cooperation (Fed. Minister for Res. & Tech., 1985, pp. 23-24).

The program calls for increased public relations work to increase awareness of the value of specialized information. Fear exists in some cases in regard to information technologies. Information consciousness

must be raised in Germany (Ibid., p. 28). One means of achieving this is by inclusion of specialized information and communications technology education into general, vocational, and continuing education. The Federal Ministry for Research and Technology supports a "German Research Network" (DFN) promoted by research groups at universities, in research establishments or in enterprises and specialized information establishments, which, based on public networks, develop agreed interfaces and formal sets of protocols in order to enable the exchange of news, data, computer software, etc. between computers of different manufacturers. Within the framework of the "German Research Network" local networks with workstations for students (university) will be tested. Universities are encouraged to set up computer funds from which suitable workstations can be bought (with the support of the respective Bundesland government), which will in turn be leased by students on favorable conditions. Software will be provided by the university computing center (Fed. Minister for Res. & Tech., 1985, pp. 109-110).

Data protection, Privacy Regulation and Transborder Data Flow

The Federal Republic of Germany provides for the protection of natural persons through the Act on the Misuse of Personal Data in Data-processing of January 1979. It protects personal data in public files and in the files of physical or legal persons (a corporation or company granted the privileges, legal powers, liabilities, and rights of an individual) maintained for their own purposes or for transacting business with others. It covers both manual and electronic/automated name-linked data (Jacob & Rings, 1986, p. 157). Name-linked data is any

data indexed by an individual's or legal person's name or related identification number (Wigand, Shipley, & Shipley, 1984, p. 168). The Federal Republic utilizes a Data Protection Commissioner to monitor privacy regulation (Jussawalla & Cheah, 1987, p. 87). The Commissioner is empowered to register/license all data files containing name-linked data. The commissioner can carry out inspections of operating databanks on his/her own initiative, and admonish public authorities through their supervising authorities. Reports are presented annually to the German Parliament (Martyn, 1985, pp. 332-333).

Individuals have the right of access to ascertain who has information on them and the nature of that information, as well as the right to challenge incorrect data. Such research is facilitated by freedom of information legislation that requires the maintenance of data registries. Privacy legislation has been enacted at the local state, and national levels of government (Wigand, Shipley & Shipley, 1984, p. 167). At the federal and Bundesländer levels, data commissioners or supervisory boards (Datenschutzbeauftragten) monitor compliance. In the private sector, each data bank of a certain size is monitored internally by a specially designated employee of the record keeping organization (Beauftragter) (Jussawalla & Cheah, 1987, p. 84). The data processing of local authorities and other regional public bodies is controlled through local data protection laws, which embody the same principles as the Federal law, and sometimes go even further in the in protecting personal data (Martyn, 1985, p. 33).

The freedom of information legislation of the Federal Republic of Germany does not pertain specifically to data held by government bodies. It has no freedom of information act along the lines of that maintained

by the United States (Kuhlen, 1986, p. 77).

In 1982, West German Bundespost regulations went into effect that conditioned private leased line access to international lines on the local processing of data prior to international transmission (National Telecommunications Administration, 1984, p. 203). Bank records may not be transferred to other countries for data processing without the approval of bank regulatory authorities (Ibid., p. 375). The Federal Republic requires that all data entering the country on internationally leased lines undergo data processing within the country before distribution (Jussawalla & Cheah, 1987, p. 23).

The government has called for a shift in this area, urging that access should be guaranteed to databases and international telecommunications networks. Utilization should not be impeded by legislation. "It is the Federal Government's aim to ensure unrestricted transborder data flow for electronic specialized information" (Fed. Minister for Res. & Tech., 1985, p. 24). However, the regulatory measures noted above have yet to be rescinded.

The Deutsche Bundespost (DBP) was established by the Constitution as the PTT (Post Telephone and Telegraph) of the Federal Republic. Telecommunications are thus directly controlled by the State as a monopoly, with the Länder and municipalities having no direct influence or power of intervention. Exceptions are made only with regard to the military and railways. The DBP is obliged by law to provide all of its services for the general public everywhere in the country on equal conditions, at equal charges and with the same quality (Eward, 1983, pp. 85-87). The DBP is a large bureaucracy of some 500,000 employees, and is a strong advocate of regulation (Cronin, 1987, p. 131). The DBP is

working out a medium-term program (approximately 5 years) and a long-term perspective (approximately 10 years) for the construction of a digital telecommunications network and the introduction of optical communication engineering. It is also in the process of international standardization (Integrated Services Digital Network -ISDN) and instituting a correspondingly integrated broadband network (Broadband ISDN) (Fed. Minister for Res. & Tech., 1985, p. 109).

Chapter IV

France

France is a republic with a presidential system of government. The president is elected directly by popular vote and appoints the prime minister and the council of ministers. The legislative branch consists of the directly elected National Assembly and the indirectly elected Senate. France has a population of approximately 55 million and an area of some 221,200 square miles. The country is made up of 95 "departements".

Information Resources in France

At the top of the list of French information resources stands the Bibliotheque Nationale. It is an outgrowth of the Royal Library that dates back to the 1300s. Its function is the collection, cataloging, and preservation of the national production, i.e. any manuscript, audiovisual item, or coin of national interest. It serves as the copyright depository for France, with printers being required to send two copies of every published item to the municipal library of their region, one of which is then passed on to the Bibliotheque Nationale. Publishers must send four copies to the Bibliotheque Nationale and one to the Ministry of the Interior. The library houses 12,000,000 books, 450,000 periodical titles, 12,000,000 prints, engravings, and photographs, 1,500,000 maps, 500,000 records, and 800,000 coins. The

collections do not circulate except for special exhibitions (Foskett, 1986, pp. 286-287).

There are 61 university libraries, of which 14 are inter-university libraries serving two or more universities in one town. Up to 80% of their budgets are provided by grants from the Ministry of Education. The remaining 20% comes from student's fees and other resources (Foskett, 1986, p. 288).

There are some 1029 municipal libraries in France. Many of these libraries were created in 1803 when the old central school libraries were handed over to the cities. This was the first national library network. Fifty-four of the libraries are known as "classees". They have collections belonging to the state, which exercises real control over them. Municipalities pay for their libraries but can receive grants from the DLL (Direction du Livre et de la Lecture) of some 20% toward their operating budgets and of 50% for the construction and equipment of a new library. For smaller communities that cannot support libraries themselves, there is a Central Lending Library in each "departement". These libraries are usually set up in the capital city of each department and serve towns with populations of less than 20,000 inhabitants by means of bookmobiles. The bookmobiles distribute the books at the local schools or the various town halls within each department (Foskett, 1986, pp. 289-290).

France has long been a highly centralized nation, and its library system is no different. The Direction des Bibliotheques et de la Lecture was created within the Ministry of Education in 1945. It had control over the Bibliotheque Nationale, university libraries, "departement" lending libraries, and some municipal libraries. The

Direction was divided in 1975 and once more in 1981. The Ministry of Education retained control of the university libraries while the Bibliotheque Nationale and public libraries came under the Ministry of Culture. Within the Ministry of Education, the Direction des Bibliotheques, des Muses, et de l'Information Scientific et Technique (DBMIST) maintains full responsibility for university libraries and libraries in some public research institutes. The Direction du Livre et de la Lecture (DLL) has complete responsibility for the provincial lending libraries, the Bibliotheque Nationale, the Bibliotheque Publique d'Information (BPI), and partial responsibility for some municipal libraries. The government provides 80 to 90 percent of the funding of the national, university, and provincial libraries as well as part of the municipal library budgets. About 80 percent of the library staff is composed of civil servants who are recruited only through competitive national examinations (Foskett, 1986, p. 287).

The library policy of France is defined jointly by the DBMIST and DLL through decisions, grants, facilities, and personnel allocation. They entirely control the Bibliotheque Nationale, university libraries, and central lending libraries. Library automation efforts have been centralized in the Division of Cooperation and Automation in the DBMIST. Automation of university libraries is its responsibility, and it has built up an online union catalog of periodicals (CCN). The DLL gives grants to municipalities to help construct new libraries. The DBMIST appoints and pays the professional librarians of scientific institutions, e.g. the Ecole Polytechnique, the Observatoire de Paris, and the Institut de France. General Inspectors are sent by the central administration to libraries of all categories, to monitor the quality of

their operations and the efficiency of their staffs, to supply advice on building projects, and to assess requests for grants (Foskett, 1986, pp. 287-288).

There is no national union catalog for books, though one is planned. DBMIST manages a computerized national union catalog for serials. There is a national network for information and documentation centers called ORIADOC, which serves as an inventory of all documentary services in France. There is a document supply network of about twenty major documentary services known as CADIST, the Centers for the Acquisition and Dissemination of Scientific and Technical Information (Mayorcas-Cohen, 1986, p. 217).

The French telecommunications network is based on the European model of all service being provided by the Ministry of Posts and Telecommunications (PTT). Responsibility for French telecommunications matters and policies rests with the Direction Generale des Telecommunications (DGT), a branch of the PTT. The state maintains a monopoly on the telecommunication network, but places more reliance on private initiative for terminal equipment and program content (Eward, 1983, pp. 101-104).

Information Policy in France

A research committee was established in 1959 to examine French scientific and technological information activities and policy. Its findings were published in 1962 as the "Boutry Report" and included suggestions for establishing a national information science center, international co-operation, publishing a high quality scientific

bibliography, the recording of French scientific publications, and expressing the necessity for scientists to grasp the comprehensive trends of science. It found that there was no co-ordination of information activities in France, and called for the establishment of a national science information organization (Sugimoto, 1984, p. 148).

The Secretary of State for Research has more responsibility than other ministers concerning information policy. In the beginning, a Delegation General a la Recherche Scientifique et Technique (DGRST) provided him with assistance. In 1972 this responsibility shifted to the newly created Bureau National de l'Information Scientifique et Technique (BNIST) attached to the Minister of Industry. Within the restricted field of scientific and technical information, the Bureau was responsible for the formulation of policy (subordinated to French industry interests) and for the means of financing of some priority actions. In 1979, this Bureau was transformed into the Mission Interministerielle de l'Information Scientifique et Technique (MIDIST), which, through the Secretary of State for Research, was under the control of the Prime Minister. MIDIST was given more responsibility and financial support than its predecessors (Canisius, 1982, pp. 17-18).

MIDIST deals with the development of databases, the improvement of scientific information systems, the access of the public to information, and provides assistance to scientific periodicals. It can enter into contracts with public and private organizations for specific programs (Canisius, 1982, p. 18). The government recognized that on-line information facilities are expensive to set up and become profitable only slowly, making financial backing difficult to obtain. MIDIST offers modest subsidies and contracts to facilitate the early

development of such information services. It also works through the Ministry of Industry to award growth contracts (contrats de croissance). These are larger sums awarded for three to five years. If a project is successful the sum provided is retained. If it is not, the amount must be returned. This encourages large firms to diversify into the information arena rather than causing a multitude of small firms to develop. MIDIST attempts to maintain the quality of the telecommunications infrastructure and of the specialized hosts and databases (Judge, 1985, pp. 69-70). MIDIST is also given the responsibility for coordinating the information programs and policies of all governmental ministries, though occasional conflict develops with the Ministry of Education and Ministry of Culture who do not readily desire to give up power (Canisius, 1982, p. 18).

A report was submitted to the government of France in 1978 by Simon Nora and Alain Minc that was entitled L'informatisation de la Societe (The Computerization of Society). The premise of what came to be known as the Nora-Minc Report was that "telematique" (telematics), the merger of telecommunications and computers, was having an increasingly serious impact on French society. This would lead to significant social, cultural, economic, and political consequences for France. The report recommended that to regain control over its future, France would have to reorganize the Ministry of Posts, Telephones, and Telegraphs to respond to the challenge of foreign information companies such as IBM. The report called for the development of indigenous computer and telecommunications capabilities in a major drive toward "technological self-sufficiency and leadership to ensure economic independence and national sovereignty" (Reynolds, 1984, p. 33).

Governmental decisions since 1978 have worked toward more coordination by assisting in the creation and development of several databases, by giving financial backing to the organization of a national host computer providing access to these databases through a public telecommunication network (TELESYSTEMES-QUESTEL), and by fostering software research and development (Canisius, 1982, p. 18).

The 'Agences Regionales de l'Information Scientifique et Technique' (ARIST) has been a major French information policy success. Eighteen ARIST agencies work at the Chambers of Commerce and Industry in various regions of the country to provide problem solving information for industrial development (Canisius, 1982, p. 18). A trained staff works at the interface between databases and end users, providing information for small- and medium-sized firms that lack the in-house services of the large companies (Mayorcas-Cohen, 1986, p. 217). The creation of French databases supported by MIDIST can also be counted a success (Canisius, 1982, p. 18).

In 1980, a report entitled Economic and Legal Aspects of Transborder Data Flows was produced by a commission on transborder data flow chaired by Alain Madec (Sterling & Thompson, 1984, p. 8). The report stated that transborder data flows reinforce the economic strength of multinational companies and "even more than trade in products, mean the decay of the state". It went on to present a scheme for analyzing information as a commodity, which could serve as a basis for imposing customs duties and value-added taxes on transborder data flow. French policy thus began to focus on information as a scarce vital resource (Sterling & Thompson, 1984, p. 202).

