The Parliament of the Commonwealth of Australia

Australia as an Information Society: Grasping New Paradigms

Report of the House of Representatives
Standing Committee for Long Term Strategies

May 1991

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+   Mr A A Morris replaced Mr L R T O'Neil on 13 November 1990.

TERMS OF REFERENCE

The Committee is to inquire into and report on:

- the desirability of adopting a National Information Policy;

- equity in information access and transfer;

- the dimension of the 'information explosion';

- questions of personal privacy and national sovereignty;

- 'information' as a factor in employment, production and export;

- libraries as an area of national need and responsibility; and

- the access of Members of Parliament to adequate information.

GLOSSARY

Artificial intelligence (AI):   sophisticated computerised systems which attempt to replicate human decision making processes e.g. in playing chess, sorting oranges, simultaneous translation.

Communications (systems):   the act or process of receiving and exchanging data, information or knowledge.

Data: observations or facts which when collected, evaluated and organised become information or knowledge. Data is essentially sensory and perceptual. Data is also one of two classes of input to a computer (the other being the program).

Informatics: term used in a diversity of ways, sometimes as a synonym for computer sciences, including electrical and computer engineering, information technology and mathematics, but used by OECD as 'rational and systematic application of information to economic, social and political development'.

Information: data processed, organised or classified into categories to serve a useful purpose. Nobel Laureate Kenneth Arrow defined information as 'a reduction in uncertainty'. Information as an intellectual construct is subject to constant change. Its importance depends on who makes any information based transactions and when. It is both resource and commodity but unlike matter and energy is not consumed by use. Communications is central to information flow and essentially subsumed in it. 'Information' depends heavily on 'information technology' (IT) but is not identical. Data, information, knowledge and intelligence ascend hierarchically. The concept of encoded data organised as 'information' is the common feature of genetics, biotechnology, language, communications, mathematics, electronics, computing and robotics.

Information economy: economy marked by a shift away from employment in producing raw materials, manufactured goods and tangible economic services towards employment directly related to the collection, processing and dissemination of data/information/knowledge and associated with an exponential increase in the volume and availability of information.

Information employment: employment directly related to the collection, processing and dissemination of data/information/knowledge. Its common element is the processing of symbols (words, sounds, numbers, images, gestures) or symbolic objects (money, cheques, letters, photographs, books, keys, title deeds, tickets, shares, insurance certificates). Its products can generally be sent through the air or by wire. Information related employment includes teaching, research, communications, journalism, entertainment, music, photography, advertising, the arts,

bureaucracy, accounting, law, banking, psychiatry, insurance, betting, real estate, office work, architecture, libraries and museums, printing, travel agencies, and most welfare work. Tools of trade include telephones, computers, typewriters, cameras and pens.

'Information explosion': a journalistic phrase, in vogue from the 1970s, describing the rapid increase in available data, the use of computers and sophisticated communications equipment and the development of global networks operating in 'real time' e.g. in communications, media, banking and securities trading.

Information industries: term generally confined to the production and sale of hardware and software for electronic systems, including telecommunications, computers, office equipment, security and surveillance systems, and sometimes entertainment and scientific equipment.

'Information revolution': another journalistic phrase, sometimes used as synonymous with the 'Information explosion' but usually applied to the new technologies such as computing, microelectronics, robotics and biotechnology.

Information society: society in which time use, family life, employment, education and social interaction are increasingly influenced by access to information technology, eg. television, telephones, radios, videos, computers; sometimes the term is used as a synonym for 'information economy', both others deny that economy and society are identical.

Information technology (IT): hardware and software used as the basis for information industries, narrowly defined. 'Information technology' is central to information employment, but 'information' and 'information technology' are not synonymous. Office work, while dependent on telephones and fax machines, is 'information employment', but not part of the 'information technology' industry.

Information theory: the theoretical basis of the transmission of data in an organised form, largely derived from the work of Claude Shannon in the U.S.A. (1948) on measuring the volume of information inputs (in 'bits' or 'shannons'), the role of information in reducing uncertainty, the relationship of information and entropy, and calculating noise/signal ratios. Shannon argued that information flow should be treated as analogous to matter and energy.

Intelligence: capacity for understanding; aptitude in grasping, interpreting and expressing truths and meaning; analytical skills.

Knowledge: sometimes used as a synonym for 'information' but wider, incorporating the subjective concept of knowing; awareness, experience or consciousness of a person or group of people; accumulated stock of information.

Knowledge systems: computerised systems used in education, research and manufacturing, used as a synonym for artificial intelligence.

Post-industrial society: term, popularised by Daniel Bell, describing a society in which industrial employment has declined, while maintaining high levels of industrial productivity, leading to a sharp increase in service employment.   The term 'information society' is now used more frequently to describe the same phenomenon.

Privacy: no satisfactory definition of privacy exists in a technological context. It involves qualitative and dynamic concepts, with recognised subsets, for example information or data privacy and surveillance.

Scientific and technical information (STI):   term widely used in most OECD countries covering pure and applied research and technology, but with differing definitions, sometimes including research in medicine, economics, social sciences and engineering, but generally embracing patents and standards. Some nations prefer the term STEI (scientific, technical and engineering information).

CORRIGENDA

Australia as an Information Society: Grasping New Paradigms
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vii 'Information'

... (IT) but is a far wider concept, with educational, social, economic, employment and cognitive implications. Data, information...

viii 'Information Society'

... 'information economy', but others deny

viii 'Information Technology (IT)'

... 'information technology' are complementary, not synonymous. Office...

ix 'Post-industrial society'

... describing a society characterised by the accumulation of knowledge, the growth of professional employment, and a relative decline in industrial employment while maintaining high levels of industrial productivity,...

paragraph 1.19

... in this the 'tertiary' sector is confined to 'non-information' service workers. A 'quaternary' or 'information' sector brings together all labour employed in information activities which would have been previously classified as 'primary', 'secondary' or 'tertiary' industry.

paragraph 1.69

... no waste and its equipment has a declining unit cost.

CONTENTS

SUMMARY OF CONCLUSIONS
AND RECOMMENDATIONS

The 'Information society' is a term that has been applied to western, developed nations where communications and computer technology have brought about a concentration of the workforce in the collection, processing and manipulation of data and the organisation and transformation of this into information and/or knowledge.

Information is central to production. It affects all areas of economic, social or cultural life. The proliferation of information and, with it, the growing complexity of laws and authorities have serious implications for the state and the relationship of the individual to the state. There is the danger of the widening gap between the 'information rich' and the 'information poor'; there is the conflict between the citizen's right to know and questions of privacy, commercial confidence and protection against fraud; there is the difficulty of selecting useful information from the mass available; there is the problem of managing the vast amount of existing paper-based material and, at the same time, developing skills and systems to move into the new areas of data management and retrieval.

During its deliberations, and taking account the many views submitted, the Committee developed some guiding principles and beliefs which provided a framework for the development of its conclusions and recommendations. These included:

1   Increases in the volume of available information and the extent of information flow, much of it based on computerised technology, have accompanied substantial changes in the structure of the Australian economy and society.

2   Governments must now grasp the significance of the growth of information, a major transforming factor, with a unique capacity to change work, personal performance, leisure and quality of life.

3   Australia has fallen behind other advanced nations in failing to use its intelligence/knowledge to produce brain-based, high value-added goods and services.

4   There is an urgent need for Australia to recognise the centrality of information as a central organising principle, a tool for understanding, and a vital element in trade expansion.

5   There is a pressing need to increase the community's use of information and this requires attention to the capacity of:

. household use of information technology;

. individuals and institutions/organisations to transform information into knowledge;

. institutions/organisations such as libraries and data base providers to store and preserve information; and

. institutions/organisations to provide adequate access to information so that it is capable of being transformed into knowledge for the benefit of society.

6   There are risks associated with developing Australia as an Information Society. Increasing computer dependence and the growth of data bases (often 'cross matched') could threaten personal privacy, allow illegal access to information, create a new group of information poor, and threaten national sovereignty.

7   Within government, both politically and bureaucratically, information issues and policy are fragmented and there is a need for some rational approach to dealing with the different aspects of Australia as an Information Society. These approaches need to focus on at least the following aspects:

. the need to provide Australia with an adequate base for the maintenance and development of the economy and society; and

. the potential for Australia to develop internationally as a trader in brain-based, high-value-added goods and services.

The challenge for Australia is to encourage the debate to put information issues firmly on the national agenda in the same way that environmental issues are. There is a need to overcome the fragmentation and the lack of coordination and comprehension that characterise the current approach.

To this end the Committee has produced a set of principles, propositions, recommendations and conclusions. These form a National Information Policy in its broadest sense. They provide principles upon which governments should act and they recommend actions governments should take. They are the substance of Chapter 5 organised under the following headings:

. the right to know;

. industry;

. scientific and technological information;

. intellectual property law;

- transborder data flows;

- sovereignty;

- defence;

- telecommunications/media;

- media ownership and control;

- libraries;

- archives;

- public accounting information;

- social justice;

- privacy;

- education;

- information research;

- information statistics;

- promoting efficient/effective information use;

- promoting critical evaluation of information;

- consumer information; and

- copyright.
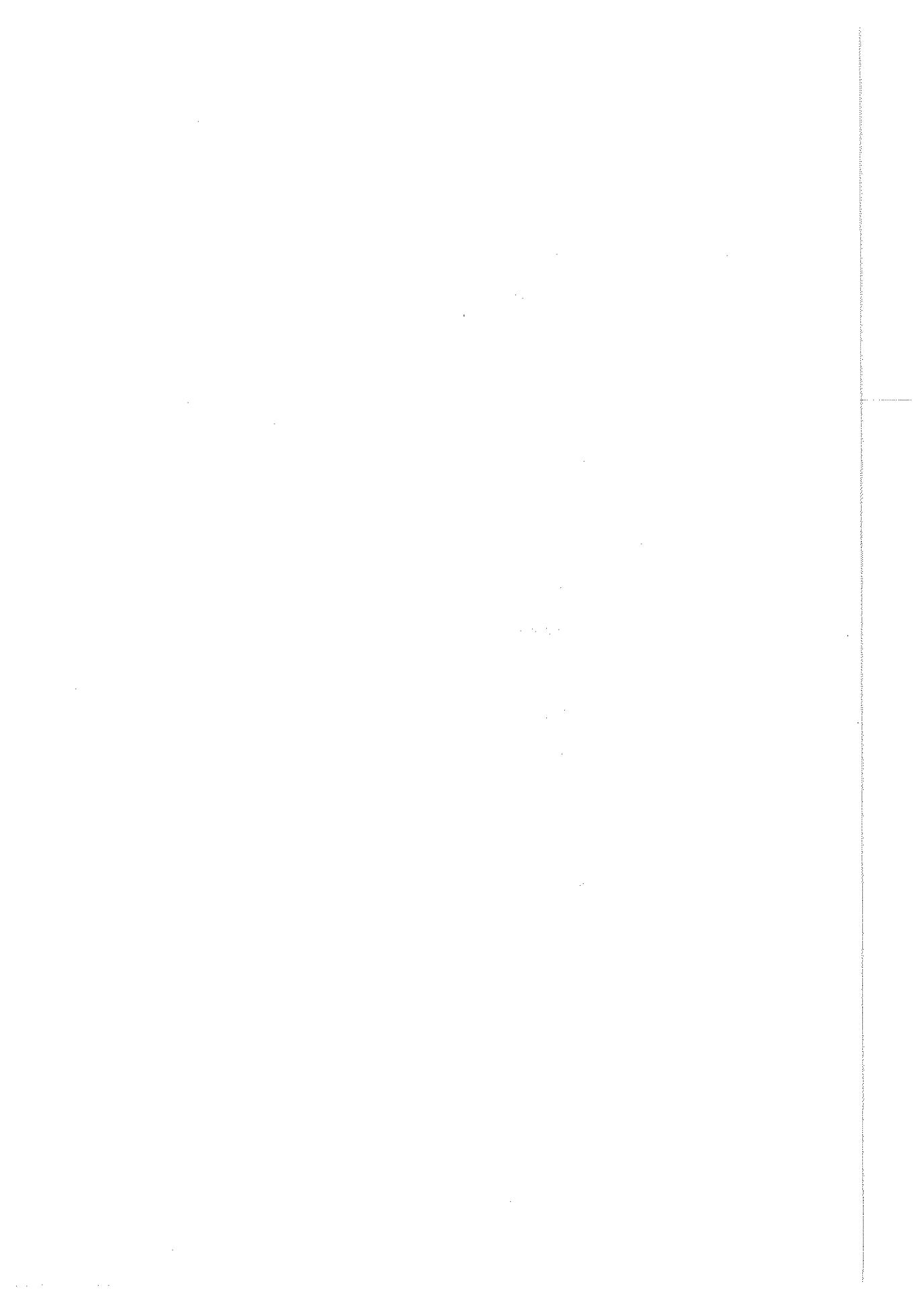
1. AUSTRALIA AS AN INFORMATION SOCIETY

The Information Society and the implications for policy

1.1   The term 'information society' is not intended to be prescriptive. In a sense, all societies have been based on information and communication has been central to the development of human communities. All societies are based on agriculture too, and the transition from an agricultural economy to an industrial economy does not mean that the production or consumption of primary products comes to an end, merely that there is a decline in one form of employment (often, perhaps invariably, linked with a sharp growth in productivity) and the growth of another sector or sectors. Similarly, the decline of manufacturing as an employer (to 18 per cent in 1981, 15 per cent in 1986, remaining there in 1991) does not mean that its importance and interdependence with the whole economy is reduced.

1.2   Describing Australia, or the United States, United Kingdom, France, Germany, Sweden, Japan and Canada, as 'information societies' is a simple form of characterisation. Much of the information activity will be inevitably related to other sectors.

1.3   While respondents agreed that Australia was indeed an 'information society', it was generally asserted that recognition of the phenomenon and appropriate policy responses were long overdue. There is an urgent need, now recognised on all sides, for information to become part of the political, bureaucratic and business agenda, to recognise its centrality as a central organising principle, a tool for understanding and a vital element in trade expansion. Calls for Australia to become a 'clever country' instead of being merely a 'lucky' one, or even an 'intelligent' one, as some have preferred, recognise that Australia has slipped behind other advanced nations in failing to use its intelligence/knowledge to produce brain-based, high value-added goods and services.