When the Socialists under Francois Mitterand took control of the

government in July 1982, they stated that the aims of French Research and Development Policy were to be the augmentation of science, the dissemination of scientific-technical information, and the promotion of French as a scientific language. Concrete goals were to make a national priority of scientific research and technological development, to improve the status of research personnel, the structure of research institutions, and the regionalization of research, and to focus R & D activities in seven subject areas in order to stimulate peak performance in those specialties. Those seven fields were energy, biotechnology, electronics and information processing, service to the Third World, employment and working conditions enhancement, promotion of French as a scientific language as well as the dissemination of a French "scientific-technical culture", and technological development in industry. The total federal research and development budget was to raise 17.5% annually and reach 2.5% of the GNP by 1985 (Busowietz & Schmidt-Reindl, 1984, p. 7-8).

Of particular significance to French information policy were the areas of electronics and information processing, the promotion of French as a scientific language and the spread of science and technology culture. The expansion of electronic applications would contribute to the modernization of the economy. The goal is not merely to enhance French as a scientific language, but also to guarantee national independence in regard to scientific and technical information, to elevate the quality of scientific-technical publications, and to improve access to existing information sources. Authority for this area would lie with MIDIST (Busowietz & Schmidt-Reindl, 1984, p. 8).

The government program spells out a number of objectives and the

specific measures to be taken to accomplish those aims. There is to be development of new instruments for the improvement of the knowledge of French scientific and technological information. Among the intended measures are development of a national research catalog and a database of current research projects, a register of research laboratories, and catalogs of scientific films, final reports, and grey literature. New infrastructure measures include creation of a national net of French hosts, development of a homogeneous national serials catalog, and expansion of stipends for information studies. There is to be a renewal of the scientific and technical publishing system. Among the projects in this area are the support of abstracting services and the creation of a new abstracting journal. Several measures to enhance the dissemination of French scientific and technical information to foreign countries are also enunciated (Busowietz & Schmidt-Reindl, 1984, pp. 8-9).

High priority is to be placed on furthering French as a scientific language. Individual foreign publications and journals are to be translated into French, and then archived and disseminated. Multilingual tools are to be developed for searching databases. The Ministry of Education is to be actively involved in the education of teaching personnel and researchers as to the need to improve the dissemination of scientific and technical information. Science and technology "culture" is to be promoted in the departements through the creation of eight regional centers for science and technology culture. Educational measures are also to be made to support scientific and technical information infrastructure creation in developing lands (Busowietz & Schmidt-Reindl, 1984, p. 9).

From 1979 on, the government has emphasized the forced development of the French information industry through the active promotion of French databanks by the Ministry of Industry and MIDIST. Particular stress has been given to publicly supporting databanks that fulfill strategic aims but lack competitive profitability. The primary weight of governmental action has focused on the coexistence between multi-disciplinary database hosts and those offering databases in specific subject areas and the construction of documentation networks. MIDIST has concentrated its efforts on the multi-disciplinary host TELESYSTEMES-QUESTEL. Because the host has achieved only slight economic success, a four year plan was instituted in 1983 to strengthen its penetration of the French market as well as export capabilities. The intention is to branch QUESTEL off as an independent company which will achieve financial autonomy from the state (Busowietz & Schmidt-Reindl, 1984, pp. 11-12).

The planned networks will link documentation centers concerned with the creation, storage, processing, and provision of information within specific scientific and technical areas. Priority is to be given to networks in energy, health/medicine, and agriculture. They nets will involve the rapid delivery of primary documents, co-operation in the selective dissemination of information, international exchange and export of information products, and the attempted realization of "scientific synthesis". All nets are to have a standardized architecture built around and through TELESYSTEMES-QUESTEL (Busowietz & Schmidt-Reindl, 1984, p. 12).

The new French information program has brought about a broadening of the fields of activity of MIDIST. Its new tasks are the development

of information tools and systems for the dissemination of information in specialized subject areas, the popularizing of science and technology, and making the means of publication of French scientific and technical information more dynamic (Busowietz & Schmidt-Reindl, 1984, p. 13).

Information policy in the mid-1980s stresses industrial output and national independence. Two important objectives are the "informatisation" of small and medium-sized businesses and educating the populace in the "language of computerization". Informatisation is defined as encompassing the whole technological field of hardware and software, the art and practice of information management, working conditions, authority, and production (Rigal, 1986, p. 289). Grants totaling some 110,000,000 FF were given by l'Agence pour le Developement de l'Informatique (ADI) to small and medium sized businesses in 1984. The 1985 State Budget provided 1.9 billion FF for a program to supply 120,000 microcomputers to secondary schools. 110,000 teachers were given one-week computer courses in conjunction with this initiative (Rigal, 1986, p. 291).

The Ministry for Research and Technology's National Center for Scientific Research has set up its own Directorate for Scientific and Technical Information. The Directorate's purpose is to disseminate essential research information and promote scientific education. Military, medical, and agricultural research all fall outside of its responsibility (Mayorcas-Cohen, 1986, p. 216).

Data Protection, Personal Privacy and Transborder Data Flow

In 1971, the government appointed a commission called the

Commission on the Coordination of Administrative Documents to examine the problem of public access to official documents. It issued three influential reports, in 1973, 1974, and 1975, which vigorously criticized secrecy in public administration and called for a law to embody right of access. Other agencies issued similar reports, and in 1977, the government established a commission to facilitate public access to official documents. An initiative in the French Parliament in July 1978 brought about provisions for an access law (Rowat, 1983, pp. 36-37).

The scope of the law is broad, granting to citizens, aliens or corporate bodies a right of access to official documents not of a personal character, (these latter materials being covered by the privacy law passed the same year). It contains strong provisions for enforcement, the primary one being that refusal of requests for administrative documents can be appealed to the Commission on Access to Administrative Documents and the administrative courts, which are independent of the government. The law applies to all regional and local authorities, all public agencies, and corporations subject to private law that administer a public service, (such as the railways, airlines, and broadcasting), as well as applying to the central government (Rowat, 1983, p. 37).

There is a special provision that individuals have access to the file when a decision has gone against them, as well as the right to attach statements to that file. There are eight exemptions, including national defense, state security, personal privacy, and court proceedings. However, access to these categories can be refused only if the government can prove that release would do demonstrated harm.

Documents may be examined free of charge, and copies must be made at a set fee. Refusal of a request must be in writing, stating the reasons. The French law is unique in its creating an independent commission to implement and interpret the law (Rowat, 1983, p. 38).

The French government's interest in transborder data flow has been primarily economic. The position was well expressed by Louis Joinet, Secretary General of the French Commission on Data Protection and Liberties, at a 1977 OECD symposium on transborder data flows:

> Information is power and economic information is economic power. Information has an economic value, and the ability to store and process certain types of data may well give one country political and technological advantage over other countries. This, in time, leads to a loss of national sovereignty through supranational data flows. (Wlison & Al-Muhanna, 1985, p. 298)

In January, 1978, the Data Processing, Data Files, and Individual Liberties Act (Informatique et Libertes) was passed. It regulates the collection, registration, addition to, storage, and destruction of computerized and manual personal data in both the public and private sectors. It does not protect legal persons, but does cover the use, interconnection, referral, or communication of personal information.

The act established the National Commission on Informatics and Freedom, (CNIL), which is made up of seventeen Members of Parliament and lawyers elected by various state organs. The Commission is independent of the authority of any minister. It has an annual budget in the order of 13,000,000 francs and maintains a staff of forty (Martyn, 1985, p. 333). The CNIL has the power to ensure compliance by means of spot checks of data facilities and by refusing to authorize data-processing

or transfer which it believes would violate the law. Penalties for violation of the law include fines up to two million francs and imprisonment of up to five years, which are similar to those for fraudulent bankruptcy and other white collar crime. Decisions of the Commission may be appealed to the Council of State (Le Conseil d'Etat) (Chamoux & Chamoux, 1984, p. 166).

The establishment of public information databanks requires prior authorization from CNIL, while creation of private databanks requires that the concerned organization declare the existence of such databanks (Jussawalla & Cheah, 1987, p. 84). The law requires companies to note their data flows with foreign countries on their registration forms. In an emergency, the CNIL has the right to propose to the Council of State that all transborder transmissions of personal data be made subject to compulsory authorization. To date, this provision has never been utilized.

A 1983 piece of legislation prohibiting expenditures over a certain amount outside of France was passed for economic reasons, but also had the effect of restricting the purchase of data and information from abroad. This included books and journals as well as electronic data. An indirect result was the protection of the indigenous French information industry (Mahon, 1986, p. 258).

Chapter V

Japan

Japan is a parliamentary democracy made up of 47 perfectures. The Emperor, who has only ceremonial powers, appoints a Prime Minister that has been designated by the popularly elected National Diet. The Prime Minister heads the Cabinet and appoints its members. The National Diet consists of a House of Representatives and a House of Councilors, with the former being more influential. Japan has an area of 145,856 square miles and a population of some 120,731,000, making it one of the most densely populated nations in the world.

Information Resources in Japan

During the Second World War, half of the collections of central libraries in the prefectures (provinces) and 80% of those in municipal libraries were destroyed by air-raids and fire. Following the war, Japanese libraries were rebuilt and reorganized along the lines of recommendations and suggestions provided by the U.S. occupation authorities. The National Diet Library (Kokuritsu Kokkai Toshokan) was established in 1948, and has as its primary function the service of Diet (parliament) members. It also serves the general public and is the only library in Japan maintaining the privilege of legal deposit of civil as well as official publications. Together with 36 branches, it houses 7,531,000 volumes, 4,038,000 in its main collection. It has 78,660

periodical titles, 230,000 maps, and 258,000 sound recordings. Though there is no overall interlibrary loan system for the entire nation, the National Diet Library lends to any library, be it public, academic, or special. A central database, JAPAN MARC, contains bibliographic information on all legally deposited materials at the National Diet Library. Thirty-five libraries subscribe to the JAPAN MARC tapes (Kon, 1986, p. 405).

In 1983, there were 830 academic libraries serving 453 universities, (93 national, 34 prefectural, and 326 private). There are two types of public libraries, the prefectural and the municipal. Prefectural libraries do double-duty, for they loan materials to their own patrons as well as lending to the municipal libraries within that prefecture through interlibrary loan. In 1984, 1,537 public libraries and 542 bookmobiles served Japan, including 71 prefecture libraries and 63 bookmobiles in the 47 prefectures. Prior to the Second World War, only a few schools had libraries. Today, 98 percent of all schools have libraries, for a total of some 42,000 (Kon, 1986, pp. 406-407).

In 1957, the Japan Information Center for Science and Technology (JICST) was established under the supervision of the Science and Technology Agency. It is a non-profit organization whose purpose is the collecting, processing and provision of all available science and technology information. Materials from some fifty countries as well as domestic publications, technical reports, conference proceedings, patent documents, and secondary literature, are obtained as rapidly as possible. JICST is involved in considerable repackaging of information into secondary and tertiary formats, and compiles twelve Japanese language abstract journals on a monthly and semimonthly basis. Since

1975, JOIS (JICST Online Information System) has offered JICST and foreign databases through an online network linking eight regional centers (Galinski, 1984, p. 38). JICST has been active in the Science and Technology Agency program for the development of an automatic translation system. In the autumn of 1986, JICST began direct online delivery of information through the JOIS system to North America, South Korea, France, West Germany, and the U.K. (Sano, 1986, p. 304).

NIPDOK is the Japanese Society for Documentation, whose primary goals are the gradual translation of Universal Decimal Classification into Japanese and the standardization of information and documentation terminology. It is also under the supervision of the Science and Technology Agency. In cooperation with the National Diet Library it formulated the rules for standardization of Japan's complete library system (Galinski, 1984, p. 39). The Japan Institute of Invention and Innovation (JIII) in cooperation with the Japanese Patent Office, collects, stores and abstracts Japanese and important foreign patents, utility models and trademarks and utilizes this data to further Japanese invention and innovation activities. It helps co-ordinate research and development efforts of individuals and private companies (Galinski, 1984, pp. 40-41).

Information Policy in Japan

Though library developments are co-ordinated by the National Diet Library, the Ministry of Post and Telecommunications (MPT) and The Ministry of International Trade and Industry (MITI) are the primary Japanese information policy making bodies. MPT has done so since 1949,

with an organization similar to European models. The MPT determines policy and regulates telephone communications, data communications, broadcasting, telex and the post office. Its minister is a member of the Japanese Diet, giving him considerable authority (Salvaggio, 1983, p. 237). The Bureau of Telecommunication Policy, the Communication Policy Division, and the General Management Planning Division all have a hand in defining MPT's data communication policy (Welke, 1982, p. 5). In 1980, a Information Policy Bureau was created within MPT to design long-range policy (Salvaggio, 1983, p. 237).

The Ministry of International Trade and Industry (MITI) is the ministry most concerned with information policy. MITI issues laws for the promotion of information processing. The Electronics Policy Division of the Machinery and Information Industries Bureau has the responsibility of defining information processing policy. MPT and MITI work closely together, though at times their relationship becomes somewhat competitive (Welke, 1982, pp. 3 & 5).