1.4   Australia's exports are overwhelmingly dominated by high-volume, low added-value raw materials. Unlike Sweden or the Netherlands, we have failed to develop brand-name goods or services which sell internationally by reputation, rather than price.

1.5   Although Australia ranks with Japan as the most urbanised country in the world, with one of the highest proportions of service employment, our export base is overwhelmingly rural and mining but these sectors are making increasingly smaller contributions to our Gross Domestic Product as shown in Figure 1 and Figure 2.

Figure 1

Australian Industry 1800 - 2000
Share of GDP by Industry Division

Per cent

Legend:
- Ownership of Dwellings
- Recreation, Personal & Entertainment Services
- Community Services
- Public Administration
- Finance
- Communications
- Transport
- Wholesale, Retail
- Construction
- Electricity, Gas & Water
- Manufacturing
- Mining
- Agriculture
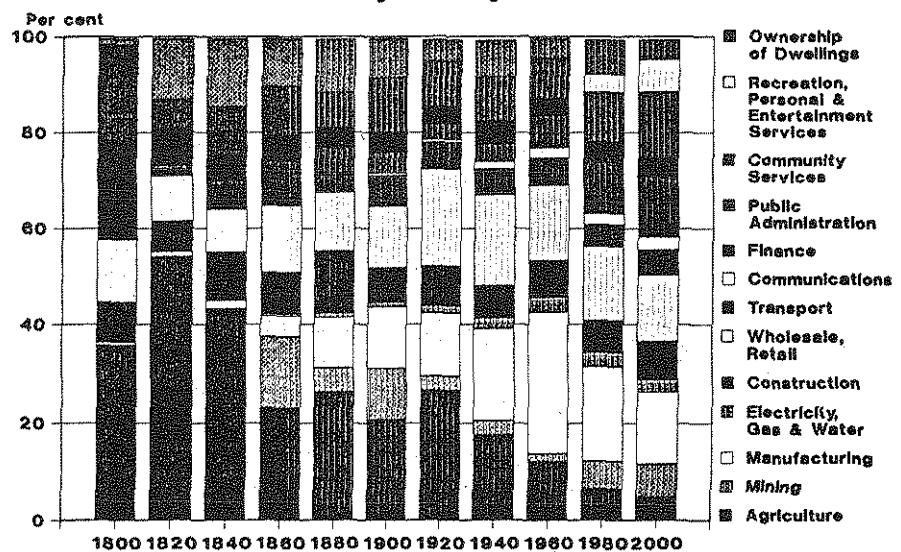
Source: *Figure provided by the IBIS Group*

Figure 2

Australian Industry 1800 - 2000
Share of GDP by Industry Sector

Legend:
- QUINARY
- QUATERNARY
- TERTIARY
- SECONDARY
- PRIMARY

Source: *Figure provided by the IBIS Group*

2
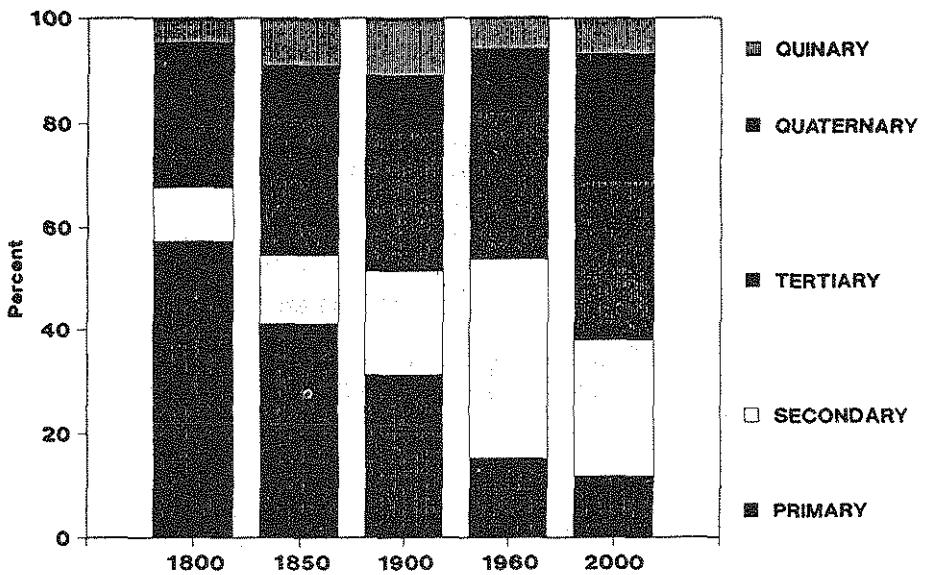
1.6   Our cities, despite their sophisticated information infrastructure, make an insignificant contribution to exports.

1.7   The declining relative importance of the mining and agriculture sector to the Australian economy is also a feature of world trade as shown in Figure 3 and the decreasing significance of these sectors is reflected in their contribution to national employment, as shown in Figure 4.

Figure 3

Share of World Trade
By Major Commodity Group
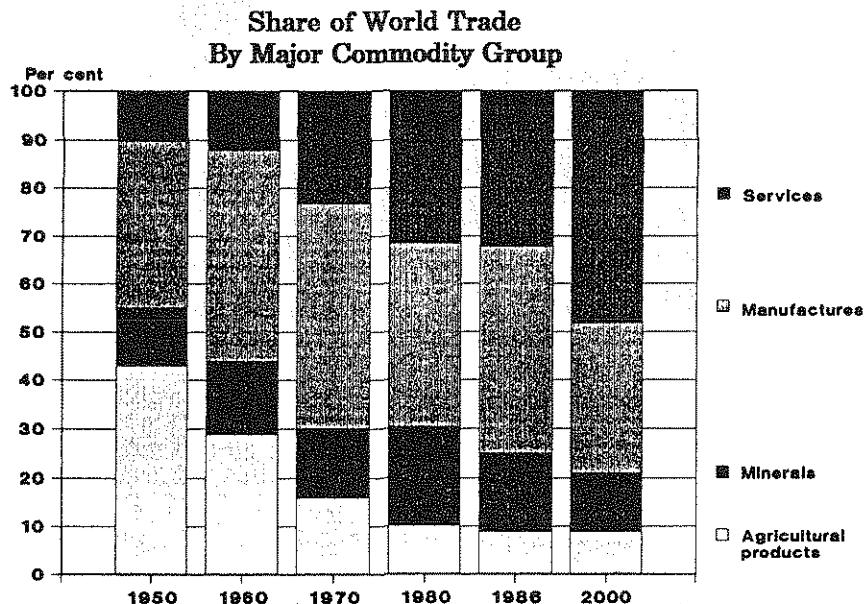
Source: Figure provided by IBIS Group

1.8   Australia is a passive information society and needs to make an urgent transition to an active one unless it is to become marginalised internationally.

1.9   Research conducted by the IBIS Group, directed by Phillip Ruthven, confirms the rapid growth in services as a proportion of total world trade and Australia's over-dependence on its traditional areas, now sharply contracting.

1.10   In information technology alone, Australia is a net importer, with a trade deficit each year estimated (depending on the IT definition used) of between $ 4 billion and $ 8 billion.

1.11   Work on future growth areas for the Australian economy reported to the Prime Minister's Science Council and to the Committee by Clem Doherty of McKinsey's emphasises the importance of strengthening the information base to add value to old industries, create new ones and establish international information linkages.

3

Figure 4

Total Employed
Share by Industry Division

Per cent

Legend:
- Unclassified
- Recreation
- Community Services
- Public Admin. Defence
- Finance
- Communication
- Transport
- Wholesale & Retail
- Construction
- Utilities
- Manufacturing
- Mining
- Agriculture

X-axis: 1901 1911 1921 1947 1954 1961 1966 1971 1976 1981 1986
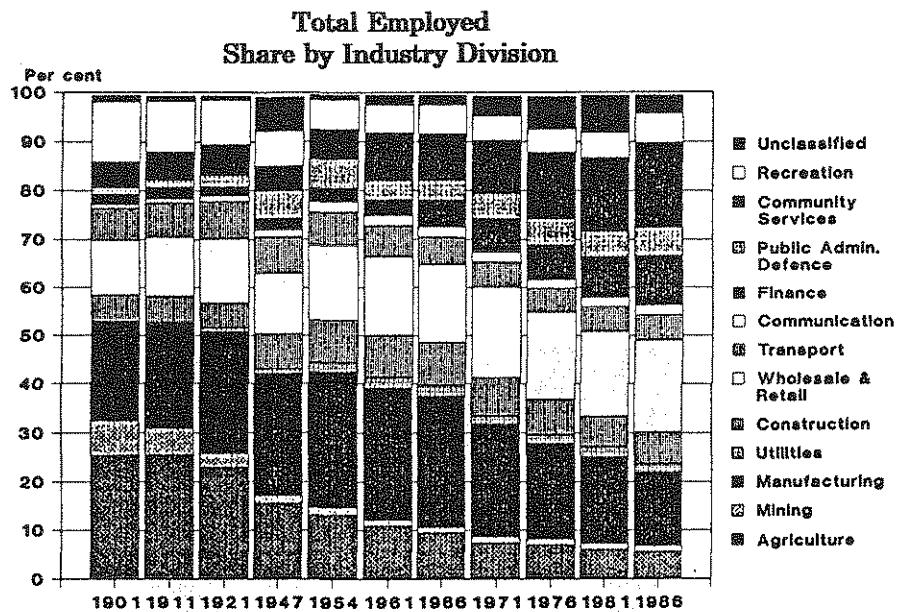
Source: Figure provided by the IBIS Group

1.12   The essential element is to enhance the community's use of information but to achieve this end attention needs to be paid to the capacity of domestic information technology to aid in the collection, collation, translation and dissemination of information. The ability of individuals and institutions to access that information and to transform it into knowledge is also important and is based in the capacity of education system to impart information skills. The capacity of our institutions to store and preserve information is also a part of this process and is a matter of long term concern. None of these processes can be considered in isolation if Australia is going to develop effective policies and strategies for its further development.

1.13   The development of information technology and the establishment of databases are important matters that require attention because they are so vital to many information processes. However it is more important to ensure that attention is given to the processes whereby useful information is extracted from the increasing amount of data and then transformed into knowledge by society for its own benefit.

The evolving information economy

1.14   Most technologically advanced societies and economies have experienced, since the 1960s, an unprecedentedly rapid increase in the use of and dependence on information, information technologies and communications systems generally, marked by the growth of electronics, especially computing.   Australia is no exception.

1.15   This exponential increase in information flow has often been called the 'information revolution'. The phenomenon itself has generated an extensive literature, both technical and popular.

1.16   Increasing urbanisation and complexity in social organisation in virtually all OECD countries has intensified the division of labour, leading to a decline in self sufficiency and an increased reliance on communications and information systems, with a rise in white collar, information and service employment. It is inconceivable that a large city, or a dispersed population, could now operate at any level of efficiency without low cost telephone and media services.

1.17   The economists A G B Fisher (1935) and Colin Clark (1940) proposed and popularised a three-sector analysis of the labour force, with primary industry comprising agriculture, mining, fishing and forestry, secondary industry consisting of manufacturing and tertiary industry including services generally.

1.18   In the 1990s, the services or 'tertiary' sector in Australia, constituted 78 per cent of the labour force. This sector is now so large as to raise questions about the usefulness of the three sector classification. Asserting that four-fifths of employment is essentially in a residual category is not very informative about areas of employment growth!

1.19   Economists in the U.S and Europe (Machlup, Porat, Boulding, Parker, Foott, Gottman) and in the OECD have proposed a four sector analysis. In this the 'tertiary' sector is divided into:

.   non-information workers; and

.   workers essentially working with information.

1.20   The latter group comprise a 'quaternary' or 'information' sector. This is a useful modification of the Fisher-Clark model (one which commended itself to Clark himself) because it helps to answer the question, 'What are people actually doing?'[1]

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[1]   The redefined 'tertiary' sector in the four-sector analysis comprises the provision of tangible economic services, involving the processing or transfer of goods, matter and/or energy: it includes transport, retailing, energy, utilities generally, storage, tourism, hospitality services. Sometimes construction is included in this sector, but the OECD joins it with manufacturing as it involves transferring materials into a finished product.

   Some concern has been expressed that the national accounts fail to recognise domestic unwaged work despite its major social and economic importance. The implications of this are currently being examined by the House of Representatives Standing Committee on Legal and Constitutional Affairs. Research is also being conducted by the University of Melbourne.
   A 'quinary' sector has been proposed which would include all domestic or quasi-domestic work, whether for wages or not, spread across an

1.21   A four-sector analysis of the United States labor force from 1860 to 1980, prepared for the U.S Department of Commerce by Dr M.U Porat, indicates the long term growth of the information sector.

Figure 5

Four-sector aggregation of the US labour force, 1860-1980
(Using median estimates of information workers)
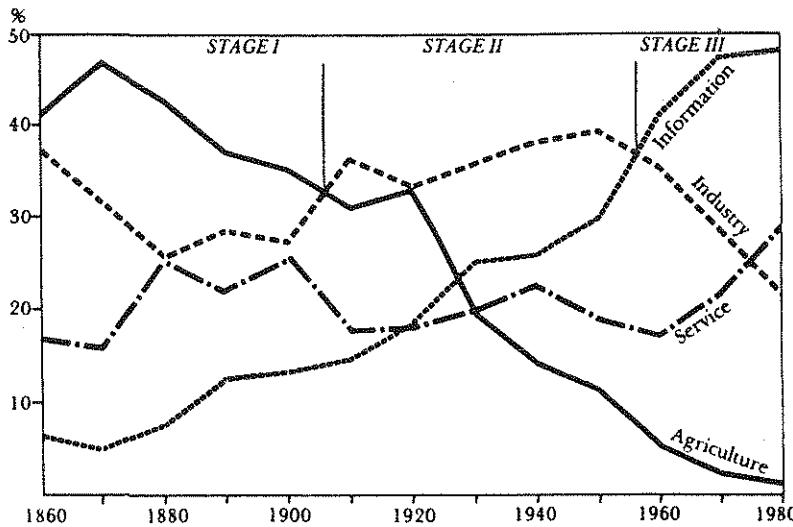
Source: Porat, vol.I, p.121.

1.22   A comparable four sector analysis of the Australian labour force from 1891-1986 compiled by the Statistics Group of the Parliamentary Library, produced the results as shown in Figure 6.

1.23   The estimates by the Statistics Group of the Parliamentary Library relied on examination of the fine-grained classification of occupations recorded in the Commonwealth Census. The definition of information workers included creative arts workers (musicians, actors, writers, photographers, artists, dancers) whose functions are more analogous to 'information' than to manufacturing, agriculture, mining and construction. Lawyers were included as 'information workers'. Some occupations, for example medical practitioners and pharmacists, are providers not only of physical services and products but of information/advice. Travel agents and bankers are essentially information providers.

extended labour force, comprising the care of children and the aged, the provision of food, drink and accommodation, cleaning, gardening and household maintenance.

Figure 6

Australian labour force in paid employment four-sector analysis, 1891-1986 (%)

Graph showing four sectors (Tertiary, Secondary, Quaternary, Primary) of the Australian labour force in paid employment as percentages, from 1891 to 1986. Vertical axis labelled % ranging from 0 to 40. Horizontal axis years: 1891, 1901, 1911, 1921, 1933, 1947, 1961, 1966, 1971, 1976, 1981, 1986.
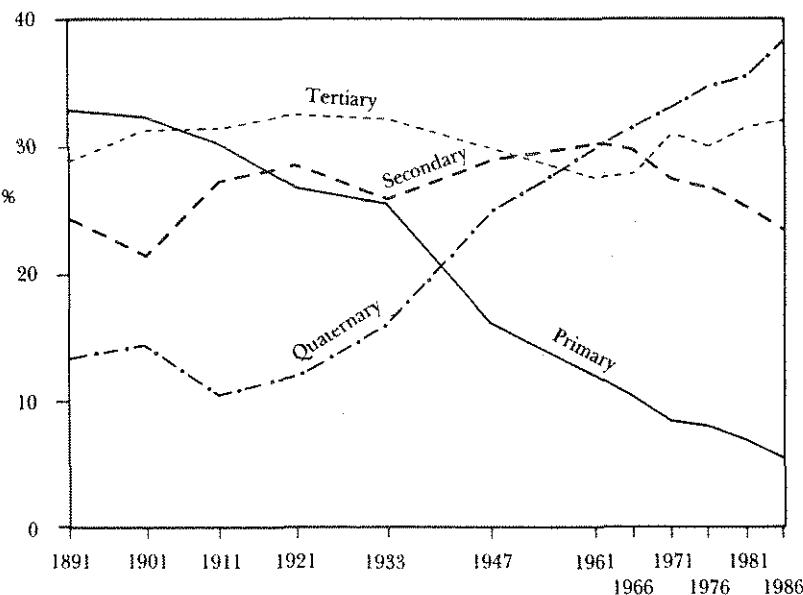
Source: Censuses of the population of Australia.

Note: Building and construction are included with manufacturing in the secondary sector and that information employment has been conservatively defined.

1.24 Figures 5 and 6 suggest that there has been a major shift in employment in both the U.S and Australia, a shift no less important for being unrecognised, with important implications for future employment trends. It raises questions about what employment is normative, and which exceptional and suggests there has been a paradigm shift away from traditional areas of employment based on muscle power and the use of energy and raw materials towards employment based on information/knowledge (not all of it high grade). As further evidence of this shift it should be noted that information plays a significant role in the more traditional sectors. Professor Lamberton advised the Committee that five-sevenths of the output of the information sector is used in the production process with the remainder equally divided between households or used internally by the information sector itself.

1.25 Old paradigms die hard.

1.26 A generation ago, people might have identified a shearer or wheat farmer as a typical Australian worker. It would not have been accurate even then, but the view would have been widely shared.

1.27 More recently, a blue collar worker, in a factory might have been identified - but they now comprise between one-sixth and one-seventh (15 per cent) of the labour force.

7

Table 1

Information Labour Force - Percentage of Economically Active

	AUSTRALIA	
	1971	1981
COMPONENT		
INFORMATION PRODUCTION	5.2	6.4
Scientific and technical	0.8	1.6
Consultative services	2.4	3.0
Information gatherers	0.3	0.2
Market search & co-ordination specialists	1.7	1.6
INFORMATION PROCESSORS	26.7	27.1
Administrative & managerial }	12.4	11.4
Process control & supervisory }		
Clerical & related	14.3	15.7
INFORMATION DISTRIBUTORS	3.4	4.7
Educators	2.9	4.0
Communication workers	0.5	0.7
INFORMATION INFRASTRUCTURE	4.1	3.3
Information machine workers	2.3	1.9
Postal & telecommunications	1.8	1.4
TOTAL INFORMATION	39.4	41.5

Source: *Table provided by Professor Don Lamberton, based on data from the Australian Bureau of Statistics provided to the OECD.*

1.28   Australian Bureau of Statistics (ABS) estimates provided to OECD in Table 1 suggest that by 1981 41.5 per cent of 'economically active' Australians were in the information labour force, comprising all those engaged in information production, processing, distribution and infrastructure. The figures differ somewhat from the *Parliamentary Library* estimate, being based on industry sectors rather than occupation. A truck driver working for Australia Post would have been included by ABS and excluded by the Library: novelists, photographers, musicians, clergy and lawyers were included by the Library, excluded by ABS. Overall, the inclusions and exclusions roughly balance out.

1.29   The OECD distinguishes between the 'primary information sector' and the 'secondary information sector'. The primary information sector includes goods and services which intrinsically convey information, eg. books, or which are directly useful in its production, processing or distribution, eg. computers, sold on established markets. This sector provides the technical infrastructure for a variety of information processing and transmission activities as well as offering information goods and services for sale directly as a commodity, as with software consultants. Put another way, the primary information sector is the productive focus of an information-based economy. The entire value added (resulting from <u>both</u>

information and non-information activities as factor input) in providing such goods and services will be attributed to the Primary Information Sector. The secondary sector records the value added by information activities - principally employee compensation of information workers and depreciation on information equipment - used up in producing non-information goods and services. It includes the costs of organising departments and firms, maintaining and regulating markets, developing and transmitting prices, the monitoring of performance and the making and enforcing of policy[2].

1.30   Table 2, based on information from the ABS, compares the components of the primary information sector as a contributor to GDP at factor cost. The most recent figures date from 1977-78, confirming that Australia has done little to provide contemporary figures on information related activity. The Australian Bureau of Statistics continues to use standard industry codes for collecting and analysing information. These reflect the primary/secondary/tertiary sector model and result in statistics that understate the importance of the information sector and information processes in other sectors.

1.31   'Information employment' is characterised by the collection, processing and dissemination of data or knowledge and its common element is the use of symbols, such as words, sounds, numbers and images, or symbolic objects which represent value (title deeds, bank notes, cheques) or represent the symbols in a tangible form (letters, books, photographs, keys, betting slips, examination papers, shares and insurance certificates). Its products are often intangible and can be transmitted electronically.

1.32   Typical tools of the trade in the sector are telephones, computers, typewriters, word processors, cameras, pens and chalk.

1.33   It must be conceded at once that the terms 'information society' and 'information employment' are neither technical descriptions nor terms of art. They are useful shorthand ways of indicating that the structure of society and the labour force are undergoing a dramatic change, one that Australia has barely noticed.

1.34   The growth of service employment, which has been a major sector in Australia from the 1860s, has rarely been the subject of much academic research and services are a disappointing contributor to Australia's exports.

1.35   Australian farmers, miners, manufacturers and retailers are, and will be increasingly, dependent on information provided by meteorologists, CSIRO and researchers, geologists, the operators of Landsat, Microbrian and other remote sensing facilities, software writers, designers, statisticians, market planners, computer operators, analytical chemists, customs officers and communications workers.

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[2]   This interpretation of the OECD view is provided by Prof. Don Lamberton, "Public Policy in the Information Society" in R J K Chapman (E2) *The Future of: Fantasy, Fatalism or Fact*, University of Tasmania 1983.

Table 2

Components of Primary Information Sector, Percentages of GDP at Factor Cost

	AUSTRALIA	
	1968-69	1977-78
I INFORMATION HANDLING SERVICES		
1 Knowledge Production Industries		
a) Research & Development	0.33	0.60
b) Private Information Services Legal, Accounting, Architectural, Engineering Technical Business Services Miscellaneous personal/repair	7.16	11.28
2 Search, Co-ordination & Risk Management Industries	5.46	8.04
Finance, insurance & real estate, Miscellaneous		
3 Information Distribution & Communication Industries	10.12	14.25
a) Education Libraries, museums .& other	3.49	6.60
b) Media of Communication Radio/TV Broadcasting	0.62	0.68
Newspapers & other printing/publishing	2.66	2.41
Telecommunications & Postal	2.44	3.12
Miscellaneous	0.91	1.44
I TOTAL	23.07	34.17
II GOODS FOR INFORMATION ACTIVITIES		
1 Consumption & Intermediate Goods Office Supplies, Photographic & optical goods, etc. Miscellaneous (radio, TV sets, watches, calculators, etc).	0.36	0.60
2 Investment Goods Measuring & control instruments Office Machinery Radio TV & communications equipment. Miscellaneous components.	1.36	1.34
II TOTAL	1.71	1.94
TOTAL PRIMARY INFORMATION SECTOR (I+II)	24.79	36.11

Source: *Table provided by Professor Don Lamberton, based on data from the Australian Bureau of Statistics provided to the OECD.*

Table 3

Categories of Information Workers

Collecting, interpreting and transferring information		Collating, mediating, negotiating with information
Public servants	Translators	Lawyers
Statisticians	Diplomats	Union officials
Librarians	Scientists	Members of Parliament
Mathematicians	Accountants	
Bankers	Economists	
Meteorologists	Academics	
Clergy		

Transmitting, disseminating information, ideas, techniques and aesthetic experience		Conceptualising
		Architects Town planners
		Philosophers
Writers	Teachers	
Musicians	Actors	
Dancers Painters/Sculptors		

Recording and publishing		Facilitating information flow
Photographers	Printers	Secretaries Couriers
Publishers	Designers	Office workers
Sound recordists		Communications workers
Lighting technicians		Postal workers
		Computer engineers

Information based agencies	Analysing probabilities
Real estate workers	Insurance workers
Travel agents	Bookmakers

Mixed functions (part information)	Providing professional information
Customs officers Police	Psychologists/psychiatrists
Theatrical workers	Physicians Pharmacists

1.36   Historically, the operation and scope of information was subject to limitations of space, time and subject, with correspondingly limited outcomes. Its impact was regional rather than national, and rarely international.

1.37   Now Australia faces the challenge of a global economy, operating in 'real time', with infinitely more variables involved, far more decisions to be made, with a greater range of consequences, that is, risk of failure or opportunities for success. This global economy is itself information based: the impact of major technological innovations, most based on miniaturisation, have reduced the unit cost of information transition, have broken down the distance factor, making traditional boundaries increasingly irrelevant.

1.38   These changes have caught Australia unawares.

Figure 7

Information Sector Employment

Information Sector Employment chart — Information Occupation as Percentage of economically active vs TIME (1951–1982). Countries plotted: United States, Canada, United Kingdom, Sweden, France, Austria, Australia, New Zealand, Federal Republic of Germany, Japan, Denmark, Finland.

Source: *OECD*

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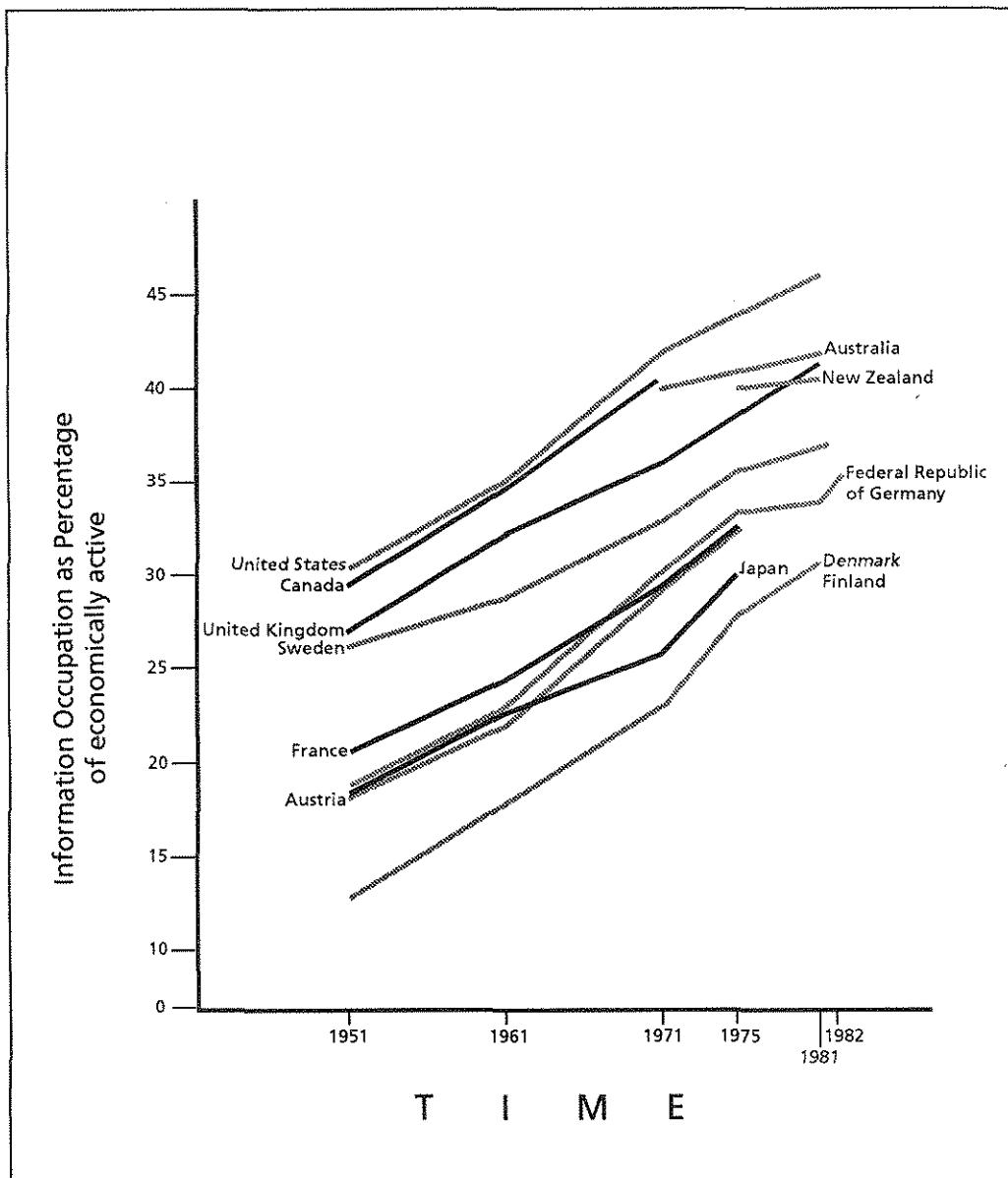
The problem of fragmentation

1.39   Governments have been extraordinarily slow to grasp the significance of the growth of information, a quality transforming factor, with a unique capacity to change work, personal performance, leisure and quality of life.