Because telecommunications are more cost effective than traditional forms of media, Japanese information policy is geared toward assisting the information industry develop telecommunications technology. There is a high degree of centralization within the infrastructure of the Japanese information industry. Nippon Telephone and Telegraph (NTT) maintains a monopoly over domestic communications and thus stands at the center of this infrastructure (Salvaggio, 1983, p. 237). NTT is supervised by MPT and has considerable influence on the computer industry in Japan (Welke, 1982, p. 3) International communications are monopolized in a similar manner by Kokusai Denshin Denwa Co (KDD) (Salvaggio, 1983, p. 237). The Japanese government works through the

NTT on special projects, making the results available to everyone. Political and financial measures provide small firms with support and hinder exploitation by foreign investment (Judge, 1983, p. 63).

In Japan, information ("joohoo") is viewed as a raw material or resource whose use, transfer and application is to be promoted for the welfare of the nation. Information has a value in itself and needs only to be processed to be turned into a marketable product. It represents the basis for research and development and encompasses communication, automation and computerization. Information is one of the basic factors needed to remain competitive. In 1981, the Industrial Structure Council of the MITI identified four basic challenges facing the Japanese economy: 1. overcoming energy constraints, 2. improvements in the standard of living and community facilities, 3. promotion of a more creative and knowledge-intensive industrial structure, and 4. stress on the development of second-generation technologies (Galinski, 1984, pp. 25-26).

The Small Business Promotion Corporation was created in 1967 by the Japanese government as a clearing-house to furnish scientific, technical, marketing, and financial information to medium and small businesses so that they could better compete in both the domestic and international arenas (Galinski, 1984, p. 41).

The Information-technology Promotion Agency (IPA) is a special body under the jurisdiction of MITI that was founded to promote and aid the information processing industry and program development. It was established under the 1970 "Law Concerning the Information-technology Promotion Agency". The government provides approximately half of its funding with the remainder coming from various commercial companies and

long-term credit banks. IPA provides financial assistance for the development of software systems through subsidies to software businesses and information processing centers. MITI and MPT select the subjects to be promoted and define them in the "Plan for Improvement in Electronic Computer Usage" which is reviewed every five years (Welke, 1982, pp. 10-15).

Subsidies cover 100 percent of the software development, but the programs become the property of IPA. A second method of promotion is by guaranteed loans to software and information processing companies for up to 100 percent of their in-house business. General companies and database service companies are limited to expenditures for program development. A last method of promotion of general purpose software is by offering tax reductions which entail reserving 50 percent of sales revenues in four-year tax free funds and deductions for the training of data processing personnel. In subsidizing the computer industry, the government required companies benefiting from promotional activities to co-operate with each other in joint research laboratories. Research results, particularly patents, became the property of the government. IPA prepares a "Program Registration Book" which lists programs being offered by Japanese companies and their sale and leasing arrangements (Welke, 1982, pp. 10-15).

MITI also promotes nationwide projects designed to enhance national welfare. Among these national projects are the Pattern Information Processing System (character, picture, speech, and object recognition), the Highly Interactive Optical Visual Information System (Hi-Ovis), the International Trade Information System, and the Health Care Information System. The purpose of Hi-Ovis is to accelerate computer use in

individual life and to promote the formation of a regional community. The Health Care Information System is funded 50/50 by the Ministry of International Trade and Industry and the Ministry of Health and Welfare, and is one sub-system of the Medical Information System. Other sub-systems are the Regional Medical Information System, the Shared Hospital Information System, Instruments and Systems of Medical Information, and the Medical Information Service System (Welke, 1982, pp. 25-26).

In Japan, "visions" are considered the basis of policy measures. There are "national visions", "regional visions", and visions covering individual segments of the industrial infrastructure. A vision has two primary functions: indication of medium- and long-range policy and providing a source of useful information that can be utilized by businesses in the formulation of their strategies. Visions are formulated by open discussion in councils composed of representatives of government, industry, financial institutions, academia, journalism, labor, small business, consumers, and local public entities. Because of this broad basis of discussion, Japanese visions are largely accepted before their publication. They are supplemented by follow-up publications on various levels that explain and illustrate their contents (Galinski, 1984, pp. 29-30). Vision are guidelines to which companies and governmental agencies adopt their policies (Ibid., p. 50).

Information policy in Japan can be viewed as an information and documentation "vision" of the kind mentioned above. It began rather slowly following the trauma and destruction of the Second World War. The National Diet Library was established in 1948, and the Japan Information Center for Science and Technology (JICST) was begun as a special non-profit organization in 1957. Two important documents

spelled out the vision that would guide the subsequent development of an "informatized" society in Japan. "Informatization" is to the Japanese "social and industrial movements oriented to and emphasizing information technologies and their influences and impacts to science, technology, industry, and culture" (Kitagawa, 1986, p. 359). The first was the White Paper on Science and Technology 1970. It authorized the government to take the lead in the development of information and documentation in Japan, and explained the significance of the "National Information System for Science and Technology" (NIST) which was founded in 1969. The second document was a report published in 1970 entitled Technological Strategy for the Communication Society - a Systems Engineering Approach to the Development of Economy and Society. It dealt with seven areas of focus for the coming decade, one of which was that the government was to be a guarantor of a highly dynamic and flexible information society (Galinski, 1984, pp. 32-33).

Following the publication of these two reports, Japan began to "systematically develop a systems approach to all fields of society", including information and documentation. Top priority was given to these six areas: 1. development of high-capacity large computer units, 2. development of information retrieval techniques and of an information referral system, 3. development of information transmission technologies, 4. development of a national system for information technology, 5. development of information and documentation software, and 6. development of electronic elements for information technology (Galinski, 1984, p. 33).

Also published in 1970 was a 30-year economic development plan entitled The Information Society: A Year 2000 Japanese National Goal.

It was produced by the Japanese Computer Usage Development Institute and held the premise that information and communications goods and services ("knowledge intensive industries") provide the groundwork for many related industries and would thus become the foundation for a new economic base and a new type of society. This marked the start of long-range national information strategy in Japan (Reynolds, 1984, p. 33).

In 1973, a "Standing Committee for Information in Science and Technology" was created by the government to revise and reformulate the National Information System for Science and Technology (NIST). NIST's aims included the expansion of Japanese databases, the construction of an on-line network, the development of a chemical compound information system, research on computerized Japanese-English translation, and development of Japanese information standards (Judge, 1985, p. 73). Research groups carried out projects dealing with the themes of networks, man-machine interfaces, and utilization of science information (Galinski, 1984, p. 34).

In October 1973, the Science Council (an advisory body to the Minister of Education, Science and Culture), published a report entitled The Immediate Basic Policies for Science Development that concerned policies for the promotion of science. It specifically cited the need for improvement of science information transfer in the academic area. By utilizing a grants-in-aid program, the Ministry of Education, Science and Culture gave support to numerous information and library science research projects, including machine-readable cataloging, information handling in specific subject fields, and a serials union list data base (Matsumura, 1983, p. 1).

During the period 1973-75, the standardization required for

networks was largely achieved. NIST expanded the Japan Information Center for Science and Technology (JICST) into the primary organization for "documentation, computerization, storage, retrieval, and commercial exploitation of all accessible data in science and technology". In 1974, NIST took on central co-ordinating, clearing house, and central depository functions, and was assigned data centers, special and general information centers, regional service centers, terminal service points, training institutions, and research and development institutions (Galinski, 1984, p. 34).

There was now a clearly recognized need for more research in the area of information science. In 1976 the Research Center for Library and Information Science was opened at Tokyo University, while the following year a Science Information Processing Center was begun at the recently founded Tsukuba University. In 1979, the University of Library and Information Science was opened in Tsukuba, offering a four-year curriculum (Galinski, 1984, p. 35).

In January 1980, following a period of consideration of the opinions and comments of various sectors of society, the Science Council published a report entitled A Plan for a Science Information System. The Science Information System (SIS) is concerned with resource sharing in all fields of knowledge for support of research activities in the academic community. It encompasses the humanities and social sciences as well as natural sciences and technology. The plan calls for a nationwide inter-university information and library network, encompassing all libraries, information services, university computer centers, and research facilities. A program was initiated in which university libraries with strong collections in certain subject areas

were designated as resource center libraries. They collect primary literature in their respective subject areas and provide interlibrary loan service throughout the country. Institutions within the SIS are expected to open their collections for general use and to promote resource sharing (Matsumura, 1983, p. 2). The Ministry of Education subsidizes co-operative acquisitions of scientific periodicals, the compilation of union catalogs, and setting up an intersystem loan program (Kon, 1986, p. 406).

A second area of significance is the secondary information retrieval service of the SIS. In order to meet the needs of Japanese researchers, a nation-wide retrieval service is being created to cover all subject fields with major databases. The SIS is also involved in the production of databases containing specialized and highly advanced information. Lastly, a Science Information Center is to be created to serve planning and coordination, database service, education and training, and research and development functions (Matsumura, 1983, pp. 3 & 5).

The Information Society: A Year 2000 Japanese National Goal was reaffirmed and updated in 1980 in a Ministry of International Trade and Industry national economic plan entitled The Vision of MITI Policies in the 1980's. It spelled-out three national long-term policy goals: (a) contributing positively to the international community, (b) overcoming the limitations of natural resources and energy, and (c) attaining co-existence of dynamism of the society and the improved quality and comfort of life. Whether these goals are attained depends to a large extent on the promotion of informatization (Welke, 1982. p. 145). Obstacles and problems are to be "overcome through full utilization of

creative knowledge" (Ibid., p. 159). It is viewed as essential that Japan develop technologies of its own. The principal areas of concern are establishment of energy security, improving the quality of life and community facilities, knowledge-intensive and innovative technologies, and next generation technologies. Next generation technologies deal with the fields of life sciences, energy, and data processing. Innovative technologies include optical communications, very large scale integrated circuits, and laser beam technology (Welke, 1982. p. 152). The knowledge-intensive industrial structure aimed at in the 1970s is to be promoted further in the 1980s with an emphasis on creativity. For this knowledge intensification, six areas will be emphasized: (a) large-scale systematization, (b) specialization, (c) software application, (d) flexibility, (E) fashion (people's tastes), and (f) feedback. Energy, aviation and space, and information processing "form the basis of long-term economic progress". "The government must take the initiative in development and basic experimental research in high-risk fields. It must also provide strong assistance to large-scale private research and development projects that may contribute to social progress." (Ibid., p. 156-157).

In 1981, the Report of the Information Industry Committee Industrial Structure Council was released by MITI; it stressed the need to establish an information oriented society and a creative, knowledge-intensive industrial structure. It laid out the direction of this "informatisation" for the 1980s, calling it the "second information revolution" (Welke, 1982, p. 162). In-depth planning from a long-term point of view is continually stressed. "The promotion and improvement of informatisation is essential to the establishment of a vibrant,

affluent society. From a nationwide viewpoint, the result of informatisation can be said to be a basic factor in determining what Japan will be like in the 21st Century." (Ibid., p. 163). Information-related technology must be developed "from a long-term and worldwide point of view" (Ibid., p. 167).

The computer industry is viewed as a "core industry" guiding surrounding industries into the next century. The basic direction of informatization policies are the improvement of infrastructural foundations, the promotion of technological development, and international co-operation (Welke, 1982, pp. 171, 174). There are a great number of specific recommendations, among them emphasis on the molding of public acceptance of informatization through public relations and education, as well as by protection of privacy measures; having the government actively promote standardization measures, software development, and database services; and increasing the supply of specialized technicians in information (Ibid., p. 177-179). Within the area of innovative technologies, government emphasis and assistance is to be placed on high speed computer systems, 5th generation computers, optical information technology, sensor technology, intelligent robots, automatic translation systems, and medical electronics (Ibid., p. 180-181). In a related development, MITI sponsored a "Fifth Generation Computer Conference" in 1981 that outlined a ten-year research and development program involving both government and industry, the goal being to surpass the U.S. lead in the computer industry (Nat. Telecom. Admin., 1984, p. 202).

The MITI Proposal for Promoting Informatization in the Fiscal Year 1985 focused on informatization in industry. Its three areas of

emphasis were: (a) establishment and fostering of the information industry, (b) informatization of industry in general, and (c) the establishment of an information oriented society. Specific funding proposals continued areas outlined above, i.e. fifth generation computing, high-speed computer systems for science and technology, medical support system, optical systems, introduction of computers to small- and medium-size companies, promotion of legal protection of software, financial aid to the Information Promoting Association (IPA), and expansion and strengthening of tax and financial aids, to name but a few (Kitagawa, 1986, p. 360).

Data Protection, Privacy Regulation and Transborder Data Flow

As far as can be ascertained through available source material, Japan has as yet no national freedom of information or personal privacy legislation. There has been, however, considerable discussion in this area. In 1981 a Special Administrative Research Council was set up to deliberate on a privacy protection law. Its final report was to be released in 1983, and to provide concrete freedom of information policy recommendations. Just what those recommendations were, and how the government responded to them, has not been determined by this author. The Constitution of Japan and its Bill of Rights assumes in theory that the people have the right of access to government information. There has however, been no statutory expression of this (Okudaira, 1983, p. 73).

The management of governmental information is considered an internal matter coming under the principle of "discretionary secrecy".

Japanese ministries and agencies set their own information management regulations without any parliamentary oversight. It is up to the discretion of the government to allow public access. Civil service law has a provision that government employees not "disclose any secrets which come to be known while in service" (Okudaira, 1983, p. 74). A liaison group prepared a "Program for the Improvement of Public Information" in 1980, which though not legally enforceable, was nonetheless a move in a positive direction. It called for the establishment of public access windows, indexing and cataloging of government information, promotion of declassification arrangements for administrative secrets, and opening up of activities concerning civil liberties (Ibid., p. 73).