1.40   Within government, both politically and bureaucratically, information issues are the subject of fragmentation. The Parliament is well-served by the Library but singularly ill-informed about information flow. Government departments are crammed with information technology, but have shown little interest in the philosophical/intellectual context in which information evolves.

1.41   The accompanying diagram (Figure 8) illustrates the point. The Department of Industry, Technology and Commerce (DITAC) has carved out a territorial claim for information technology (IT), both hardware and software, imports and exports but has shown little or no interest in information policy, the 'rules of the road' and encouraging likely new areas for information usage which might, in turn, encourage future industrial development. DITAC equates information with IT.

1.42   The Department of Transport and Communication (DOTAC) sees information as the provision of communication systems, Telecom, Aussat, OTC, the ABC, the licensing of commercial radio and television, regulation by the Australian Broadcasting Tribunal. Policies seem to be developed on the run, in response to a crisis. No broad communications or information philosophy has been worked out.

1.43   Both DITAC and DOTAC have been represented on the OECD's Committee for Information, Computer and Communications Policy (CICCP) but neither have contributed very much to the development of international policy and have done little to further the local consideration of OECD deliberations.

1.44   The Minister of Arts, Sport, Environment, Tourism and Territories has responsibility for some major institutions: The Australian National Library, the Australian National Gallery and for funding bodies such as the Australia Council and the Australian Film Commission. Major portfolio elements appear to operate in isolation and there is no national policy on libraries, either on its own or in the context of information.

1.45   The Minister of Employment, Education and Training has responsibility for research through instruments such as the Australian Research Council but little if any work on information and related issues has been generated by the Department of Employment, Education and Training. The National Language Policy exists in isolation.

1.46   Other portfolios such as Defence, Treasury, and Prime Minister and Cabinet all have heavy involvement in and expenditure on information, but operate in isolation, often with minimal consultation. The major government agencies involved in the information sector at the commonwealth level are listed in Table 4.

1.47   A similar situation arises within each of the states.

Figure 8. Information Responsibilty in Canberra:
commanding heights and prevailing fog.
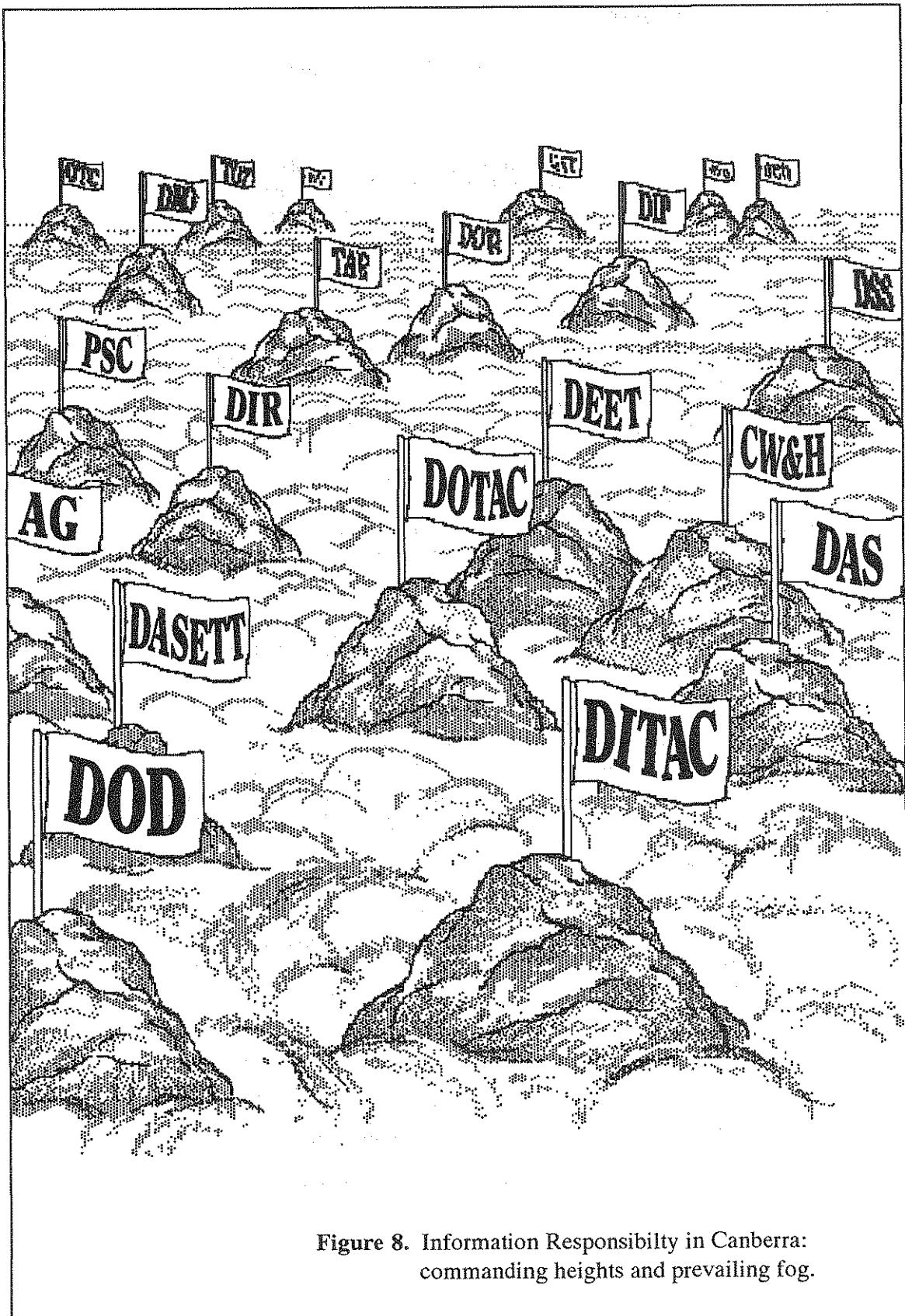
1.48   Attempts to develop a National Information Policy foundered in 1985-1986 because government departments may have been anxious about possible encroachment on their territoriality, suspecting that such a policy would be unduly prescriptive.

Table 4

Some Major Commonwealth Government Authorities involved in the information sector

Industry, Technology and Commerce
Information technology as an industry, patents
  * CSIRO
  * Industry/Industry
    Development Councils
	Transport and Communications
	Communication systems and media
	  * AUSSAT
	  * ABC
	  * Australian Broadcasting
	    Tribune
	  * Australia Post
	  * Telecom
	  * OTC

Arts, Sport, the Environment, Tourism and Territories
Environmental and meteorological information, heritage, arts, museums
  * Australia Council
  * Australian Film
    Commission
  * Australian Heritage
    Commission
  * Australia National
    Gallery
  * ANPWS
  * National Library
	Attorney-General
	Intellectual property rights, copyright; privacy protection, security and criminal intelligence
	  * ASIO
	  * Human Rights & Equal
	    Opportunity Commission
	  * National Companies and
	    Securities Commission
	  * Trade Practices
	    Commission

Administrative Services
Government procurement, archives, surveying & land information, government publishing
	Employment Education and Training
	Education, training and research
	  * National Board of
	    Employment, Education and
	    Training

Community Services & Health
Welfare and community assistance policy & programs, health administration, planning
  * Australian Institute of
    Health
  * Health Insurance
    Commission
  * National Health & Medical
    Research Council
	Prime Minister
	  * Australian Science and
	    Technology Council
	  * Public Service Commission
	  * Resource Assessment
	    Commission

Defence
Defence and national security
	Treasurer
	Economic management
	  * Australian Bureau of
	    Statistics
	  * Australian Taxation
	    Office

1.49 Most submissions received by the Committee reflected the fragmentation of 'information': archivists urged that a National Information Policy should give due regard to archival issues, libraries tended to concentrate on library issues, technicians on technicalities. Government departments, more sympathetic than they had been in 1985-1986, were prepared to support a National Information Policy so long as it was general in nature (a strategy rather than a policy) and minimised interference.

1.50 Under our federal system, no single Minister has responsibility for information policy or for setting the rules of the road about the questions of access to information. Information related subjects have a divided responsibility. For example, following the departmental division of responsibility outlined above:

.   the information technology industry is the responsibility of the Minister for Industry, Technology and Commerce;

.   the provision of telecommunications services is the responsibility of the Minister for Transport and Communications;

.   the provision of educational services is the divided responsibility of the Minister for Employment, Education and Training and the relevant state Ministers; and

.   the National Library is part of the responsibility of the Minister for Arts, Sport, the Environment, Tourism and Territories, but she has no responsibility for libraries and library standards generally; but

.   no Minister takes general responsibility for a conceptual or policy framework in information issues.

1.51 A National Information Policy will need to address, inter alia, some broad issues about the pricing of information services, access and equity, privacy versus accessibility. There are yawning gaps which need to be filled in and some Minister will need to take responsibility for co-ordination, although the creation of a dedicated Department of Information is unlikely to be proposed. Certainly, a Standing Interdepartmental Committee on Information could be useful.

1.52 The failure to address the major issues and new problems involved in the Multi-function Polis (MFP) proposal illustrates our collective weakness in tackling complex information related issues. We failed to recognise the Japanese MFP proposal in an information context. The Japanese did. We did not, hence the confusion and unnecessary delay.

1.53 The MFP episode indicated serious weakness in the capacity of the Australian political/bureaucratic system to come to grips with issues involving complex technological variables in an unfamiliar philosophical context. It could have provided an opportunity for innovation and a means for the diffusion of information through Australian society.

Some future problems

1.54   As far back as 1978 Simon Nora and Alain Minc in their report to the French Government, The Informatization of Society raised the challenges (or 'illusions') of information technology:

> *The pessimists emphasise the risks involved - rising unemployment, social rigidity, the vulgarisation of life. They see computerisation as a victory for the impersonal, repetitive nature of tasks and the elimination of jobs. It would solidify the unwieldiness and the hierarchal nature of organisations, reinforcing the omniscience of those 'in the know' while automatising the others. All that would remain would be the computers and the computerised, the users and the used. The machine would no longer be a computer (ordinateur), a tool for calculating, remembering, and communicating, but a mysterious and anonymous order-giver (ordonnateur). Society would become opaque, to itself and to its individual members, but at the same time dangerously transparent, to the detriment of freedom, to those possessed of the demiurgic technology and their masters.*
>
> *On the other hand, the optimists believe that miracles are within reach, that computerisation means information, information means culture, and culture means emancipation and democracy. Anything that increases access to information facilitates dialogue on a more flexible and personal level, encourages increased participation and more individual responsibilities, and strengthens the ability of the weak and the 'little man' to resist the encroachments of the Leviathan, the economic and social powers that be.*

They concluded:

> *This dream and this nightmare at last share the same questions. Are we headed, regardless of the appearances and alibis, towards a society that will use this new technology to reinforce the mechanisms of rigidity, authority, and domination? Or, on the other hand, will we know how to enhance adaptability, freedom, and communication in such a way that every citizen and every group can be responsible for itself?*

1.55   There is an extraordinary ambiguity in technology. What is the fundamental relationship between human capacity and technological capacity, between natural intelligence and artificial intelligence? If machines can do (or think) more, will humans need to do (and think) less?

1.56   One great hope in the computer age is that for the first time society will have the capacity to produce individual rather than mass responses to social problems and that people will actually be able to choose options for themselves.

1.57   However, increased technological dependence, combined with a lack of understanding of how the technology works and what it can do, may lead to a deterioration in confidence in personal competence.

1.58   The question of wastage of human capacity does not rank high on our current political agenda, perhaps because little empirical data is available. How far are Australians the victims of having adopted the British model of 'education of minimal expectations': the concept - which we accept so readily - that hardly anybody is capable of doing anything well (except professionals).

1.59   Within Australia, life chances in education and employment are essentially determined by Postcodes. We assume without questioning that children from working class areas either wouldn't want to extend and deepen their education, or that they couldn't do it even if they wanted to.

1.60   But have we done all we can to ensure that they have access to the information that they need, and the means to apply it? Should the public library system, for example, adopt a broader role and does it have the resources to do so?

1.61   The developing 'information society' clearly has implications for education. Should schools be increasingly specialised, computer related and science oriented? Or is this the time for greater emphasis on general education, complementary totechnology, aimed at promoting personal development, including literacy and the arts? It is a subject of enormous concern for parents. There is little evidence that it is being addressed in the community at large.

1.62   Professor Lamberton argues that the more important economic characteristics and propositions of information central to the economics of information are as follows:

.   There is a great deal of difference between personal and group or organisational use of information. The division of information gathering may well be the most fundamental form of the division of labour.

.   The cost of producing information is independent of the scale on which it is used.

.   The greater part of the cost of information is often the cost incurred by the recipient.

.   Learning takes time so that there is a limit to the rate at which decision-makers can absorb information.

.   There are usually significant information differentials in terms of possession of information, access to information and capacity to use information.

.   The stock of information and the organisations created to handle information have the characteristics of capital.

.   The output of the information sector is used to a significant extent by industry as opposed to consumers.