Some progress has been made at the local governmental level. The small town of Kanayama-cho became in 1982 the first municipality in Japan to enact a "Freedom of Information Ordinance". Practically every prefecture in Japan is now studying freedom of information legislation (Okudaira, 1983, p. 71).

There have been measures concerning data protection, but these have been established by individual ministries and agencies according to guidelines set down by the Administrative Management Agency (Welke, 1982, p. 49). There is no national legislation of the type offered by Canada, France, or the Federal Republic of Germany.

Nippon Telegraph & Telephone (NTT) provides domestic telecommunications services as a government-owned public corporation. A private corporation, Kokusai Denshin Denwa (KDD), provides international services. In 1981, a special advisory committee presented the Japanese Prime Minister with recommendations for the liberalization of NTT's

telecommunications services. It proposed that NTT be sold to the private sector, NTT be restructured into regional and long-distance enterprises, and that equipment provision be deregulated and divested (Eward, 1983, p. 137).

NTT has an ambitious three year plan for an Information Network System which will utilize optical fiber and digital switching systems. It will be completed in 1990 and include data, telephone and facsimile, with a later addition of two-way videoconferencing. The MPT and NTT together sponsored a national videotex system known as CAPTAIN (Character and Pattern Telephone Access Information Network System) which is now in use. It utilizes pattern transmission to handle complex Japanese characters (Salvaggio, 1983, p. 238).

Japan has utilized protective barriers in the area of transborder data flow. In 1978, Japan unilaterally imposed trade restrictions on channel services leased from KDD by Tymshare, Inc. and Control Data Corporation. It was mandated that each leased circuit must terminate at a single facility in the United States, which would limit the types of services that these companies could offer to the Japanese market (Nat. Telecom. Admin., 1984, p. 201). This had the added effect of delaying the operations of those companies for five years (Grub, 1984, p. 143).

In the 1970s, the Japanese government imposed import restrictions on computer equipment to protect the domestic market against foreign competition, particularly the U.S.. Import quotas were given to computer items in the Tariff Schedule. Authorization could be obtained from MITI on a case-by-case basis. MITI would also not generally permit a foreign company to establish a daughter company in Japan, though there were exceptions. In the mid-1970s, Japan began to show considerable

liberalization of these policies, shifting Import Quota items to the Automatic Import Quota category. Today foreign manufactures have chances similar to domestic producers in the Japanese market, though there are still low import tariffs on much computer equipment (Welke, 1982, p. 39).

In April of 1985, the Telecommunications Business Law was passed which called for liberalization of the Japanese international telecommunications market to permit entry of foreign companies. In 1986, two companies attempted to enter into the market controlled previously by a KDD monopoly. One represented a consortium of Japanese banks and firms while the other, International Digital Communication, has a British firm as one of its two largest shareholders, the other being a Japanese company. The Japanese Ministry of Posts and Telecommunications has thus far denied International Digital Communication approval to do business, even though the law permits up to one-third foreign ownership of domestic companies. It does not help matters that MPT controls a government employee's fund which owns some 11% of KDD's stock. An agreement has yet to be reached (Poe, 1987, p. 25-26).

Chapter VI

The United Kingdom

The United Kingdom is a constitutional monarchy whose official head of state is the Queen. Power rests however, in the executive and legislative branches of government. Parliament has two chambers: the House of Lords, composed of hereditary and crown appointed peers; and the House of Commons, whose members are elected. The leader of the majority party in the House of Commons is invited by the monarch to be Prime Minister. The prime minister chooses the Cabinet ministers who must also be members of Parliament. The United Kingdom is composed of the forty-five counties of England, the eight counties of Wales, the six counties of Northern Ireland, and the nine regions and three islands of Scotland. The area is 92,226 square miles and the population is 56,423,000.

Information Resources in the United Kingdom

The United Kingdom has a long and venerable association with libraries and librarianship. Copyright deposit dates back to 1666 in England and 1709 for Great Britain as a whole (Harrison, 1986, p. 823). The British Museum Library served as the national library from 1753 to 1973. In 1972 the British Library Act was passed by Parliament, which led to the establishment of the British Library the following year. The act stated that the British Library was to serve as a national center for reference, study, bibliographic, and other information services in

the fields of science, technology, and the humanities (Lewis & Martyn, 1986, p. 25). The British Library was created from the British Museum Library, the Science Reference Library, the Patent Office Library, the National Lending Library for Science and Technology, and the National Central Library (Harrison, 1986, p. 823).

The British Library is governed by the British Library Board and receives approximately 80% of its funding from Parliament (Ibid.). The remainder comes from its various activities. The British Library has responsibility for bibliographic control of domestic literature, for maintaining a comprehensive collection of recorded matter, and for sponsoring research in the areas of library management and information services (Lewis & Martyn, 1986, p. 25). There are some 15,000,000 volumes in its collections. The library is divided into three primary areas: Reference, Lending, and Bibliographic Services. The Reference Division includes among others the British Museum Library, the Science Reference Library, the National Sound Archive, and the National Newspaper Library. The British Library Lending Division maintains approximately 2,000,000 volumes, 1,000,000 microforms, and 50,000 periodicals that are lent to other libraries, primarily by means of photocopying. The Lending Division was renamed the British Library Document Supply Center in December 1985. The Bibliographic Services Division produces the British National Bibliography. Because the British Library operates from nine separate locations in London, Parliament has approved construction of one centralized facility. Work began in 1982 and will be finished sometime during the early 1990s (Harrison, 1986, p. 824).

The British Library also provides a service quite similar to OCLC

in the United States, called BLAISE, the British Library Automated Information Service. It includes cataloging, information retrieval, and document delivery services from UK MARC and associated databases. It also has responsibility for MEDLARS in the United Kingdom (Gray, 1979, p. 45).

There is also a National Library of Scotland with 4,500,000 volumes and the National Library of Wales with some 3,000,000 volumes (Gray, 1979, p. 45). The United Kingdom has some 800 academic libraries including universities, polytechnics and other institutions of post secondary education. University libraries are funded both by the individual institutions and by the Department of Education and Science through its University Grants Committee. Allocation of funding is left to the discretion of each university (Lewis & Martyn, 1986, p. 26).

Public libraries in Great Britain date from the Public Libraries Act of 1850. There are presently some 5,600 public libraries which are the responsibility of 167 local authorities, i.e. County Councils or Metropolitan Boroughs. They are supported by local taxes and tax support grants. Many library authorities also offer school library support (Lewis & Martyn, 1986, p. 26). In those schools not receiving such support, their libraries are organized by the local educational authority. In 1982, a Public Lending Right Scheme went into effect whereby compensation is provided to authors for use of their works. Payments and funding for the scheme's administration come from the central government, not the local library authorities (Harrison, 1986, p. 827).

Information Policy in the United Kingdom

The United Kingdom has no overall national information policy. "...it has no coherent body of policy relating to information collection, storage, provision and supply....information policy emerges most frequently as an ad hoc response to a particular need or situation" (Lewis & Martyn, 1986, p. 25).

> In the UK there is no formal or overarching framework within which issues relating to the information and communications sector can be ventilated....Public policy must be inferred; it is neither explicit nor integrated. Issues are factored into discrete elements and holistic planning eschewed. (Cronin, 1987, p. 129)

There is no Cabinet Minister specifically concerned with information and information-related issues. Information policy is highly fragmented, with responsibility for it spread across a large number of government departments. Among these are the Department of Trade and Industry, the Department of Education and Science, the Office of Arts and Libraries, the Office of Telecommunications, the Home Office, and the Cabinet Office.

The Department of Trade and Industry has a good deal of responsibility in the area of information technology through its Minister of State for Information Technology. This includes computer hardware and software and the spurring of research, development and production of new products and processes through direct financial assistance, (the Support for Innovation Scheme). It has provided support to computer and microelectronics educational programs, worked to develop advanced information technologies, and placed microcomputers in

schools, ("Micros in Schools") (Lewis & Martyn, 1986, p. 27). The Department has accountability for some science and technology information services as well as sponsoring the printing, publishing and film industries. It is also responsible for copyright policy and telecommunications regulation, including radio-frequency allocation (Information Technology Advisory Panel, 1983, p. 42).

Library policy is the concern of the Office of Arts and Libraries, as well as information issues falling outside the scope of other departments. The Office reports to the Minister of Arts and maintains an advisory council called the Library and Information Services Council. Though it maintains a small staff, it handles a budget of some one billion dollars per year (Judge, 1985, p. 66). The mandate of the Office of Arts and Libraries includes development of library services, consultation with bodies responsible for academic and public libraries, and maintaining the Interdepartmental Coordinating Committee on Scientific and Technical Information. The Office of Arts and Libraries does not support external library or information services or research. The senior members of the Department of Trade and Industry and the Office of Arts and Libraries serve as the United Kingdom's representatives to the European Economic Community's Committee on Information and Documentation for Science and Technology (Lewis & Martyn, 1986, p. 27).

Most government departments maintain their own libraries and operate information services within their specific areas of interest. Some of these services and internally created databases are offered to the public for purchase (Lewis & Martyn, 1986, p. 26).

There are also a number of non-governmental organizations concerned

with information and library issues in the United Kingdom. These include the Library Association, the Institute of Information Scientists, Aslib (the Association for Information Management), the Association of Database Producers, the British Computer Society, and the Information Committee of the Royal Society, to name but a few (Lewis & Martyn, 1986, p. 28).

Though an integrated information policy is practically non-existent in the United Kingdom, there has been some governmental movement toward focusing on information issues. These initiatives have, however, lacked a holistic approach, instead dealing primarily with individual sectors like broadcasting, cable TV and 5th generation computing. A report was released in 1980 titled Technological Change: Threats and Opportunities for the United Kingdom, which pointed out the significance of service activities utilizing information technology and recommended increased effort to develop such services (Info. Tech. Advisory Panel, 1983, p. 40).

Probably the most significant of these reports was one entitled, Making a Business of Information: A Survey of New Opportunities. It was produced by the Information Technology Advisory Panel (ITAP) of the Cabinet Office, and was published in September 1983. The Panel was formed to deal with the technology, i.e. hardware, side of the field of information. This included computerization, information transmission, satellite broadcasting, and cable television (Lewis & Martyn, 1986. p. 29). Because 1982 was declared by the Panel as Information Technology Year in the United Kingdom to promote awareness and understanding of computerization within industry and society as a whole, the Panel decided that this report should focus on information itself rather than

on equipment and hardware. The primary conclusion of the report was that information should be viewed as a tradeable or commercial commodity with a value which serves as the foundation of economic activity. Both the private and public sectors should be "concerned with the creation and maintenance of its value, and to take steps to develop the delivery systems that best meet user's needs" (Info. Tech. Advisory Panel, 1983, p. 39). The Panel made three specific recommendations:

1. Government should recognize the current economic significance of the tradeable information sector, and the opportunities for future growth, and take its interests into account in policy formation.

2. Those already active in information supply - in publishing, broadcasting, film-making, etc. - should closely examine their present activities to identify how new technology is eroding the previous distinctions between their particular interests and others with which they may previously have had no contact, and should prepare business strategies accordingly.

3. Those wishing to stimulate or participate in new business activities should note the many opportunities now being opened up through the use of new technology for the supply and analysis of information, which are suited to an entrepreneurial approach.

The report added that "the principal responsibility for exploiting the opportunities opened by new computing and communication technologies must rest with the private sector" (Info. Tech. Advisory Panel, 1983, pp. 40-41).

Because there is fragmentation in both the UK information industry and in governmental responsibilities, the report also called for

institutional changes to bring "greater coherence and purpose in the national effort in this area". There was a call for one governmental department to have a clear commitment to this area and responsibility for all policy co-ordination. The Department of Trade and Industry was judged as the most suitable candidate for this role. An area demanding immediate action was copyright legislation (Info. Tech. Advisory Panel, 1983, pp. 42-43).

Governmental response to the report has been on the whole lackluster. There was however, more immediate impact with the creation of the Confederation of Information Communication Industries (CICI) by the information industry in 1984. It is designed as a single voice by which the industry can speak with Government on the needs, problems and significance to society and the economy of the information sector. CICI has twenty-five members on its General Assembly and a nine member board (Judge, 1985, p. 68). Its membership includes Aslib, the Library Association, the Institute of Information Scientists, the British Library, the Periodical Publishers Association, the Association of Data Processing Managers, the British Phonographic Industry, and the British Broadcasting Corporation, among others. It maintains working parties on market development, technical issues, legal matters, education, and public affairs (Lewis & Martyn, 1986, p. 31).

In 1986, the Department of Trade and Industry put forth a policy initiative on government-held tradeable information, which indicated some movement on the Government's part in response to the ITAP proposals. Companies were contacted as to their interest in acquiring government-held data to create enhanced value services. At the start of 1987, twelve companies were conducting market feasibility studies.

Guidelines were drawn up for the governmental officials within each department concerned with potentially tradeable information resources. An audit was to be conducted by each department so that a register of such resources could be created. The register would list information that could be used by the private sector for reasons other than those for which the information had originally been collected by the government. The Confederation of Information Communications Industries took active part in the creation of the guidelines. CICI will also be represented on the inter-departmental group handling policy implementation difficulties (Worlock, 1987, pp. 193-194).