- The demand for information equipment, eg, tele-communication equipment and computers, is a derived demand, dependent upon the demand for information transmitted and computations performed.

- The combination of uncertainty, indivisibility and the capital nature that characterises information and information channels leaves the behaviour of organisations open to random influences and, more importantly, the successful pursuit of efficiency is likely to lead to a loss of responsiveness to change.

- The complexity of information activities makes information as a resource difficult to contain within the traditional production function mode of analysis.

- The limitations on information as a commodity dictate resort to organisations as an alternative to markets.

- Much time has been wasted in definitional debate. It is more fruitful to proceed as Arrow has done and say simply that "information is a descriptive term for an economically interesting category of goods which has not hitherto been accorded much attention by economic theorists".

1.63   These are all matters that must be examined in a National Information Policy, which should attempt to redress the enormous imbalances in information transfer and to ensure that the community grasps the significance of information itself as a factor of production and area for employment. It should also address the attendant social and political implications of the 'information society.'

Industry/Economy/Information

1.64   A National Information Policy and a national industry (or economic) policy are inextricably linked. In a global economy, with traditional barriers becoming obsolete, industrial strategy will be increasingly dependent on access to information about the size and location of markets, assessing consumer feedback, scientific discoveries and technological innovation, changes in style, fashion and design skills, the implication of various factors (economic, social, environmental, political, cultural) determining consumer demand and preference, the impact of transborder data flows, and access to information about price and currency fluctuations in 'real time'.

1.65   Information policy and industrial policy have to deal with the same issues - efficient use of resources, innovation, international competitiveness, and growth - in the same industries.

1.66   If Australia is to respond to the changing patterns in world trade and to overcome the current trend towards a declining share, information (especially collection of data followed by economic analysis) must be seen as central to future development and not peripheral.   The recent industry statement 'Building a Competitive Australia' (12 March 1991) failed to connect industry and information. The speeches of the Prime Minister contained short references (fifteen words in

19

total) to 'information industries', 'burgeoning knowledge-based industries' and to greater efficiency in telecommunications. The speech by the Minister for Industry, Technology and Commerce referred to information industries (ie. hardware and software production) in the context of offsets and the Partnerships for Development Program. There was no reference to information content or the role of information as a factor in research, development, design, innovation, marketing and anticipating changes in local or international demand.

1.67 Recognition of a new paradigm, the development of an information dependent global economy, in which Australia has the potential to play an increasing role (or faces the risk of a deteriorating one) is essential and long overdue. One reason for the delay in recognising a new paradigm has been confusion between information technology (IT) and information generally in which content and handling techniques have been equated.

1.68 Information technology is an essential element in the processing of information transactions but 'information' and 'information technology' are not synonymous. 'Information' is a far broader concept, emphasising content, not the instrument being used. It is important not to confuse policies encouraging the manufacture and use of hardware/software with the need to develop content, make it readily available, and use it as an instrument to solve personal, national and global problems. To illustrate by analogy, the motor transport system is not equivalent to the design, manufacture and sale of cars, buses, trucks and motorcycles: it also includes road design and maintenance, driver education, the provision of road maps and street signs, the rules of the road, the role of police, safety and speed standards and their enforcement, fuel supply and its pricing, insurance, repair, maintenance, dealing with road trauma, environmental and social impacts, taxation and many other elements.

1.69 Among the issues which need to be addressed in a National Information Policy are the following:

- The growing disparity between the 'information rich' and the 'information poor', with its significant class, regional and ethnic implications, suggesting that as the national skill base rises, large groups of citizens may suffer increasing disadvantages through lack of access to information.

- Whether, and if so under what circumstances, information should be regarded as a free good, with the consequent risk that goods provided freely will be aimed at the lowest common denominator and of little assistance to personal development. If, under other circumstances, information is to be regarded as a commodity, what should the basis of charging be?

- The configuration of information systems and its implications for the political process. Is information to be vertically integrated, controlled from the top and used to shore up existing political/economic structures? Or should there be a horizontal model, based on democratic access, strengthening the periphery relative to the centre,

the individual against the mass organisation, the one against the many?

- The economic significance of information: its synergy with other sectors of the economy and the areas where it differs from other commodities or resources (eg. it is not consumed by use, it is non-polluting, leaves no waste and has a declining unit cost).

- The integrity of information systems and the balance between the protection of individual privacy and the provision of public access to information. Society is likely to become further stratified with individuals at various levels of information well being. Some will be comparatively rich compared to others but information poor compared to those most able to access and use information. Even those who are generally information rich may find that they are not so well off in relation to some areas of information.

2. THE PARAMETERS OF THE COMMITTEE'S INQUIRY

2.1   In September 1990 the Committee set out, through the Parliamentary inquiry process, to consider the further development of Australia as an information society. The Committee intended that the issues for the inquiry would include the desirability (or otherwise) of adopting a National Information Policy which would set out matters which governments should be aware of, and the community should be informed about, relating to information access and its importance in Australian society, culture and the economy:

.   the elements that should be included in a National Information Policy;

.   questions of equity in information access and transfer;

.   the international dimension of the 'information explosion', its impact on national sovereignty and personal privacy, and

.   the importance of 'information' as a factor of production, with the potential to create employment and export income, recognising the threats to national sovereignty and security of failing to have an adequate national capacity to anticipate and respond to new elements in this area of increasing international importance.

2.2   In March 1975 a Committee of Inquiry into Public Libraries in Australia was appointed by the then Prime Minister to inquire into and report on the current role and effectiveness of State, regional and municipal libraries in serving the information and recreational needs of the community. The Committee was chaired by Allan Horton. The Horton Report, 'Public Libraries in Australia', was published in March 1976 and made a series of recommendations about networking to avoid duplication of expenditure functions and to make the most effective use of resources. None of the major recommendations were acted on. The Committee decided that it would also investigate whether its recommendations - the only serious public inquiry into library services in Australia - were still relevant in the 1990's and that it would investigate the current situation to determine if it had improved, deteriorated or whether the status quo been maintained.

2.3   Information use in the Australian community is such a pervasive activity that it is very difficult to define the parameters of the 'information society'. It is just as difficult for the purposes of the Committee's inquiry for it to establish a working definition of information. Previous attempts to discuss information as a policy issue have foundered because of conflicting definitions and differing priorities of the various sectors that tend to be involved in the debate. The Australian Council of Library and Information Services (ACLIS) believes that the lack of progress on the development of a National Information Policy has been largely due to a combination of factors, including the lack of a commonly understood definition of 'information'.

2.4   The Committee's approach has been to use a broad definition of information and to see the 'information society' in terms of the changes described in the preceding section. It is more important to understand the processes that transcend

sectors and the inter-relationships between sectors than it is to define static information.

Information and the economy

2.5   Many of the submissions received by the Committee discuss the role of information as a factor of production or as a commercial product.   These submissions repeated the arguments set out above that the key to Australia achieving clever country status is action that will make individuals as well as our organisations and corporations better and more frequent users of information. To gain significant economic benefits Australia will have to participate vigorously in the international market place for information and information products. This will require our managers to become more competent in the use of information. The convergence of telecommunications and information technologies has increased the tradability of information intensive services which have become a major component of world trade. Telecommunications and information services are perhaps the most important stimulant to economic growth and development globally[1]. Such services are important because they are directly tradeable and because they also facilitate trade in other goods and services.

2.6   DITAC has identified the services sector, based on advances in communication and data processing technologies, as an area that has potential to contribute to Australia's trade performance[2]. Information intensive industries with export potential include telecommunication services, education services, finance and insurance, legal services and consultancy services.   Other promising service industries such as tourism and health and medical services also include significant information components.

2.7   It is argued that there are barriers to developing information industries in Australia which may limit the extent to which they can contribute in the way suggested by the Department. Dr Bob Frater, Director of the CSIRO Institute of Information Science and Engineering advised the Committee of at least three problems facing the information technology industry in Australia including the size of the domestic market, the comparatively unfavourable economic environment (particularly perceived high interest rates) and the inability of Australian business to capture the benefits of research[3].   However, with appropriate government involvement in the market place and with provision of appropriate assistance to industry -   for example, the role of government in stimulating particular developments such as the Australian Telescope, submarine and frigate programs,

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[1]   R. Brian Woodrow 1989 'Trade in Telecommunication and Data Services' in *Electronic Highways for World Trade*, edited by Pewter Robinson, Karl P Sauvant and Vishwas P. Govitrikar, The Atwater Series on the World Information Economy, Westview Press

[2]   Department of Industry, Technology and Commerce, Annual Report 1989/90, Appendix 1.

[3]   Evidence pp 317.

there may be scope to enhance Australia's performance[4]. The Australian information technology market may be small compared to major developed economies but it is large in absolute terms with a turnover of over $11 billion in 1990. It can for the purpose of world trade be seen as one of several strategic market places[5].

2.8   The Australian Information Industry Association considers that for the information technology industry to develop there must be an attractive investment environment and a recognition of the integral role government plays in facilitating industry development[6]. The Association calls on the government to establish and articulate clear policy objectives supported by initiatives which promote and support investment and growth and remove policy inconsistencies which impede growth.

The broader role of information in an educated society

2.9   Development of an dynamic export orientated information industry will not in itself ensure that all Australians benefit from being part of an information society and the evidence received by the Committee contained expressions of concern about the social impacts. For example, some of the submissions argued that there has been an over-emphasis on information technology and computer literacy at the expense of a consideration of important social processes:

> *the consequence of this oversight has been a mis-match between expected social outcomes for the information society and models for attaining such goals. Information can equally legitimately be seen as a commodity, a resource, a cultural artefact, a social institution, a cognitive process, a political tool, an epistemological medium, an expression of unconscious archetypes or numerous other entities or processes. There is a need for examination of these other roles and their place in our society.[7]*

2.10   This approach recognises that information is more than data to be stored and processed. It also involves transfers and relationships within society and between individuals. If, in addition to building our economy on a base of strong and active information industries, we can also ensure community access to information we will not only progress towards becoming the clever country but we will also become an equitable and aware clever country.

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[4]   Evidence p.335

[5]   "The World Communications Industry in 2010: An Overview" report prepared for the Department of Industry, Technology and Commerce, January 1991.

[6]   Australian Information Industry Association 1990 'Industry development, the information industries in the 1990's.

[7]   Department of Information Services RMIT - Victoria University of Technology, submission p.1

2.11   To reduce social inequality while realising the potential of the information society, we need to broaden our concept of information to include the social, political and cultural roles of information.   There is also a need for people to develop an understanding of their information rights and become information literate.   This could take the form of increased opportunities for students to develop information awareness and skills in a more concerted way than is currently the case in education.   At the tertiary level there is a need for all graduates to have an understanding of the links between values and information as well as information handling skills.   There is also a need for specific programs to be put in place at all three levels of education to develop information handling skills in students.   These programs should allow for the subtle nature of information and not be equated with computer skills.

2.12   ACLIS submitted that not only is information important as a support for research, development and economic progress but that any country with serious policies for economic, social and cultural development needs complementary policies to ensure the supply and use of information[8]. The State Libraries Council stated that information is important to education at all levels, to research, to economic, social and cultural development, to participative democracy and to welfare delivery. The Council suggested that the progress of society depends on the availability of knowledge because an informed society is also a free society and that the complexities of contemporary life demand a critical society.   If this aim is to be realised, citizens require ready access to the breadth of available knowledge so they can make informed decisions in the management of individual, corporate or national needs.   Modern technology has not only extended the boundaries of human knowledge, but has also provided the means for its arrangement and immediate access [9].

2.13   The libraries and community information services play a vital role in meeting the information needs of the populace:

> *Libraries as a major information supplier have, for centuries, been the universal repositories of cumulated human knowledge.   Their unfettered operation is a guarantee in a democratic society that all citizens can have equal access to knowledge. Effective library services enable the citizen to evaluate, in a critical manner, the issues of the day, independent of the glib, factional or sensational packaging of information so readily available and so attractive as a substitute for independent analysis[10].*

2.14   The future role of libraries was considered throughout the Committee's inquiry, not so much because this role was disputed but because there were doubts about the ability of libraries to continue to provide an adequate level of service. Libraries are facing an ever expanding body of information and increasing costs of

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[8]   ACLIS, submission p4.

[9]   State Libraries Council, submission p.1

[10]   *ibid*

both the materials they seek to acquire and the new technologies they are called upon to use. The commercialisation of information has made things more difficult for libraries and resulted in pressure for the introduction of direct user pays practices in community libraries.

2.15   It is unquestionable that there are tremendous benefits to be gained if Australia can further advance as an equitable information society but it is also clear that there are major obstacles to be negotiated. This suggests that there is a need for positive action by all sectors of the community including the three levels of government. Such action should be coordinated across all information activities and should be carried out in the context of some overall policy.

Information and the risks to society

2.16   A commitment to the further development of Australia as an information society cannot be made without recognition of, and due regard for, the risks that might be involved. The risks posed by this development threaten individuals and the nation as a whole.

2.17   The community is clearly concerned about risks to privacy associated with the establishment of personal information databases and the cross matching, both legal and illegal that subsequently occurs. The cross matching of data, referred to as data-matching, involves the systematic comparison of two or more sets of personal data collected for separate purposes. It is usually done to ascertain if there are any discrepancies in what is known about an individual. The development of information technology has removed the physical barriers to widespread data-matching. According to the Privacy Commissioner this is a particularly sensitive activity because it brings together records from different areas of administration in what could become personal dossiers and because it has the potential to give rise to unfair or inaccurate interpretation of data.

2.18   Concerns about data-matching are being addressed by the Privacy Commissioner who, in a discussion paper, said that data-matching involves a transgression of individual privacy of a very serious kind and that the human rights issues involved, although important, are little understood[11]. The Privacy Commissioner found that the development of data-matching in Australia had been stimulated by the development of information technology and by the pressure to reduce government expenditure through fraud control and social service payment regulation.

2.19   The Committee was given evidence about the consequences of illegal and inappropriate access to information and its inquiry was carried out at a time when serious allegations of unauthorised access to government databases by a range of individuals and organisations were being aired in the New South Wales Independent Commission Against Corruption[12]. In recent years there have been legislative and

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[11]   Federal Privacy Commissioner 1990 'Data-matching in Commonwealth Administration'.