A second major report, Future Development of Libraries and Information Services, was issued in 1982 by the Library and Information Services Council. Its main premise was that there should be a move from a "Holdings Strategy" to an "Access Strategy" in the development of a national library and information network. It expressed a need for local, national and international co-operation to more effectively utilize the library and information resources of the United Kingdom. It placed emphasis on "the efficient procurement of material and information as required" and on working together in a national information network (Brown, 1986, p. 5).

The Library and Information Services Council set up a working group to produce concrete proposals for action in response to the report. It came up with the concept of Management Plans for Library and Information Services which would be prepared by local authorities. It would call together the major information providers within an area to decide what the total resources were, who could best do what, and how to go about facilitating co-operative arrangements. Such joint planning would take

place over a five year time period. A second concept would be the establishment of an electronic inquiry network that would permit user requests to be referred either directly or through a central referral point to a member library capable of fulfilling the request. The British Library is funding through its Research and Development Department a pilot electronic enquiry network in the subject area of business information as a feasibility study of the concept. Discussion is currently continuing on these proposals (Brown, 1986, pp. 6-7).

The Library and Information Services Council and the British Library have also jointly established a Working Group to look into areas in which interaction can be developed between public and private sectors in regard to the provision of library and information services. (Ibid., p. 6)

In the area of scientific and technical information, an Office of Scientific and Technical Information (OSTI) was established in 1965, which had a mandate to support basic research in information science and to evaluate new systems and services. In 1974, the OSTI became the Research and Development Department of the British Library. It broadened its scope and took a more active role in identifying and prioritizing issues, in performing the actual research, and in disseminating the results. Also in 1974, the Department of Education and Science set up an Interdepartmental Co-ordinating Committee for Scientific and Technical Information to link various governmental departments and agencies. Among the bodies regularly represented on the Committee are the Department of Education and Science, the Department of Trade and Industry, the Department of the Environment, the Department of Health and Social Security, the Ministry of Agriculture, Fisheries and

Food, the Ministry of Defence, the British Library, the UK Atomic Energy Authority, and the Science Research Council. The primary functions of the Committee are (a) to review the allocation of responsibilities between departments and agencies and to fill any gaps, (b) to provide central co-ordination of policy problems concerning multiple departments and agencies, and (c) to co-ordinate UK participation in scientific and technical information activities of the European Economic Community (Gray, 1979, p. 45).

In the United Kingdom, the Government has actively supported scientific and technical information service activities on the private level, assisted in the supply of foreign scientific and technical information, and provided financial aid to scientific and technical document delivery systems. It has also worked to promote the effective utilization of governmental scientific and technical information (Sugimoto, 1984, p. 150).

The present UK government believes in minimal government regulation, holding that whenever appropriate, the initiative for new service development should come from the marketplace (Cronin, 1987, p. 137). It has however, been involved in some industrial innovation projects. The best known of these is the Alvey Programme for advanced research in information technology which began in 1983. Three hundred fifty million pound sterling was provided over a five year period, 150 million contributed by industry and 200 million by the Government. Fifty companies, forty academic institutions, and five research bodies are involved in some 170 industrial projects in five key areas. Two microelectronics programs, MISP 1 & 2, have provided support to the development of chip making capabilities (MISP 1) and application-

specific circuits, computer aided design, and innovative semi-conductors (MISP 2) (Blundell, 1986, pp. 405-406).

Data Protection, Privacy Regulation, and Transborder Data Flow

In 1984, the United Kingdom passed a Data Protection Act. It deals only with computer-based information systems, not manually produced data. The Act provides for the appointment by the crown of a Registrar of Data Protection who has responsibility for the creation and maintenance of a Registry of "data users". Data users are defined as a person holding data if, (a) the data is a part of a collection of data processed, or intended to be processed by or for the person, on equipment operating automatically; (b) the person controls the contents and use of the data; or (c) the data must be in the form in which it will be, or has been processed. The Registrar is to encourage trade associations and other bodies representing data users to draw up and disseminate codes guiding compliance with the data protection principles (Jacob & Rings, 1986, p. 161). An individual is given the right of access to personal information held about him/her in a computer. There are legal provisions for compensation for damages suffered to data subjects because of loss or unauthorized disclosure of personal data, as well as for the courts to order correction or erasure of data records when damage is suffered (Jussawalla & Cheah, 1987, p. 86).

The United Kingdom has no freedom of information legislation. In addition to the broad Official Secrets Act, Britain has some 89 statutes imposing criminal penalties for the unauthorized disclosure of official information. The Public Records Act contains the "30 year rule" for the

disclosure of governmental records. Records can be made public after periods of either longer or shorter than 30 years, but the decision is left up to the Lord Chancellor and the individual departments. Freedom of information legislation was introduced in 1978 and again in 1981. The first bill lapsed when the government lost the vote of no-confidence and dissolved Parliament for a general election in 1979. The second was introduced by a Labor Member of Parliament and defeated by the Conservative majority, which is strongly opposed to the idea. After that, emphasis turned toward the data protection legislation (Michael, 1983, pp. 61-69).

Prior to 1980, all telecommunications services were provided by the British Post Office monopoly. The 1981 British Telecommunications Act established a public corporation, British Telecommunications (BT), to provide telecommunications and data processing services throughout the United Kingdom. Another Telecommunications Act was passed in 1984 which allowed limited service competition. BT's power to license systems was given to the Secretary of State for Trade and Industry and an independent regulatory body under the Office of Telecommunications (Blundell, 1986, p. 404). A private, specialized carrier called Mercury was authorized and protected from demise by Office of Telecommunications rulings. Mercury and British Telecom are currently engaged in a price war and testing the market (Cronin, 1987, p. 131). Competition is limited, for the Government will allow no other public networks before the early 1990s (Blundell, 1986, p. 405). Also in 1984, British Telecom lost its monopoly on the supply and maintenance of telephone equipment (Ibid., p. 403).

Chapter VII

Summaries and Comparisons of National Policies

As can be readily determined from the information policy measures described in the previous chapters, there is a very wide variety of approaches taken to information issues. This should be of no great surprise, considering the varying historical, cultural, political, and economic backgrounds of the nations involved. This chapter will summarize the various policy initiatives country-by-country. An attempt will be made to analyze those policy measures in light of the aforementioned environmental contexts. Comparative summaries of the findings will close this chapter.

Australia

In Australia, national information policy is not multi-dimensional, for it focuses primarily on the creation, promotion, support, and coordination of information services rather than the additional issues of societal "informatization", telecommunications, privacy, and transborder data flow. The policy formulation process is fragmented, with several governmental agencies and private bodies involved in separate initiatives. The platform of the ruling Labor party has a section dealing specifically with national information policy, but there have been no concrete initiatives toward its implementation. The National Technology Council has shown concern for the promotion of

information technology awareness. The Department of Science and Technology issued a discussion paper in 1986 (A National Information Policy for Australia) that will hopefully provide a stimulus for action. An Australian Libraries and Information Council (ALIC) was formed in 1981 for the purpose of forming a national plan and nationwide coordination. As yet it has been relatively ineffective.

This points to one constant in regard to policy initiatives in Australia, namely that they are very slow in coming. It took twenty years of discussion about national information issues to reach the present point. This is understandable if one considers that, "Australia is not fertile ground for proposals of major political or constitutional change, let alone any ideas of broader revolution." (Hawker, Smith, & Weller, 1979, p. 3). Australia is a stable society in a favorable geographic location that has known no revolutions and little permanently unsettling discontent during its development. The major political parties were formed early and have maintained their shares of the electorate with a great deal of constancy. Policymaking in Australia is usually incremental and pragmatic (Hawker, Smith, & Weller, 1979, p. 1).

In light of this, the Australian Labor Party's platform support of a national information policy is indeed innovative. That the proposals have not yet been acted upon is not unusual. An Australian Labor platform is little more than "...a broad constraint upon the leaders, indicating some things that they might do." (Hawker, Smith, & Weller, 1979, p. 33). Because it follows the British parliamentary system, policymaking power in Australia rests largely with the Cabinet. Cabinet ministers have competing demands on their time and often lack expertise in a specific subject area (Hawker, Smith, & Weller, 1979, p. 32).

Thus, the impact of Australia's parties on policy is sometimes limited, causing them to appear relatively impotent in certain policy areas (Hawker, Smith, & Weller, 1979, p. 39).

Australia does have two governmental institutions and one independent body that could figure prominently in any national information planning. In the Australian Libraries and Information Council, Australia has a body specifically given the mandate to formulate and develop a national strategy as well as to coordinate national information initiatives. Of the other five nations examined in this work, only France possesses a similar body.

The second governmental body that could figure prominently in national information planning is the Commonwealth Scientific, Industrial and Research Organization, better known as CSIRO, which is the largest and most significant body carrying out research and development in Australia (OECD: Australia, 1986, p. 42). There is only a small amount of private sector research and development in Australia. Two-thirds of research and development funds are provided by the Federal Government. CSIRO is a unique institution, "...in no other OECD country is there a single national institution which attempts to embrace advanced R & D in almost all fields from agriculture and mining through to electronics." (OECD: Australia, 1986, p. 34). CSIRO is well situated to play an integral role in the creation, storage, repackaging, and diffusion of national scientific and technical and research and development information.

A third institution, the cooperative federal/state National Industry Extension Service is a model development not seen elsewhere. Through its consulting and educational services, it will offer small and

medium sized companies information to promote the growth and competitive capabilities of industry.

Australian policy has grasped the significance of regional co-operation, offering policy initiatives to upgrade library/information services and expand resource sharing with neighboring developing nations. By establishing such ties, Australia is laying the foundation for future economic activity in the Pacific Basin.

Under the Cabinet system, ministers have almost total shielding from public and parliamentary scrutiny, and more liberal access is viewed with alarm (Ashford, 1981, pp. 48-49). Australia must thus cope with deeply-entrenched traditions of governmental secrecy. In that context, it is remarkable that a freedom of information act has been passed into law, yet understandable why there are so many exemptions permitted under the legislation. The act is innovative in that it establishes Information Access Offices throughout the country.

Canada

Information policy legislation in Canada has been primarily of a protectionist nature. There is no holistic approach to national planning, but rather a number of governmental departments and agencies which are concerned with information issues. Canadian initiatives in the area of information have been influenced more than anything else by its close physical proximity to the United States. Canada has focused on the threat posed to its cultural and economic sovereignty. The emphasis of its policies has been on reducing dependence on U.S. information processing and storage and the regulation of the transborder

movement of information. There is a fear that Canada would be vulnerable if its data were withheld on political or economic grounds. "Canada believes that the export of information to the U.S. will engender dependence, a loss of employment opportunities, a balance of payments problem, loss of access to vital information, and loss of control of industrial and social development." (Wilson & Al-Muhanna, 1985, p. 296). These issues are significant because over 40% of the Canadian labor force is involved in information-related occupations (Duchesne, 1984, p. 2).

The 1979 "Clyne Report" served to focus national interest on these issues. Much like the Nora/Minc Report in France, it galvanized government action in regard to the sovereignty problems. Policy initiatives stemming from the report were the regulation of transborder data flow by the Canadian Banking Act of 1980 and the encouragement of Canadian programming by the 1983 "Broadcasting Strategy for Canada".

Canada has no overall national information policy coordinating body. It is well served by the Canada Institute for Scientific and Technical Information in the area of scientific and technical information services and by the National Library of Canada in the humanities and social sciences. The National Library is also involved in national planning for libraries and is currently working to develop a nationwide decentralized library and information network.

As in the United Kingdom and the United States, Canada has placed great emphasis on private sector enterprise. A healthy commercial sector related to information products and services has been encouraged by creating a hospitable environment and maintaining minimal government intervention.

Until 1867, Canada was a collection of separate colonial provinces. The nation that emerged was governed by a complex mixture of federal and provincial legislation, policies and regulations (Eward, 1983, p. 71). Historically, federal/provincial cooperation and coordination have not been easily obtained:

> The separate jurisdictions within the government sector have led to a longstanding conflict between, on the one hand, needs and wishes to maintain provincial and local autonomy and, on the other hand, needs and wishes for a consistent national set of arrangements applying in all parts of the country (Duchesne, 1984, p. 4).

This undoubtedly plays its role in Canada's lack of a comprehensive national information policy.

Canada is very similar to Australia in that it also possesses a governmental system based on that of the United Kingdom, with long-standing traditions of secrecy. It must then be viewed as quite a positive accomplishment to have passed significant information access legislation. The Canadian Privacy Act goes somewhat further than Australia's in that final right of appeal can be made to the Federal Court of Canada. On the other hand, the act maintains a comprehensive exemption of all cabinet records, even to the extent of an unreviewable right to deny disclosure to a court. Canada thus has one of the most secretive executive privilege rules in the Western world.

The Federal Republic of Germany

The Federal Republic of Germany can be said to possess a national information policy. Its government has taken active policy measures to introduce overall national planning. Initiatives have assumed the form of two separate yet related programs: the Information and Documentation program 1974-1977, and the Specialized Information Program 1985-1988. Both programs focused primarily on coordinating information services, i.e. the creation, storage and provision of information. Stress has been on the promotion of a single national scientific and technical information policy. However, information science has been emphasized to a greater extent than pure science and technology (Sugimoto, 1984, pp. 157-158).

The I & D program called for the creation of twenty information centers in specialized subject areas, the development of databases, and the establishment of a national information network. The program failed to achieve its goals, due in part to high costs and the onset of recession, but also because the government lacked the necessary expertise to coordinate and regulate the entire information market.

The Specialized Information Program of 1985-1988 was a reorientation of the original I & D Program. Establishment of the twenty centers was dropped as an initiative and there was a general realignment toward the free market and private enterprise. The goal was to improve the German information market and German information services. The government would continue to support activities deemed essential to avoid foreign dependence, or that were necessary but not yet profitable. In addition, the program called for an education and

public awareness campaign to increase use and acceptance of specialized information.

This last aspect is particularly vital to the Federal Republic. In an April 1985 Harris/Emnid poll of public opinion relating to computerization attitudes in five countries, respondents from the Federal Republic of Germany were shown to hold the most negative outlooks toward computers. (See Figure 1: Attitudes toward Computers and Figure 2: Computer Learning, for results of this poll.)

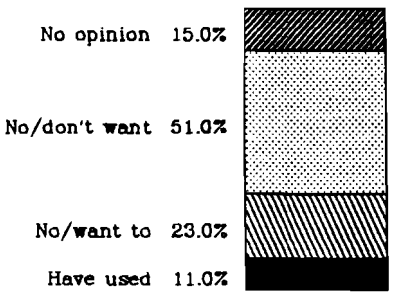
Part of this negative public sentiment may be due to the high level of publicity given to the 1983 Census Law controversy. The law was passed unanimously by the German Federal Parliament, but after 30% of the populace refused to fill out the census questionnaires, it was appealed to the Federal Court of the Constitution. The Court ruled that the law violated the Constitution in that it mixed personal and statistical data in a manner that could be dangerous to citizens. At this same time, discussion also centered on the government's plan to introduce a computer-readable identity card that some feared would become a general key to all data banks. Public opinion may also have been influenced by a strong labor movement which has successfully utilized strikes against computerization and automation. As a result of a 1984 strike by the Metal Workers Union, the work week was reduced from 40 hours to 38.5, creating some 100,000 new working places (Brunnstein, 1986, p. 258).

While they held power in the 1970s, German Socialist Party (SPD) policies favored more state intervention in the economy, and medium- and long-term co-ordination and planning (Katzenstein, 1987, p. 14). The implementation of the I & D Program 1974-1977 with its broad, long-range

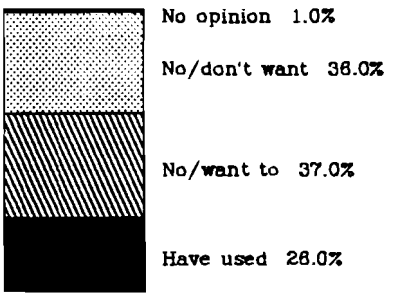
Figure 1

Attitudes toward Computers 1985

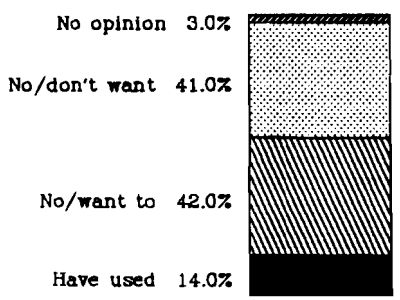
Have you ever used a computer?



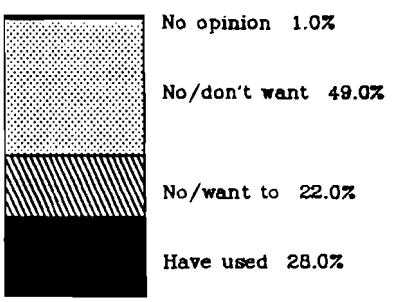
Germany



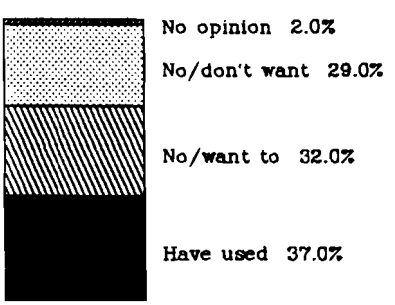
France



Japan



United Kingdom



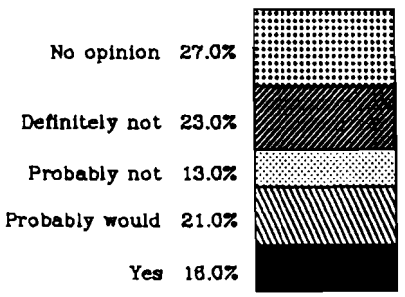
United States

Source: Brunnstein

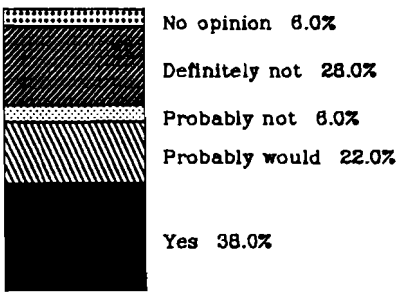
Figure 2

Computer Learning 1985

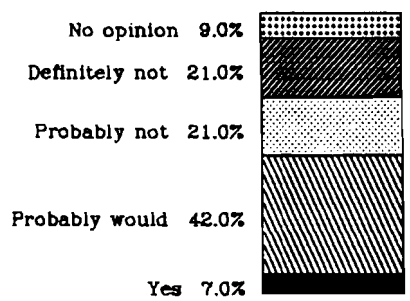
Would you undertake computer education?



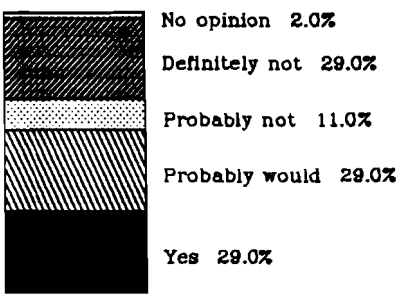
Germany



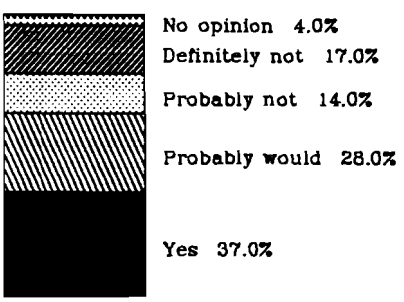
France



Japan



United Kingdom



United States

Source: Brunnstein

goal of creating twenty centralized specialized information systems in various subject areas, is thus quite understandable.

The shift of the Specialized Information Program toward more private sector initiative is no doubt due in part to the ascendancy of the conservative coalition led by Helmut Kohl in 1982. There was no radical policy change but rather an incremental modification. The move toward more dependence on the commercial sector and open markets reflected the beliefs of the new conservative coalition. Many aspects of the original I & D Program were left largely intact. In West Germany, there has been an absence of large-scale policy alteration when the composition of the government changes. When the conservative coalition took power in 1983, there was little alteration in the basic policy approaches. "Since 1983, the more conservative CDU has avoided breaking sharply with the past in favor of changing well-tested policies incrementally." (Katzenstein, 1987, p. 4). Constrained policy shifts are also influenced by the fact that less than ten percent of all legislation is actually contested by the major parties in the Bundestag. Party opposition in the Bundestag seeks to exercise control through cooperation in legislation rather than confrontation in debate (Katzenstein, 1987, pp. 42-43).

Germany's national unification occurred late, in 1871. Economic, social, and cultural integration occurred before the imposition of a national government. Nationalism provided the glue to weld the country together. This late arrival as a modern industrial state had fundamental consequences for German foreign and domestic affairs. Political authoritarianism was favored at home and an expansionist policy abroad (Katzenstein, 1987, pp. 11-12). Military defeat and

occupation at the end of the Second World War deeply affected the structure of the German nation. Unlike Japan, the country was divided. Political life emerged first in local and state politics, well before the creation of the Federal Republic in 1949 (Katzenstein, 1987, p. 13). The Allied occupying powers felt that a territorial decentralization would help protect democratic institutions from the possible re-emergence of centralizing, totalitarian political movements. In the Western section, immediate postwar discussions of establishing a central library for foreign technical publications were unsuccessful due to the disastrous consequences of Nazi centralization policies. The central technical library did not come into existence until fourteen years after the war (Richards, 1985, p. 198).

As a result, West Germany displays a strong federalism, with the individual Lander given great prominence. Under the "Basic Law", the Constitution of the Federal Republic, the Länder are given primary powers in the areas of education, cultural affairs, radio, television, law enforcement, and the environment (Katzenstein, 1987, pp. 15-16). The result to German policymaking is that the federal government must cooperate and negotiate with the Länder over which it has little control. The decentralization of the state contributes to its tendency toward incremental policy change (Katzenstein, 1987, p. 16).

Incremental policy change is also aided by the prevalence of government by coalition. Bold policy initiatives are hindered by concern for coalition partner's viewpoints (Katzenstein, 1987, p. 40).

The specialized information program of the Federal Republic of Germany can be seen as a national information program in a somewhat narrow sense. Where France embraces the whole area of information in a

modern society, West Germany takes an economic viewpoint of enhancing information markets primarily through the development of databases in specialized information areas and the creation of information networks. Little concern is given to the areas of the humanities and the social sciences.

Privacy legislation has been enacted at the local, state, and national levels, and pertains to both the public and private sectors. West Germany does have legislation regulating transborder data flow. The Federal Republic of Germany was one of the earliest nations to concern itself with transborder data flow. The federal state of Hesse enacted a law in 1970 to control information transfer capability. It specifically addressed the privacy and security of computer prepared and processed data (Surprenant, 1987, p. 57).

France

Like Canada, France has taken the view that their cultural and economic autonomy are of utmost significance. French policy has been concerned with information as a finite resource vital to the economic interests of its society. Early on, "telematics", the integration of information technology and telecommunications, was recognized as important in any national information policy. France is highly concerned with the informatization of the whole society, i.e. with transforming not only the French information industry infrastructure, but also to influence the attitudes of all sectors of the society. In France, the policy focus is on both information science and science and technology (Sugimoto, 1984, pp. 157-158).

Through their subsidization of research and development, nationalization of certain firms, and tariff and non-tariff import restrictions, the French government has fostered the development of its own information processing industries. The effect has been to dissuade foreign firms from entering into their information processing market. Policies have encouraged the development of the information infrastructure, the creation of new technology, production of indigenous databases, and the training of the personnel for a French dominated information service sector.

The findings of the Nora/Minc report in 1978 brought about a concrete government commitment toward a national electronic information society. This commitment lasted through the drastic power shift that accompanied the elevation of the Socialists to office in 1981. Large amounts of public funding have been expended to achieve the "informatisation" of French society. Economic and cultural priorities lay behind this approach. Another goal of the French policy initiatives is to gain a strategic advantage over economic competitors.

France had a very clear concept of democracy early in its political development, but had great difficulty translating that concept into an institutional form. During the chaos of the French Revolution, the country turned to a strong leader, Napoleon, to solve its institutional problems. The Napoleonic period was one of the most intense intervals of institution-building in history. In little more than a decade, France acquired a supreme legal advisory body, a rigid, hierarchical educational system, a large number of highly trained administrative bodies, a systematic codification of the rules and procedures governing all aspects of French life, and a carefully designed territorial

structure (Ashford, 1982, p. 13). The effect of this critical period was that France acquired an elaborate and top-heavy administrative structure. France gained an inflexible and oppressive "big government" well before the rest of Europe (Ashford, 1982, p. 14). Of the six nations, France has the most comprehensive national information policy. Having a tradition of highly centralized administration facilitated the creation of a national plan relative to the informatization of the entire French society.

In France, the most common coordinating device to prepare and implement policy is the interministerial committee (Ashford, 1982, p. 36). MIDIST, the Mission Interministerielle de l'Information Scientifique et Technique, is an example of such a coordinating body. It has the mandate to serve as a single locus of authority in information policy matters.

Ashford (1982) believes that there is a certain experimental quality about French policymaking (Ashford, 1982, p. 64). Such could certainly be said for the information program promoted by the Mitterand government. No other industrialized democracy has attempted integrated national information planning of such all-encompassing scope.

Whatever the political disagreements of the various French parties, there has been a central determination by those of all political persuasions to preserve an influential role for France (Ashford, 1982, p. 309). The ease of acceptance of the findings of the Nora/Minc Report and the concrete measures taken in response to it highlight this national resolve.

Present French national information policy is actually merely a part of an overall research and development strategy. It encompasses

the forced development of the French information industry through database creation and the development of national documentation networks, stresses science and technology and self-sufficiency within that area, provides subsidies and grant support for information technology innovation, promotes French as a scientific language, initiates educational and public awareness measures, and emphasizes creating a French "science and technical culture". The success of this national planning could not be determined from the available source material. ARIST (Agences Regionales de l'Information Scientific et Technique), the regional agencies providing problem solving information for the promotion of industrial development, has succeeded quite well. Figure 1: Attitudes toward Computers and Figure 2: Computer Learning, show that positive results have also been achieved through French education and public awareness campaigns.

In 1978, France enacted the strongest data protection and personal privacy act of any of the six nations. It is unique in that it created an independent commission to implement and interpret the law. Access to exempt categories is forbidden only if the government can prove the release would do demonstrable harm. Penalties for violation of the law include fines and imprisonment. The French government has the legal right to regulate transborder data flow, but has as yet not done so.