[12]   Evidence p.417

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administrative gains in relation to privacy protection and the use of information technology but concern still exists.

2.20　Privacy is not the only concern - it is apparent from the submissions that some in the community see risks associated with the commercialisation of information. This is occurring as information is increasingly seen as a commodity or a factor of production. Some measure of commercial incentive is necessary to encourage information services and it is necessary to provide intellectual property rights to encourage innovation but there is the risk that the user pays principle and copyright will be so widely applied that information will be restricted to those who have the capacity to pay. We already have the 'information poor' and the 'information rich' in this country and such developments will serve only to widen the gap to the point that the a new class structure may emerge with the information poor at the bottom.

2.21　By seeking full and open participation in international market places, Australia as a sovereign entity places itself at risk. As neither a major manufacturer nor a strategic market Australia is not in a good position to have its views prevail in those circumstances where it wants access to products, services or markets. At present we face problems arising from our imbalance of trade and it has been suggested that our dependence on imported technology is a threat to our sovereignty. Transborder data flows also raise questions in relation to jurisdictional authority in relation to matters such as privacy protection, copyright and product liability.

2.22　Australia may have to make a decision on how far it is prepared to risk some degree of economic independence in order to participate in the world information economy. This will involve, for example reconciling the objectives of telecommunications policy with those of trade policy. Telecommunications policy is essentially concerned with the effective and efficient operation of domestic services and the impact of those services on broader economic and social policies. Even at the international level this usually requires some emphasis on technical matters, regulation and formal cooperation. Trade policy tends to be concerned with liberalising trade, avoiding collusion and removing barriers to international commerce. OTC suggested to the Committee that large international service companies could not function without the capacity to move information across international borders with speed, accuracy, reliability and security.[13] Government regulations and the activities of government owned telecommunications monopolies can be seen as restricting information flows but the continued growth of trade in services is dependent on the unrestricted flow of information. The free flow principle is one of the driving forces behind the liberalisation of international telecommunications.

Defining a role for a National Information Policy

2.23　Consideration of the need for a National Information Policy has been a major theme of the Committee's inquiry. The large number of divergent and conflicting

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[13]　OTC, submission p3.

issues and the decisions that need to be addressed suggest that there is a need for some rational approach to dealing with the different aspects of Australia as an information society.

2.24   For example, Telecom submitted to the Committee that there is a need for a higher-level, overall policy framework, within which a range of other policy and strategy initiatives would be pursued.   Telecom provided a detailed and comprehensive submission on the transition of Australia towards an information society, a subject with which Telecom has been heavily involved since the publication by it of 'Telecom 2000: An Exploration of the Long Term Development of Telecommunications in Australia' in 1976.   Indeed Telecom regarded telecommunications and information as inextricably linked and suggested the need for a National Information and Telecommunications Policy. However, Telecom did not propose any new elements for inclusion in such a policy. For example, they considered that policies relating to the telecommunications industry, Freedom of Information and privacy are seen to need to co-exist within an 'information society' policy framework. The range and interdependence of a number of key overlapping policy areas indicates the desirability for the development of a higher-level strategic framework.

2.25   Whilst this view was generally supported, the Committee received several submissions that presented a more cautious case on the question of a National Information Policy or which advocated a different solution. The Department of Defence, for example, submitted that such a policy may be so broad and might impinge upon existing practices and accepted divisions of responsibility to such an extent that it may well be politically and administratively unsuccessful. Others for example, argued variously for a series of policies, a consolidation of existing policies, a strategy or a plan.

2.26   The need for a National Information Policy was raised in a discussion paper circulated by the former Department of Science but it appears that no further comprehensive work was carried out by the Commonwealth Government after the Department was abolished in 1987. However, a number of professional groups, especially library services, have also called for the establishment of a National Information Policy.

3. A POLICY FRAMEWORK FOR INFORMATION ISSUES

3.1   Although the need for an over-arching policy framework to guide the responses to information issues was seen as self evident, the submissions received by the Committee indicated a variety of views about what could be achieved (remembering the problems and opposition of 1985-1986), and concerns were expressed about the feasibility of having a single 'policy', or 'strategy' or 'plan', whether it would be prescriptive and interventionist, or descriptive and bland, integrated or segmented. The submissions did not contain unanimous support for what was described as a National Information Policy. In some cases the lack of commitment to such a policy reflected a lack of understanding of what the term might mean but in other cases there was a clear concern that such a policy could be unworkable or unnecessary.

3.2   A discussion paper prepared by the then Department of Science in 1985 was circulated prior to a National Information Policy Workshop. In summing up the proceedings the workshop chairman suggested that it had identified options but did not indicate if a consensus view had emerged.[1] There were four approaches mooted at the workshop including:

> .   the "barnyard door" approach, setting out for public disclosure a continuing and evolving set of principles;

> .   the "framework" approach involving a more detailed statement or set of guidelines within which other elements can operate;

> .   a number of more targeted information policies; or

> .   a new authority to advise government.

3.3   Subsequently the Department of Science proposed the establishment of an Advisory Council of Information Policy and a set of national information principles which would reflect the government's policy and objectives in relation to information issues, promote consistency of policies and activities across government departments.[2] The proposal for an Advisory Council was endorsed by a ministerial council but no further action was taken. However, ACLIS was established in 1988 with responsibility to *"identify the necessary elements of the national information system and to develop a National Information Policy".*[3]

3.4   ACLIS, the Australian Library and Information Service (ALIA) and some others suggested that the question of a national information paper be approached with a view to promulgating a series of inter-related policies rather than adopting

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[1]   National Information Policy Workshop, Proceedings and Report of the Workshop, Canberra 3-4 December 1985 Department of Science 1986.

[2]   Australian Council of Libraries and Information Services, submission p.2

[3]   *ibid, p.3*

a rigid centralised policy framework. There may be a view that a National Information Policy could be rigid and centralised but this was not advocated by the Committee. ACLIS's preferred approach appears to be:

> ... an acceptance of the principles of total information management in place of existing fragmentation and an acceptance of the extreme importance of full consultation and cooperation between all sectors of the information industry.[4]

3.5   Many of the submissions that explicitly supported some form of a National Information Policy were from government agencies low in the bureaucratic pecking order and from organisations involved either in providing information services to the community or seeking to facilitate and support development of the information industry. These organisations lacked bureaucratic power compared to some other stake holders in the information services area. By comparison, those organisations with power were more inclined to urge caution and to identify problems with proposals for a National Information Policy.

3.6   The submissions that either supported a National Information Policy or at least accepted that such a policy was to be promulgated often took a sectoral view and saw the policy as a vehicle for developing and delivering specific services. In many submissions, whether broad ranging or focussed on single issues, the need for a National Information Policy was seen to be imperative, for example the following argument was typical of several submissions:

> ... a National Information Policy is essential if Australia is to benefit economically from the changes which are occurring ... (and) ... to address issues of education, training, management, and any other issues ... which might ... require national initiative ahead of market need.[5]

3.7   Many of the submissions that argued for a National Information Policy did not expand on the question of what such a policy might be. There were however some supporters, like ACLIS and ALIA, who questioned the concept, if not the need for some broad approach to the coordination of policy and there were a range of alternatives put forward by others who saw a need but were concerned about the concept. The proposals included:

.   a national Information Bill of Rights;

.   a series of interacting policies;

.   a set of principles;

.   an explicit restatement of existing but implicit policies;

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[4]   Australian Council of Libraries and Information Services, submission p.11

[5]   Kevin Davies, submission p.1

.   a national information strategy;

.   a national information plan to support policy coordination;

.   development of specific recommendations for high priority information related issues dealt with in sequence;

.   a higher-level, overall policy framework within which a range of other policy and strategy initiatives can be pursued; and

.   a mechanism (Office of Information Policy) that could gain a greater understanding of the issues, prepare short term strategies for greater cooperation and plan (in the long term) for an information policy.

3.8   The Australian Computer Society offered conditional support for a National Information Policy subject to it being comprehensive and developed progressively. The Association stated in its submission that the development of a National Information Policy must be a multi-stage process involving:

.   an initial round of public submissions and deliberations by the Committee;

.   the establishment and publication of a framework for subsequent deliberations;

.   further rounds of submissions on specific matters within that framework, undertaken variously by the Committee and other agencies;

.   formulation and publication of a Draft National Information Policy;

.   a Summit, at which the commitment of a variety of institutions should be gained;

.   adoption of the Policy by the Government;

.   funding of particular programs to implement the Policy: and

.   implementation of those programs by a wide range of organisations.

3.9   An even more cautious note was sounded by the Department of Defence, and some others. The Department, for example, suggested:

A National Information Policy might seek to prescribe comprehensively the criteria for access to information in broad areas of public policy such as a government's accountability to the community, regulation of private economic activity or the international transfer of information. However, in each case, such a policy may well impinge upon existing practices or divisions of responsibilities which represent the resolution of prior political issues...

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In its most general sense, information is the basis of all public and private social activity. A policy which attempts to deal comprehensively with the accumulation, use and dissemination of information will raise issues of such a fundamental political nature that the prospects for any sort of comprehensive policy approach seem unlikely at best.[6]

3.10   The Department of Defence saw that there were three areas where a comprehensive policy approach might cause breakdowns in information processes. It stated that a National Information Policy might, for example, consider information from the perspective of a government's accountability to the community but it thought that such a policy would inevitably be seen to impinge upon those parliamentary practices and legal procedures which are held to guarantee the democratic nature of our society.

3.11   The Department also argued that a National Information Policy could address the information requirements for adequate public regulation of private economic activity.   However, it was considered that the more broadly such a policy was directed the more likely it would be constrained by legal and economic considerations concerning public access to privately owned information. Similarly, it might impinge upon priorities in other policy areas or on the responsibilities of other levels of government. However, a National Information Policy concerned with the application of information technology in this context or with developments in the information industry, by being more selective, appeared to be more possible to the Department. An information policy was also seen as possibly dealing exclusively with international aspects of information transfer, but the Department concluded that this was an equally difficult area for policy development because of the possible range of issues involved.

3.12   The Department of Defence continued its arguments in a similar view in relation to privacy and suggested that from the perspective of public policy development, it appeared questionable whether a single National Information Policy was the most appropriate vehicle for dealing with the issues of privacy and equity which may arise with respect to information held by government agencies across a wide range of portfolio programs.   The Government's social justice strategy suggested a different approach to the Department for dealing with these issues because it was seen to require program managers in all departments and agencies to take account of the four elements of social justice (equity, equality, access and participation) in developing, implementing and evaluating programs.   The Department suggested that social justice considerations such as equity and privacy in access to information should already be receiving attention across the entire range of government programs.

3.13   Similarly the Department of Transport and Communications submitted that:

... the concept of a general policy for information is really quite amorphous. Information can take many forms and it can be

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[6]   Department of Defence, submission p.1

transmitted in different ways within the print and electronic media. Information can be collected, disseminated, transferred, stored, processed, applied and manipulated. If a single information strategy were developed to co-ordinate each of these elements simultaneously, the Department considers that it would, of necessity, be so broad as to render it ineffective for policy purposes. If a national information strategy were to be developed, then separate policies seem necessary to address these various elements. For example, specific policies may need to be developed which govern what information should be stored by Government organisations, yet separate policies may need to specify what information can be disseminated. Whether the policies would need to be different would depend very much on the issues concerned...

Thus an attempt at policy integration of any one of a number of information issues into a single strategic framework would seem somewhat ill-conceived, and, if not impossible, it could run the risk of over-simplification of complex and diverse issues. This is not to say that there is no room for more integration of related policy issues than we have at present; only that attempts to achieve such an integration should not be over-ambitious.[7]

A representative of the Department clarified its views when he told the Committee that:

...the Department is not opposed to the suggestion of a National Information Policy. What we have tried to do from our experience is show some of the problems in finding precisely how you develop those sort of structures.[8]

3.14   The Committee clearly has a range of proposals and options to consider when developing its conclusions about the best approach to take to the question of a National Information Policy. In particular, the Committee has had to recognise the different concerns and priorities of various interest groups and academics. It asked a number of these to suggest inclusions for a National Information Policy in the form of principles and objectives.

3.15   Some of the submissions presented to the Committee included proposals for principles to be followed when dealing with information issues. Notable among these was the submission from the Community Information Networkers (SA) Inc which included the following series of principles for the provision of community information:

.   People have a basic right to know about their rights and responsibilities and the services and resources available to them to meet their needs and improve the quality of their lives.

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[7]   Department of Transport and Communication, submission p.14

[8]   Evidence p.1031

. Community information provision takes account of gender, sexuality, race, language, culture, creed, age and degree of disability.

. Community information provision acknowledges, and within its operation takes account of, the views, attitudes and pre-existing information networks of people and groups within the community.

. Community information services are a component of the community development process which

  - involves community consultation and the participation of consumers in the planning, development and provision of community information services

  - includes promoting self-help with the local community, social action and advocacy, raising local issues and influencing the development of social policy, as well as the provision of community information.

3.16   Other areas that have been dealt with in this way included the provision of scientific and technological information, education and information literacy, privacy, intellectual property, accounting information, community libraries, special interest libraries and the development of the information industry. These represent only a part of the range of issues and activities that could be brought under the umbrella of a coordinated approach to information policy.

4. A NATIONAL INFORMATION POLICY

> A popular Government, without popular information, or the means of acquiring it, is but a prologue to a farce or a tragedy, or perhaps both. Knowledge will forever govern ignorance and a people who mean to be their own governors must arm themselves with the power knowledge gives.
>
> - James Madison (1822)

Introduction

4.1   'Policy' should not be read narrowly or prescriptively but as a broad outline of principles which, after consideration by Government, should be presented to the Parliament for debate and endorsement by resolution of both Houses.

4.2   Principles in a National Information Policy should be an important factor in framing future laws. Some general principles, such as 'the right to know' have probably been taken as implicit and axiomatic, but appear nowhere in legislation, regulation or operating procedures.

4.3   The term 'Information society' or 'Information economy' is often applied to countries in which a high and rising proportion of the labour force is employed in the collection, processing and manipulation of data, which is then organised and transformed into information and/or knowledge. Such countries include Japan, the United States, Great Britain, Canada, France, Germany, Italy, Sweden and Australia.

4.4   With the development of communications and computer technology, information has become a decisive factor in the global economy which transcends national boundaries and increasingly operates in 'real time', and in which transactions are affected by rapid changes in currency values, speed of delivery and the quality of advice for decision making.

4.5   Information is increasingly important in all areas of employment and production - agriculture, mining, manufacturing, and services generally. However, information policy has generally evolved in an uncoordinated fashion, often responding to a new technological or commercial form, for example the development of commercial television, or reacting to a real or perceived crisis, for example privacy legislation, but without developing or applying an agreed set of principles which could apply to 'information' issues generally.

4.6   Information is a central factor in production, and is at the core of education, the media, the arts, welfare, and other aspects of a sophisticated society. The National Information Policy proposed in this chaper is intended to promote discussion and understanding of the nature of an 'information society' and to assist citizens, community groups, corporations and government itself to understand how information related changes can improve the quality of life.

4.7   The sheer complexity of modern urban life, with its proliferation of laws and authorities makes it hard enough for educated, computer literate citizens to keep abreast of change: the task may defeat citizens without such skills, leading to a widening gap between the 'information rich' and the 'information poor'.

4.8   Many Ministers, in Commonwealth and State governments, take responsibility for some aspects of information policy. Strong claims for exclusive territoriality are asserted by powerful Departments. The National Information Policy recognises the inevitable diversity of interest and does not propose that all information activities of government be placed in the hands of a single Minister. Nevertheless, information related issues - in a broad context, rather than a set of fragmented contexts - ought to be placed on the national political agenda, not only debated but understood in Cabinet, Parliament, Premiers' Conferences, the media and the community generally, with far more information flow about information flow, so that neglected areas, such as a national policy on libraries, can be recognised and addressed.

4.9   Much has been said about the explosion of information. However the explosion has been in words rather than content - while the amount of information available is increasing at an alarming rate, additions to our national store of knowledge are increasing rather more slowly. Part of the challenge, particularly for scientists and other technical users is to work out ways to sort the useful "information" from the data in which it is embedded.

4.10   One area where there has been a true 'explosion' is in the gathering of statistics and factual data.   This adds another dimension to information management and leads to the requirement for the more effective presentation of complex data.

4.11   As part of the development of a National Information Policy, we need to understand the current status of Australian information management in this country.   Our current community understanding of appropriate approaches to archiving of paper-based material is poor. Our paper-based archive systems are not well understood and do not do the job for which they were designed. As a first step, we need to understand which information needs to be stored for future reference; what contextual information is necessary for its comprehension; and which information, once used, is valueless and therefore not worth saving.

4.12   Environmental impact statements, controversial and expensive as they are, have at least forced developers as well as national, state and local governments to consider the impact, both long and short term of new proposals. A case could be put for energy and resource impact statements being required in the future.   The Committee is not suggesting a formal requirement for 'Information Impact Statements' but considers that administrators, politicians, researchers, proprietors, managers and all information users should be encouraged to consider the information implications of what they are doing, to see if and how their operations create a synergy which helps information to be used more usefully and efficiently to pursue social, intellectual and economic goals, both collectively and individually.

The Elements of a National Information Policy

4.13   The following propositions should be presented to the Australian Parliament for debate and adoption as a National Information Policy, setting out appropriate guides for access to information in a period of rapid technological change.

1. The Right To Know

4.14   'Information' is a resource, a critical factor in production, economic growth and the development of tradeable services. 'Information workers', broadly defined, constitute the largest single employment sector in Australia and other advanced economies.

4.15   Access to information is a basic right and a precondition to personal and national autonomy. It is also a basic right to be able to reject unwanted information. This basic right must be qualified by other peoples' right to privacy. The right is absolute for one's own affairs, and will normally be broadly construed in matters of public concern, subject to some qualifications such as national security.

4.16   The Australian community is divided between the "information rich" and the "information poor". Information facilities are remote from those who need them most. They do not know what is available and do not know how to remedy their lack of information. Some people, perhaps alienated by the complexity of social processes, may chose not to know.

4.17   Information is essential to enable Australians to participate fully in society, access available services and entitlements, particularly government services and entitlements, act on opportunities, and make informed decisions which shape their lives. Therefore, essential information must be accessible to all as a factor in promoting social justice in Australia.

4.18   The financial and social costs of providing information by all levels of government should be minimised and in particular open systems and consistent standards should be adopted.

4.19   Growing inequity in "information transfer" threatens the position of individuals relative to governments and corporations. An increasing volume of available information due to new methods of gathering, storing and dissemination may lead to fragmentation of knowledge:

> .   a growing sense of "alienation" and "anomie" in many people who feel unable to understand what is going on around them;

> .   a risk that power will move away from representative institutions; and

> .   a major threat to privacy from personal data files in private hands, especially with the prevalence of computer based technology and data matching.

4.20   The entitlement of Australians to access to information, should be without regard to where they live, of their social and economic position, language, sex, age, mobility or physical disabilities.

4.21   Government should encourage Australian industry to recognise the centrality of access to information both international and domestic as a business strategy, and should work with the private sector to determine how information access can be facilitated.

4.22   The Commonwealth of Australia should take the leading role in:

- providing consistency to national-state information relationships;

- increasing the status of information provision as a function of all governments;

- furthering the achievement of social justice objectives through improving the accessibility of information for all; and

- outlining the advantages of pursuing the relationships between information, information services, information technology, industry and the economy.

4.23   The Commonwealth should collaborate with the States in:

- developing strategies to facilitate the transition of Australia to an information society, and enabling maximisation of benefits and minimisation of negative impacts produced by this transition;

- investigating the feasibility of the rationalisation of central databases (such as state registers of births, deaths and marriages) to reduce administrative duplication, and to enable simpler access by individuals Australia-wide;

- establishing standards and guidelines for information technology and the collection and dissemination of information throughout Australia;

- identifying the quantitative and qualitative dimensions of Australia as an "information society"; and

- encouraging the use of standardised formats, as appropriate, to enable easy information transfer and to develop mechanisms to overcome some of the associated language problems and which encourage 'systems transparency' so that the system itself is not an inhibition to information flow.

4.24   A national advisory body on information policy should be established by the Australian Government with appropriate representation from state governments, business and industry, research organisations and information providers, to keep broad information issues under review and provide expert advice to governments

and organisations as required on information matters. This body should be serviced by a permanent interdepartmental Committee and should report to the Parliament through a Minister designated by the Prime Minister.

4.25 Information is both a free good and a commodity, and while the unit cost of information generally is falling, the provision of highly specific information will impose substantial aggregate cost and appropriate costing mechanisms will need to be developed. Legislation should define and codify:

- the right to access, where this is in the public interest, of individuals or public or private bodies to relevant non-government information resources;

- the political and social guarantees which individuals and institutions can legitimately expect, including protection of privacy and professional secrecy;

- the basic rules of reciprocity which should govern relationships between the public and private systems and networks; and

- a code of ethics for professions and industries concerned in this field.

2. Industry

4.26 Information Policy and Industry Policy will need to be increasingly integrated, 'Information' implications for manufacturing, services and trade generally will need specialised attention in relevant Government Departments including the Department of Industry, Technology and Commerce, The Department of Primary Industries and Energy, and the Department of Foreign Affairs and Trade, where dedicated personnel with appropriate skills should be employed.

4.27 Ministers responsible for making statements on policies relating to manufacturing, services and trade generally should ensure that information-related aspects are specifically raised for discussion and public information.

4.28 Australia's skills, research capacity and English language base should be used to develop information-related industries, using sophisticated investigative techniques to identify specific market needs, for example, biotechnology, pharmaceutical, information and communications technology, specialised engineering/manufacturing, education, banking, insurance services, and environmental improvement (pollution monitoring, water quality control, energy efficiency, sewerage and waste disposal techniques), all dependent on a skill base.

4.29 The Commonwealth Government should encourage industry to become active users of existing information in research institutions and data bases, recognising that many businesses lose any comparative advantage by disregarding existing resources and importing know-how at a time when it is too late for Australia to become internationally competitive.

4.30   Because of the Commonwealth Government's major role as a consumer, Departments generally should adopt 'best practice' procedures in synergistic use of data networks to maximise the return on high levels of investment in information resources which are often not effectively used.

3. Scientific and Technological Information (STI)

4.31   While Australia has an existing framework for the storage, acquisition of and access to STI, existing systems are specialised, subsidised, with very patchy coverage, essentially used by the researchers themselves and not by government, industry or the community generally, with minimal involvement in production or trade. This puts Australia at a distinct disadvantage compared with Japan, the U.S., Korea, Taiwan and most EEC countries.

4.32   Both Government and industry must recognise that for Australia to become internationally competitive in any area it will be essential to establish comprehensive data bases, documented to a level consistent with their value, which:

.   can be effectively searched;

.   is machine readable by common systems; and

.   is available to all users with a potential need.

4.33   Such comprehensive data bases, linking those already operating, should be established by government, operated at first by a consortium of CSIRO and the National Library of Australia, and available on a fee-for-service basis so that universities and other research organisations are encouraged and able to participate.

4.34   Government should operate, as a public good, a comprehensive directory of all data bases operating in Australia.

4.35   As a general rule, not less than 0.5 per cent of the cost of producing STI in Australian research organisations should be set aside for publication and/or integrating appropriate references to the research (without necessarily breaching commercial confidentiality). The Australian community, having borne the cost of research, ought to take some interest in the generally far lower cost of ensuring its availability and potential use.

4.36   The Minister for Science should be given initial responsibility for creating such comprehensive data bases and appointing a small expert advisory group to oversee their development until the appointment of a Minister with specific responsibility for information policy.

4.37   The Federal Government should clearly delineate the roles of the National Library of Australia, CSIRO, universities and specialist research agencies to determine who is responsible and accountable for STI in Australia.

4.38 Relevant Commonwealth agencies should:

.   establish and maintain a map of the size and nature of the scientific information resource in Australia;

.   encourage the coordination of scientific and technical information activities, particularly through existing government mechanisms and programs (for example, the Coordination Committee on Science and Technology, the Primary Industries and Energy Research Council, the Standing Committee on Agriculture, NIES);

.   provide a focus for scientific and technical information policy and program development, including special reference to the identification of appropriate communication standards for information networks and exchanges of information;

.   encourage an understanding of the value and use of scientific and technical information within Australia;

.   evaluate the export potential of scientific and technical information in Australia; and

.   provide a focus for international activities, particularly aid related, that involve scientific and technical information.

4. Intellectual Property Law

4.39 The Prime Minister should designate an appropriate Minister to take responsibility for developing laws on intellectual property given that the ownership, control and economic exploitation of information internationally will be increasingly important to the Australian economy. The Minister so designated should seek expert advice on the adequacy of present institutional arrangements to meet Australia's economic and cultural needs, co-ordinate the activities of existing bodies in this area, monitor and report on the success of policy initiatives overseas.

4.40 The Minister should also explore with the Minister for Industry Technology and Commerce and other relevant Ministers the potential for establishing a national patent defence mechanism. Such a mechanism, jointly funded by Government and industry, would take responsibility for prosecuting breaches of Australian patents in other countries.

5. Transborder Data Flows

4.41 The greatly increased capacity of information and communication technology to facilitate international transmission of data has significant implications in several areas of the law as well as for national economic independence and cultural identity. Policies for dealing with these issues can only be effectively developed in an international environment. If Australia acts unilaterally it risks isolation from the world's major markets.

4.42   All legislation, programs and policies related to the development and application of new information and communication technologies or the development of information and communication infrastructures should take account of international standards and developments. The capacity for such technologies and infrastructures to facilitate transborder data flows should also be specifically recognised.

4.43   As a significant market for information and communications technologies and a leading developer of communications technologies Australia should take an active role in promoting the resolution of problems associated with transborder data flows. It should take the lead in placing issues such as legal implications and sovereignty on the agenda of international bodies.

6. Sovereignty

4.44   Entering into a global economy operating in 'real time' with information as a central pervading element poses inescapable challenges to national sovereignty, and the Parliament should be given the opportunity to debate this. Frontiers are coming down all over the world, and traditional protective mechanisms such as tariffs are of declining relevance. Information is infinitely easier to export than traditional commodities and the transmission of economically sensitive information may be undetected until it is too late to avoid adverse consequences. Science is an international activity operating in the long term and it knows no regional boundaries, while technology is national, extremely competitive, emphasising short term elements. A middle sized economy such as Australia may lose its best scientists to nations with higher levels of activity, while industry may become uncompetitive and suboptimal.

4.45   A particular risk for Australia is that the nations which generate the greatest scientific activity - Japan, Germany, the U.S., Britain, France, Italy, Sweden, Switzerland - may demand reciprocity in information exchange. They will not provide quality information to us, unless we provide quality information to them. There is also some evidence that nations will only pass on STI on the basis that we have laws which restrict access in a way comparable to the nation originating the information. However, Australia cannot take the option of a retreat into defensive isolation - in the end it would protect nothing.

7. Defence

4.46   Defence forces everywhere are reluctant to share sensitive information about how they operate, their equipment, details of budgetary outlays and many other areas. While an argument could be advanced that greater openness would be in the long term interest of the Defence forces themselves, it is recognised that in practice the Minister for Defence would be likely to claim exemption from any legislation or regulations arising from adoption of a National Information Policy, in the same way that Freedom of Information legislation does not apply in practice. However the Committee noted that Defence did not object to a National Information Policy provided that it was not too prescriptive, and agreed that 'the more selective the scope the greater the possibility for agreeing to and implementing an effective National Information Policy'.

4.47   Defence could make a major contribution to Australia's economic potential as an information society by purchasing locally produced equipment where it is of appropriate quality, and encouraging local industry to lift levels of performance where it is not.

8. Telecommunications/Media

4.48   Telecom argues that 'an understanding of Australia as an Information Society is fundamental to our emergence into the Twenty-First Century. The requirements for an integrated, co-ordinated approach to establishing and perusing relevant national objectives of an Information Society should be recognised and developed'. The Committee endorses Telecom's concerns that national communications policies ought to be coordinated with other government policies and that Community Service Obligations ought to be given legislative protection. The Committee also endorses the importance of adhering to the highest international standards for telecommunications, such as the Open Systems Interconnection (OSI) Model.