Japan

Like France and the Federal Republic of Germany, Japan can also be considered to have strong national information planning. From 1970 on, a series of government reports have laid the foundation and plotted

Japan's course in "informatizing" its society. These "visions" indicate medium- and long-range policy and provide a blueprint that can be utilized by business and industry in the formulation of their own strategies. "Visions" are largely successful because they are the result of open and broad-based discussions by all segments of society. Politics in Japan is a highly consensual process, with heavy emphasis on group solidarity. "Success in Japan is measured in terms of achieving group rather than individual goals." (Pempel, 1982, p. 3).

One of the most influential of these reports was the 30-year economic development plan The Information Society: A Year 2000 Japanese National Goal, published in 1970. It presented a long-range national information strategy for developing Japan's knowledge-intensive industries. In-depth, strategic planning is continually stressed in Japanese reports.

Japan differs from France and West Germany in that it utilizes a continuous string of related policy measures initiated by various governmental bodies. The Japanese have exhibited a high degree of selectivity in the scope and direction of their policies. Selective government intervention or direction rather than a constant presence is a Japanese hallmark (Pempel, 1982, p. 21). They intervene forcefully in some areas but remain only on the periphery in other contexts (Pempel, 1982, p. 12). Japanese policies have been geared toward the areas of information technology, telecommunications, education in library and information science, and molding public acceptance of informatization. Subsidies are actively provided through the Information-technology Promotion Agency. The use of trade barriers and other protective measures fostered the development of Japanese "knowledge-intensive

industries". An entire four-year university dedicated to information science was founded in Tsukuba. The goal of Japanese policy initiatives has been to gain a strategic advantage over economic competitors, primarily the United States. Japan considers itself as a unified political whole when it confronts "outsiders" (Pempel, 1982, p. 4). In that regard, their policy initiatives have been largely successful. "The general efficiency of Japanese public policies in terms of meeting stated government objectives is undeniable." (Pempel, 1982, p. 300).

The high degree of effectiveness of the Japanese state in its information policies is due in no small part to its small size. The Japanese government is among the smallest in the industrialized world. Japanese government employees represent 9% of the labor force compared with 14-20% in most European and North American countries, and Japanese government expenditures stand at about 22% of the national GNP compared with anywhere from 30 to 60% in Europe and North America. The government has left many functions in the hands of the private sector: social welfare, regulation of labor and internal commerce, health care, higher education, and research and development. As a result, the size and cost of Japanese government is markedly lower than other countries (Pempel, 1982, p. 20). Smaller size means more efficient allocation of resources and a higher degree of control over policy initiatives. Japan's policy successes are also related to its high racial, ethnic, and linguistic homogeneity. "Having relatively broad bases of commonality in such things as speech, upbringing, and information minimizes or at least clarifies the areas of potential disagreement, confusion, and misunderstanding that often arise in more diversified societies." (Pempel, 1982, p. 24).

In Japan there has been strong emphasis on collaboration between the public and private sectors to achieve national goals. Old school ties, family linkages through marriages, informal study groups, research associations, social groupings, and having one geographic center all facilitate the communication between government and private industry (Pempel, 1982, p. 21). By cooperating in an atmosphere of trust, government and private industry have had great success with large-scale strategic research and development projects. An example of such a joint government-industry program is the current fifth generation computer research, while another is the National Superspeed Computer Project, a $200 million program funded by the government and six major companies (National Telecommunications Administration, 1984, p. 414). It is also significant that the results of such research projects are made available to everyone. The government actively supports the diffusion of technology into commercial production. Japanese policy assumes that growth in specifically targeted knowledge intensive industries will insure a healthy economy in the future. Information is viewed as crucial to Japan's ability to compete economically.

Japan also unhesitatingly adapts to foreign technology and know-how that it views as useful to the national good. Historically, Japan modernized earlier and faster than any other non-Western nation (Pempel, 1982, p. 4). Because of its strong interest in drawing knowledge from all possible sources, several of Japan's current government-industry research projects focus on automatic translation systems.

In the 1980s, Japanese information policy has focused on enhancing creativity in the knowledge industry sector. During this decade, Japan has also been gradually moving from economic nationalism to economic

internationalism. The government has shown increased sensitivity and receptiveness to international criticism (Pempel, 1982, p. 304). The past decade has seen a relaxation of trade barriers and telecommunications regulation. The Vision of MITI Policies in the 1980's and the Report of the Information Industry Committee Industrial Structure Council in 1981 stressed the importance of international cooperation and contributing positively to the international community.

Japan's Science Information System to support academic research is significant in that it will be a nationwide information and library network. It will include the humanities and social sciences as well as the sciences.

One area where Japan lags noticeably behind the other nations in this study, is in the area of personal privacy and freedom of information legislation. National legislation has yet to be passed in those areas. Two main features of Japanese government are a powerful state bureaucracy and a long reign by a democratically elected cohesive conservative coalition (Pempel, 1982, p. 307). This, in combination with the consensual nature of the society, might explain the slow progress in this area.

The United Kingdom

As stated earlier, the United Kingdom has no discernible national information policy. The government of the United Kingdom places reliance on the competitive market to spur its information industry. Some policy attempts have been made to raise awareness of information technology through promotional campaigns, and occasionally market

stimulation subsidies are provided, but there is no integrated national program as in France, Japan, or West Germany. Positive policy measures have been made by the Library and Information Services Council and the British Library to develop a national library and information network to enhance access. Private information agencies are quite active in the promotion of information issues.

In the United Kingdom, the conservative government feels that it should not intervene in those areas adequately handled by the private sector or by local bodies. Information provision is handled primarily by the private sector. The main policy focus in the UK has been to instill in British society the ideas of information as a tradeable commodity and paying a fair price for information services. The 1983 Cabinet Office report, Making a Business of Information, highlighted this trend, stressing the economic significance of the information sector. The report did however, also point out the fragmentation of both the UK information industry and governmental responsibilities toward information. It called for the creation of one single governmental department to have authority for all information policy coordination. Though the British information industry formed a successful lobbying group as a result of the report, i.e. the Confederation of Information Communication Industries, there has been little official government reaction to the proposal. Why is this, and why has British government been so unresponsive to national information planning?

Untangling policy problems of conflicting jurisdictions and objectives rests almost entirely with the Cabinet and higher civil servants (Ashford, 1981, p. 16). Once elected to office, British

members of parliament (MPs) and above all the Cabinet, are not only hard pressed by the daily flow of business but are comparatively free of continuing political pressures and demands (Ashford, 1981, p. 17). Compared to most modern democracies, policymaking is remarkably concentrated in the Cabinet and the higher civil service. The individual MP has little chance of changing bills once the Cabinet has formed its policy (Ibid., p. 17). The executive branch is itself hard pressed to carry on the day to day governmental business. There is little time for long-term policy discussion, and ministers easily become mired in the details of running large departments (Ashford, 1981, p. 28). The British political system has generated relatively few incentives to innovate in public policy, to articulate underlying social and economic conflicts, and to expose the administration to public criticism and public demands (Ashford, 1981, p. 22).

Information policymaking responsibilities are scattered across a number of governmental departments in the United Kingdom, each with its own narrow scope of interest. The effective level of policymaking is the department, which is supervised by a minister. The ministers carefully guard their departmental domains, with their success as ministers dependent more upon how well they provide for the department in the annual budgetary battles than on policy innovation and experimentation (Ashford, 1981, p. 33). Parliament has no direct role in policymaking. It does not actively initiate or design legislation. Parliament serves more as a deliberative body (Ashford, 1981, p. 43). Unlike nearly every other democratic legislature, the Opposition is excluded from policy formation (Ashford, 1981, p. 24).

The elites in all parties have little inclination to change the

system that gives them enormous powers, and society in general maintains a high degree of confidence in the system. The Opposition has no wish to alter the system, for they hope to eventually gain power (Ashford, 1981, p. 8).

The United Kingdom has a data protection act, but no freedom of information legislation. Britain's tradition of governmental secrecy is based upon the Official Secrets Act of 1911 which was passed in one day under the shadow of a looming conflict. It makes even trivial unauthorized disclosures criminal acts. In no other country in the world are ministers so completely protected from public and parliamentary scrutiny (Ashford, 1981, p. 48). In Britain, government's right to conceal is valued more than the public's right to know (Michael, 1983, p. 68).

Because the present Conservative government is strongly behind reliance on competitive markets and private sector initiatives with minimal government regulation, and is not fond of freedom of information legislation, very little change can be expected in the United Kingdom's information policy stances.

Policy Comparisons

France, Japan, and the Federal Republic of Germany all have national information policies. In West Germany it has been laid out explicitly in two related information programs. However, the focus has been rather narrow, concentrating primarily on the development of the information market and information services through documentation centers, database creation, and nationwide networks. France and Japan

have both taken more holistic views, the goal being the total informatizing of each respective society. The role of the government is to act as a stimulator and financial supporter of large-scale telematic developments. Cultural and economic sovereignty is the concern of France, while Japan's desire is economic self-sufficiency and eventual market domination in knowledge intensive industries. France has utilized various policy initiatives to achieve its societal objectives, but the greatest portion of its activities have been centered around its national research and development plan, which is under the coordination of a central planning body, the Mission Interministerial de l'Information Scientifique et Technique. Japan has placed heavy emphasis on broad-based, long-term strategic planning. Many individual policy measures are involved, but they are linked by the common national master plans or visions. The national information measures of France, Japan and the Federal Republic of Germany are helping develop the respective national information infrastructures and information industries.

Australia, Canada, and the United Kingdom have "...no policy but a series of policies arising from reactions to technical and social pressures, formulated and implemented by a diversity of public authorities and private bodies, in pursuit of limited, unco-ordinated and often contradictory objectives" (UNESCO, 1982, p. 58). Australia however, appears to be making concrete progress, albeit slowly, towards eventual implementation of an overall national information policy. Canada has passed policy measures in highly focused areas. Canada's main concern lies with its economic and cultural vulnerability to the international transmission of information, particularly in regard to the

United States. The United Kingdom appears to have no coherent overall national information planning. However, some segments of the British government are beginning to take note of the economic significance and growth potential of the information sector, and a call has gone forth for the establishment of a coordinated planning body.

France, Japan, Canada, and Australia all view information as a key resource, something deserving policy consideration in regard to its production, dissemination and utilization. These aspects cannot be left up only to market forces. The United Kingdom, (and the United States), view information as a commodity and stress reliance on the private sector with a minimum of governmental regulation. Most decision-making should be left to the competitive information market. The Federal Republic of Germany, while starting out with heavy government intervention, has made a significant shift toward the private sector/commodity viewpoint in its last Specialized Information Program.

Japan, Canada, France, and the Federal Republic of Germany have all to greater or lesser degrees, instituted some form of protectionist measures. These have been primarily trade restrictions against foreign competition, e.g. Japan and France, or barriers to the transborder flow of information, e.g. Canada and West Germany.

France, the Federal Republic of Germany, Australia, Canada, and Japan have all stressed the provision of support to national information activities which reduce dependence on foreign information sources, but which would not be provided by private initiative. All six of the examined nations are heavily dependent upon foreign database producers, particularly on the United States. Indigenous resources exist, but they are often in widely scattered subject areas and offer only marginal

information autonomy. For Australia, the fact that it has a relatively small population means less resources are available to spend on research and development, necessitating heavy importation of information (Judge, 1985, p. 87). There have been few commercially successful information technology product developments in Australia. Most information technology is imported or assembled in Australia, primarily from British and U.S. firms. There is some time lag behind similar implementation overseas (Lane, 1985, p. 36).

Thus, to defend against total domination by foreign information providers, these countries must provide governmental support to the creation of databases in subject fields of only marginal commercial viability. A legitimate fear of vulnerability to the political whims of other nations fuels this stance. The USA dominates the world information market, holding approximately 82% of the sales of electronic online information. Japan maintains approximately 7%, the United Kingdom 4%, the Federal Republic of Germany 2%, and France some 1.5% (Fed. Minister of Res. & Tech., 1985, p. 77). Of approximately 816 scientific and technical databases existing worldwide in 1984, 7.8% were produced in the Federal Republic of Germany, 10% in France, 8.5% in Canada, 7.4% in the United Kingdom, 1.7% in Australia, and only .5% in Japan. (See Table 1) Of the 1,035 economic databases, 5.9% were produced in Great Britain, 5.7% in Canada, 4.3% in France, 3.1% in Australia, 1.7% in Germany, and 1.5% in Japan. (See Table 2) In only a few subjects does Europe resist American superiority in the production of databases: in civil engineering the production of databases is done mainly in West Germany and France; in physics, mathematics, materials, and electrical engineering, Europe and the U.S. are about equal

Table 1

Distribution of Scientific and Technical Databases (1984)

	Aus.	Canada	France	Germ.	Japan	UK	US
Health/Medical	-	1	4	7	-	6	70
Agriculture	1	1	6	1	-	2	8
Chemistry	-	2	7	7	-	10	30
Energy, Physics, Mathematics	-	5	5	10	1	1	45
Law	-	24	5	-	-	2	37
Social Sciences & Humanities	6	10	18	4	-	4	65
Technology & Patents	-	1	16	12	1	14	71
Environment	-	8	4	10	-	1	36
Other	7	17	17	13	2	20	64
Total	14	69	82	64	4	60	426

Source: GID (Federal Minister for Research and Technology, 1985, p. 78)

Table 2

Distribution of Economic Databases (1984)

	Aus.	Canada	France	Germ.	Japan	UK	US
Stock exchange news	5	18	-	1	1	15	95
Commercial law	-	1	1	2	-	2	22
Macro-economic data	14	9	10	3	3	5	141
Product information	1	-	-	5	-	2	27
Enterprise data & credit info	2	13	6	2	4	10	61
Trade directory information	4	10	4	2	2	6	226
Economic news	3	3	5	1	3	5	37
Marketing	1	5	5	-	1	12	49
Other	2	-	13	2	1	3	57
Total	32	59	44	18	15	60	715

Source: Schulte-Hillen (Federal Minister for Research and Technology, 1985, p. 79)

(Neubauer, 1984, pp. 115-116).

France, Japan, and the United Kingdom have all maintained active public awareness and educational campaigns in regard to information technology. France and the United Kingdom have both instituted programs to increase the utilization of computers in schools. Figure 1: Attitudes toward Computers and Figure 2: Computer Learning, demonstrate that these efforts are achieving positive results.

There has also been increasing co-operation between nations to counter the overwhelming domination of the United States in information provision. France and Canada jointly launched a telecommunications satellite in 1983, while another satellite was put into space in 1984 by France and the Federal Republic of Germany (Wilson & Al-Muhanna, 1985, p. 296).

Canada maintains a combination private sector/provincial government telecommunications system. Australia, Japan, and the United Kingdom all show signs of easing monopoly control of their telecommunications services. In France, the state maintains a monopoly on the telecommunications network, but allows private sector involvement in the provision of equipment. Telecommunications in the Federal Republic of Germany remains a tightly regulated monopoly.

All six of the nations have worked to develop indigenous information services because foreign sources often lack material that is relevant to their particular environments. Databases in the USA cover less than half of the German magazines and less than a third of German conference literature (Federal Minister for Research and Technology, 1985, p. 10). Australian input into U.S. databases runs about 2% of the total records for those databases that even make an effort to include

Australian literature (Judge, 1985, pp. 88, 90). Australia, Canada, and the United Kingdom have, however, been considerably more open to foreign sources and services, particularly those of the United States. Having a common language undoubtedly plays a strong role in this. Canada's close proximity to the United States is also a likely influence on its heavy use of outside services.

Japan, France and the United Kingdom each possess one geographical center where most of the country's political, commercial, financial, cultural, and media activities are concentrated, i.e. Tokyo, Paris, and London respectively. Such is not the case in Australia, Canada or West Germany. Of the six nations, Japan is largest in population, has the greatest population density, and maintains the highest gross national product. It also has the most positive trade balance. The Federal Republic of Germany and Canada are the only other nations with positive balances of trade. (See Table 3 for a statistical comparison of the six nations. The United States has been included to provide a point of reference.)

Table 4 compares major aspects of data protection and privacy regulation in the six nations. France and West Germany maintain the highest levels of protection, standing in stark contrast to Japan's total lack of legislation in these areas. The response of the United Kingdom is only slightly better, which is quite surprising, considering its strong tradition of democratic ideals. As was discussed previously, this relates in no small degree to the power held by the executive branch, i.e. the Cabinet. That Canada and Australia have instituted measures for the protection of data and privacy is significant in that they both have governmental systems modeled on Great Britain's.

Table 3

Statistical Comparison

	Aus.	Canada	France	Germ.	Japan	UK	US
Area ('000 sq. mi.)	2,699	3,851	221	96	145	92	3,623
Population (million 1985)	15	25	55	61	121	56	239
Pop. Density (per sq. mi.)	5.2	7	261	635	840	599	66
GNP (GDP) (1984 US$ bn)	170	317	565	678	1,200	455	3,701
Imports (1985 US$ bn)	25.9	81.4	107.7	158.4	130	109	361.6
Exports (1985 US$ bn)	22.7	90	101.6	183.9	177	101	213.1
Labor Force							
(Agriculture)	7%	3%	9%	6%	9%	1.5%	2.7%
(Indus & Comm)	30%	52%	45%	42%	34%	30%	NA
(Services)	32.6%	28%	46%	42%	48%	59%	NA

Source: The World Almanac and Book of Facts 1987

Table 4

Data Protection and Privacy Regulation

	Aus.	Canada	France	Germ.	Japan	UK
Electronic data processing	X	X	X	X	-	X
Manual data processing	X	X	X	X	-	-
Protected persons: natural persons	X	X	X	X	-	X
legal persons*	-	-	-	-	-	-
citizens only	-	X	-	-	-	-
Data control board	-	X	X	X	-	X
Registration/licensing	-	X	X	X	-	-
Regulated sector: Public	-	X	X	X	-	-
Private	-	-	X	X	-	-
Enforcement: fine	-	-	X	-	-	-
Right of access/ challenge	X	X	X	X	-	-
Freedom of information	X	X	X	X	-	-

* legal person = a corporation or company granted the privileges, legal powers, liabilities, and rights of a natural person.

Source: Wigand, Shipley, & Shipley, 1984, p. 167

This thesis has examined and discussed in detail the information resources, national information policy measures, and data and privacy regulations taken by six industrialized trading partners of the United States. The final chapter will offer some thoughts on certain previously discussed concepts that could be utilized to develop a more coherent information policy stance for the United States.

Chapter VIII

Considerations for the United States

The situation of the United States in regard to information policy is quite analogous to that of the United Kingdom. There appears to be a serious lack of holistic national level planning. Information policy must be inferred from the decisions of a multiplicity of involved governmental bodies. These include the Department of Commerce, the National Telecommunications and Information Administration, the Bureau for International Broadcasting, the State Department, the National Aeronautics and Space Administration, the Department of Defense, the Federal Communications Commission, the United States Information Agency, the Office of Management and Budget, the National Security Council, and the Office of Science and Technology Policy (Cronin, 1987, p. 130). One result of this is a publicly perceived lack of direction:

> At present, with over two dozen federal agencies and departments involved in telecommunications and information policy making, it is almost impossible to assign prime responsibility for such policies, let alone improve the speed of response. Without the identification of primary responsibility, interagency conflicts are inevitable and policies are delayed, contradictory, or are never formulated. (Surprenant, 1987, p. 62)

Given the historical and economic development of the United States and its traditional aversion to regulation and centralization, one must view it as less than realistic to expect some form of comprehensive

national information policy to transpire in the immediate future. However, at least three significant policy concepts gained from the national policy measures of the six nations examined in this work could be effectively utilized to the benefit of the U.S., namely, long-range strategic planning, a national productivity extension service, and a single coordinating body for information policy.

A critical lesson to be learned from the Japanese experience is the importance of medium- and long-range planning. Traditionally, U.S. business has tended to concentrate on short-term profits rather than strategic goals (Grub, 1984, p. 145). The Japanese government utilizes broad-based discussions involving members of all segments of society to consensually develop national "blueprints" for the future. Heavy emphasis is placed on greater productivity and making optimum use of technological breakthroughs. Though the United States lacks the basic homogeneous, consensual nature of the Japanese, strategic policymaking based on wide-ranging discussions could nonetheless easily be within the realm of possibility.

Related to this is the need for industry and government to coexist in a cooperative environment rather than maintaining an adversarial relationship. This is particularly true with regard to the information industry, if the challenge of global competition is to be successfully met. As an example, in the field of telecommunications, "...uncoordinated laws and regulations concerning taxes, antitrust, and trade regulation have actually served to discourage R & D, marketing, and trade innovations." (Sterling & Thompson, 1984, p. 11). The Japanese have demonstrated time-and-again the fruitful results of positive government-private sector interaction. In the mid 1970s, a

joint Japanese industry-government research project on large-scale integrated circuits allowed them to leapfrog U.S. leadership in chip technology (National Telecommunications Administration, 1984, p. 414). The successful fruition of Japanese information technology targeting is also corroborated by the fact that the Japanese export share of world telecommunications equipment rose from 12 to 23 percent between 1970 and 1980, while the U.S. share dropped from 22 to 18 percent (Sterling & Thompson, 1984, p. 11).

The two remaining concepts to be drawn from the experiences of U.S. industrial partners both concern the enhancement of the U.S. economic position in the world, an area of legitimate unease. The United States trade balance has dropped from a $17 billion surplus in 1980 to a $139 billion deficit in 1986. This included for the first time a deficit in high technology goods. The U.S. is now the world's largest debtor nation at $400 billion (Zuckerman, 1987, p. 110). The United States was credited in the 1950s and 1960s with 75 percent of the world's total research and development. Today the figure stands at 30 percent (Meredith, 1985, p. 15). "With its present standard of living and cost structure, the United States can successfully compete in the global economy only when it regains a substantial lead in productivity." (McMillion, 1985, p. 47).

Though many other factors are involved, declining U.S. growth and competitive ability is certainly not enhanced by the lack of coherent leadership in areas as globally significant as information and telecommunications. "The lack of any clear, coordinated policy contributes to the erosion of the competitive position of U.S. firms in international telecommunications and related markets." (Sterling &

Thompson, 1984, p. 11). Information has unquestioned significance for productivity, "...information has become the cutting edge of technological advancement and a central element of economic growth." (Spero, 1982, p. 139). "The timely and inexpensive availability of information makes it a motor for innovation and therefore a driving force for economic and social development." (Van Rosendahl, 1984, p. 15).

A positive measure that could be adapted from overseas to aid U.S. productivity is the concept of an extension service for productivity, such as the National Industry Extension Service in Australia. NIES is an independent, non-profit venture whose purpose is to supply subsidized consulting services to small and medium sized companies. Like this Australian prototype, a United States productivity extension service could be modeled on the highly successful domestic Agricultural Extension Service. It would serve as a central facility for the dissemination of commercial information and education to facilitate economic growth. As in Australia, the Service could actively cooperate with state governments and work at the local level. Japan has a similar organization in its Small Business Promotion Corporation, a government created information clearinghouse, while France has its regional agencies for the promotion of industrial development, i.e. Agences Regionales de l'Information Scientifique et Technique..

It is also vital that the United States institute a single national coordinating body in the area of information and telecommunications policy. France has had considerable policy success with its Mission Interministerielle de l'Information Scientifique et Technique (MIDIST). Though the Australian Libraries and Information Council (ALIC) has not

achieved such positive results, it is positioned so that coordinated national planning could readily occur given effective leadership. The United States would be much better served by anticipating information policy issues rather than continually reacting to current developments. Information and telecommunications policy issues must be integrated and explicitly stated. The previously mentioned need for long-range policymaking is also intimately interrelated to the functions of a national coordinating body.

While U.S. information policy is hampered by inaction and fragmentation of responsibilities, nations like Japan, France, and the Federal Republic of Germany are instituting comprehensive national planning that threatens the competitive lead of the United States. Failure to have a coordinated national information strategy has led to decreased U.S. response capabilities to the policy initiatives of other nations:

> ...the inability of the United States to formulate and express a coherent set of public policies has contributed significantly to current international differences of opinion. Even today the United States government is unprepared to respond to a dynamic national and international environment in information and technology. (Surprenant, 1987, p. 60)

Information and telecommunications are very significant foreign policy concerns. Herbert Schiller writes that, "Information and the communications process have become the pivots of present and future national and international power relationships." (Schiller, 1984, p. 48), while U.S. Secretary of State George Shultz states, "Across the globe the foreign policy agenda reflects new economic disputes as

developing and advanced nations alike struggle to come to grips with transborder data flows, technology transfers, satellite transmissions, and the crowding of the radio spectrum." (Shultz, 1986, p. 16). Canadian, French, German, and Japanese protectionist measures create barriers to productive international relationships. The United States requires coherent and coordinated responses to such foreign initiatives.

In order to succeed, the single national coordinating organization would require legitimate authority to allow it to deal from a position of strength. It could be a whole new governmental agency, an interdepartmental arrangement along the lines of France's Mission Interministerielle de l'Information Scientifique et Technique (MIDIST), or an organization created within an existing department. The majority of Japan's policy initiatives originate within the Ministry of Trade and Industry while the Minister for Research and Technology oversees information policy in the Federal Republic of Germany.

Far-sighted and innovative political leaders will be needed to establish such a body, and they will have many obstacles to overcome, not the least being, many established departments with their own internal agendas, a basic suspicion of centralized planning and regulation, possible private sector hostility, and a record deficit to be brought under control. The latter problem would likely prove the greatest barrier, for the creation of a coordinating body and its ensuing financial requirements would undoubtedly evoke strong opposition. However, a good argument for such government expenditures is that investment in information technology and services and in telecommunications is analogous to investment in traditional physical infrastructure projects like the highway system. When the national

highway system was being developed, transportation was recognized as an asset vital to the good of the country. Information has become a similar national resource, and as such, warrants serious governmental consideration.

Outmoded ways of looking at the issues need to be done away with. The U.S. government must begin being more innovative, global-minded, and future-oriented. It would be fitting to close with a warning given by Lynton Caldwell during the late 1960s, that could easily apply to the current U.S. need for a coordinated national information strategy:

> ...our danger arises because ours is the ignorance of the highly educated, the technically proficient, and the professionally competent. It is the ignorance of believing that the mere fact of having created the super-culture is assurance that we already know how, or can easily learn how, to manage it. Too few among us have sensed the true enormity of the impending managerial task and fewer yet have seen that an urgency to control and direct its thrust is already upon us. (Caldwell, 1967, p. 133)

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