4.49   Evidence from the Department of Transport and Communication confirmed that communication policy often develops as a response to a crisis and not in a broad information context. The reason for regulation and licensing of radio and television outlets was expressed as being because of the 'power to influence', but this is not expressed in any Statute. It should be. Australia should also take a more active role in the OECD's Committee for Information Computing and Communication Policy (CICCP).

4.50   Media programming is determined by narrow economic considerations, as the Department's evidence indicated.[1]   Educational broadcasting, and - until the Government's recent announcement on an Open University project - remote learning, not to mention quality programs for children, is either not happening, or happening at an unduly modest level for an intelligent (or even clever) country.

9. Media Ownership and Control

4.51   S.51 (v) of the Commonwealth Constitution gives the Parliament power to legislate about 'Postal, telegraphic, telephonic, and other like services' which has been interpreted by the High Court to extend to radio, television and added-value telecommunications services. The Commonwealth has no legal power over the print media, thus contributing to a segmented approach to media ownership. Laws can prescribe or proscribe the extent of foreign ownership of television or radio, but not for newspapers. If the situation arose, the Foreign Investment Review Board, acting on a request from the Treasurer could prevent a foreign takeover of a newspaper. Nevertheless, it would be preferable for the Parliament to declare a general principle by way of resolution about what degree of foreign ownership (if any) is acceptable in advance of need.

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[1]   Evidence p.1021

10. Libraries

4.52   The provision of public library and information services should remain the collective responsibility of the Commonwealth, state, territory and local levels of government, funded in part by each.

4.53   Public libraries must become information resource centres, including local data banks, information about access to government services, with increasing emphasis on non-book material such as gramophone records, tapes, cassettes, microforms and audio-visual material generally.

4.54   The expansion and extension of all library and information services should be achieved through cooperation and/or contract and the formation of library systems and networks with each service retaining its autonomy within the overall state plan for the development of these services.   Existing information services should be coordinated and integrated to avoid duplication and waste of resources.

4.55   There should be a balance between continuing commitment to funding for libraries from all levels of government, with a reasonable degree of private sector involvement, and appropriate cost-recovery mechanisms.

4.56   Electronic libraries will be of increasing significance in the 1990's and beyond and much important information will only be accessible to those with appropriate equipment and the ability to use it. Providing appropriate access will raise funding problems for local libraries, especially in remote areas.   The question of funding should be discussed by appropriate Commonwealth and State Ministers.

11. Archives

4.57   Effective creation and management of archival documents is a pre-condition of an information rich society. It underpins the public accountability of government and non-government organisations, Freedom of Information and Privacy legislation, protection of personal rights and the quality of the archival heritage.

4.58   In an Information Society increasingly dependent on electronic communication and comprehensive data bases, the role of the archival document may become increasingly peripheral which will make the task of recording Australia's political, social, economic and cultural history very difficult.

4.59   The Government should establish a Committee including representation from the Australian Council of Archives and the Australian Council of Libraries and Information Services (ACLIS) to make specific recommendations on the preservation and use of archival resources including:

.   acquisition and collection policies;

.   preservation and conservation of records both in and out of custody;

.   promotion and value of the use of Australia's archival heritage;

- the impact of electronic recordkeeping on the archival heritage; and

- raising the level or awareness of the role of archives as a factor in social cohesion.

4.60   The Parliament should legislate for the provision of recordkeeping principles or guidelines to ensure the integrity and useability of the archival document for current and historical purposes and to promote ethical recordkeeping.

12.   Public Accounting Information

4.61   Public accounting information provides the only regular, complete source of quantitative information about the financial activity of public and private enterprises and overall measures of enterprise performance and viability. The availability and quality of such accounting information needs to be assured.

4.62   The Parliament should legislate to establish a framework to ensure the adequacy and consistency of public accounting information.

13.   Social Justice

4.63   Access to information for all citizens is essential to the achievement of social justice in a democracy. Information about political processes, government services and individual rights must be made available to all citizens on an equal basis to enable them to make informed choices and to share equally in the benefits and obligations of the society.

4.64   Special provision should be made for those groups in society which are disadvantaged in their access to information. The approach of the South Australian Government, which has identified eight disadvantaged target groups for the provision of information services, could serve as a model for other states. The target groups are:

- the rural isolated;

- aboriginal people:

- women, particularly those in the home;

- the elderly;

- the disabled;

- the poor;

- people from non-English speaking backgrounds; and

- the illiterate.

4.65   Government should encourage the setting up of effective networks to foster the long term development and delivery of services to these groups. In the case of the Commonwealth government this could be seed grants or incentive funding. Identification of the need for such services could be an early task for the national information advisory body recommended above.

4.66   The Committee is concerned that existing education systems are not bridging the gap between the skills provided in secondary education and the expectations of society in the world of work.

14. Privacy

4.67   Information is a resource which, depending on the way it is used, can be beneficial or detrimental to individuals, groups and ultimately society.   The proliferation of information in the economy and society expands opportunities for infringement of personal privacy. Developments in information and surveillance technology have brought serious implications for privacy and individual liberties.

4.68   It is important to balance information flow and access with controls to protect individuals. However, the various uses of information in society have outstripped the legal structures designed to provide a balance between government and the individual. Further developments in technology will widen the gap. Privacy and data protection issues need to be addressed and Australia has an increasing need for data protection. Privacy issues such as employee data privacy, credit reference, tax file number and data matching need to be safe guarded to ensure individual protection.

4.69   In recent years there have been judicial and legislative gains in privacy protection. A number of important laws and Acts have been established to deal with the privacy issue. Notwithstanding these developments, privacy protection in Australia has proved to be inadequate and viewed as an incomprehensive set of laws. Data systems are operating in public and private sectors without reference to established data protection principles and new technologies are being applied without adequate examination of their impact on privacy.

4.70   The Privacy Act, as presently interpreted by the courts, offers little protection to individuals who are the subjects of computer matching. This involves the electronic comparison of two or more sets or systems of personal records. Computer matching programs raise several constitutional questions such as the violation of protection against unreasonable search and seizure. It is also possible that information in databases can be improperly altered, it may be inaccurate, or it can be used to harass innocent people. Technology creates new possibilities for the invasion of privacy.

4.71   To provide adequate controls on information:

.   mandatory frameworks must be established to control the processing of personal data and use of surveillance technologies;

> . the upcoming generation must be educated in the use of technology and how to control it; and
>
> . adequate resources should be provided so that privacy and data protection issues are properly addressed.

4.72 In addition there is a need for legislation to be introduced that will provide that:

> . only necessary information shall be collected and then only after proper arrangements for its management have been made;
>
> . both personal and proprietary information shall be handled in a manner that precludes unwarranted intrusion upon personal privacy or violation of confidentiality; and
>
> . individuals may have access to and the ability to amend their own records.

4.73 All personal information assembled by government agencies should be kept as individual information units and access to identifying information about individuals should be restricted to:

> . access necessary to investigate alleged fraud or crime;
>
> . access by the person to whom the information relates;
>
> . access by persons properly authorised by power of attorney to act on behalf of the person to whom the information relates; and
>
> . access by government officers that is necessary to perform the function for which the information is held.

4.74 The introduction of new technologies will bring new problems to the ones that already exist in the area of privacy. Over the last decade, privacy problems associated with new developments in technology (especially information technology) have grown. New forms of information storage have made it easier to search, retrieve, manipulate, analyse and exchange information. Issues that need examining are computer networks, powerful new techniques that can gather information rapidly and inexpensively, growth of third party records, secondary use of transactional data, changes in telecommunications. With the advancements of technological innovations, the requirements and capabilities of an information society are in a state of flux. As a consequence, privacy legislation or an information policy will need to be constantly reviewed to keep pace with these developments.

4.75 The Privacy Commissioner argued that the increased use of artificial intelligence and automated data handling will pose threats to privacy because the exercise of human judgement will be eliminated or of declining relevance. This issue should be referred to the Australian Law Reform Commission for investigation and report.

15. Education

4.76   Information retrieval, including data base searching, should be regarded as a fundamental skill at all levels of education.

4.77   The extent of adult functional illiteracy, estimated to be in the region of 1,000,000 people, two-thirds from English speaking backgrounds suggests that Australia may have some difficulty in making the transition to the production of sophisticated, high value added goods and services. Recommendations in the recent report 'Words at Work' by the House of Representatives Standing Committee on Employment, Education and Training must be given a high priority by Government.

16. Information Research

4.78   The Minister for Higher Education and Employment Services should raise with the Australian Research Council the possibility of encouraging universities to apply for research grants in information and information-related issues, noting the relatively small contribution that Australia has made to international research in this area.

17. Information Statistics

4.79   The Australian Bureau of Statistics should address the need for up-to-date statistics on:

.   information-based employment;

.   components of the primary and secondary information sector as a contributor to GDP at factor cost;

.   the share of exports attributable to information related industries; and

.   the share of imports attributable to information related exports.

18. Promoting efficient/effective information use

4.80   It is essential to distinguish between the existence of an information resources such as data bases, libraries and archives and their effective use. Considerable public and private expense is incurred in acquiring information which is then not used efficiently so that its value deteriorates in time. Priority must be given to the use and users of information, rather than to putting elaborate structures in place to supply information in the first instance.

4.81   Stimulating information use, through developing the ability of organisations and individuals to use information, will place demands on existing structures, policies and information suppliers to a point where suppliers of information will be motivated to cooperate and coordinate activities for more responsive information service.

19. Promoting Critical Evaluation of Information

4.82　As a general rule, the value of information will be enhanced in the hands of users if its providers give details of the date of production, as is already done with books, films, compact discs. Some information has a relatively short shelf-life, for example economic statistics or prices, other information, for example chemical formulae, has a long one.

4.83　In principle, information providers should recognise the moral obligation to disclose where material has been derived, so that users can have an opportunity for independent evaluation. However it is conceded that such obligation could not be made mandatory. It is also important that prospective users of dangerous products, for example pesticides, should know if information is sourced from industry or from an environmentalist perspective.

20. Consumer Information

4.84　The right to information, for example product labelling and its place of origin, is essential to enable consumers to exercise informed choices in the marketplace, but when market forces dominate the supply of information this may not operate equitably.

4.85　A community education strategy should be developed by the Commonwealth and State Governments in conjunction with consumer organisations including the Australian Consumers' Association (ACA) which explains the information society to citizens and informs them about likely impacts on products, services, and business and professional practices. It is important that users of banking services be on a level playing field with the resource provider so that they understand the costs of services they will be asked to pay for. Similar considerations apply to the purchase of real estate or motor vehicles by way of mortgage or credit provision.

4.86　The use of data matching, for example where a consumer shops at a supermarket and habitually pays by credit card, contributes to a data base which may make the consumer a target for promotional campaigns which may lead to some invasion of privacy.

4.87　Resources should be given to the Federal Bureau of Consumer Affairs, in association with the ACA, to provide a report to the Parliament which examines:

　　　　　.　　likely future scenarios for consumers given the pervasiveness of information technologies;

　　　　　.　　defining the 'basic information' to which consumers have a right of access; and

　　　　　.　　the adequacy of FOI laws for consumers.

21. Copyright

4.88   The Federal Court decision in <u>de Garis and anor.</u> v. <u>Neville Jeffress Pidler Ltd</u> (1990) found that the photocopying or facsimile transmission of articles in newspapers and magazines was a breach of S. 35 (4) of the Copyright Act (1968). The Attorney General should review the Copyright Act and attempt to balance the proprietary rights of journalists and the public benefit of encouraging a free flow of information.

BARRY O JONES
Chair

15 May 1991

CONDUCT OF THE INQUIRY

The Committee adopted terms of reference and advertised the inquiry in September 1990. It was intended that the inquiry consider three main areas: the need for a National Information Policy, the future of libraries and Parliament and information issues in the context of Parliamentary decision making.

Most of the submissions received related to either or both the first and second aspects of the inquiry. During the process of reviewing the submissions and holding public hearings the Committee found that the questions related to the future of libraries were integral to the questions related to the need for a National Information Policy and therefore to a degree these two aspects of the inquiry have been considered simultaneously. The library question is to be the subject of further inquiry and another report by the Committee. It is proposed to pursue the parliamentary information aspects of the inquiry later in 1991.

By May 1991 the Committee had received 121 submissions and held public hearings in Sydney, Melbourne, Brisbane, Adelaide and Canberra. The submissions are listed in Appendix 2 and the witnesses who appeared at hearings are listed in Appendix 3. Several of the people who appeared at public hearings made supplementary submissions in response to requests from the Committee that they propose material for possible inclusion in a National Information Policy.

Before preparing this report the Committee held a working session in Melbourne at the Centre for International Research in Communications and Information Technology with the following:

> .   Professor William Melody
>   Director
>   CIRCIT
>
> .   Professor Don Lamberton
>   Deputy Director
>   CIRCIT
>
> .   Ms Una Mansfield
>   Visiting Lecturer, University of Wollongong
>
> .   Mr Greg Tucker
>   Monash University and OECD
>
> .   Mr Peter Fritz
>   Managing Director the TCG group of companies

- Mr Warren Horton
  Director, National Library

- Ms Barbara Kitchen
  Council Member, Victorian Community Information
  Network

- Mr Phil Ruthven
  IBIS Group

- Professor Mairead Browne
  University of Technology Sydney

The Committee was greatly assisted in its deliberations by this workshop and acknowledges the value of the participants' contributions to the Committee's inquiry. Professor Melody, Mr Horton and Ms Mansfield also briefed the Committee on separate occasions prior to the workshop while some of the others also appeared at public hearings as indicated in Appendix 3. Information prepared by Mr Ruthven and Professor Lamberton is reproduced in this report and the Committee gratefully acknowledges their contributions.

Others informally to brief the Committee, included Dr Ian Reinecke, Mr Trevor Barr, staff of the University of Wollongong, officers of the Department of Industry, Technology and Commerce and representatives of ICL (Australia).

LIST OF SUBMISSIONS

1   Mr Leung Chen (NSW)

2   Mr Jim Heath (WA)

3   Mr Alister Wright (SA)

4   Mr Anthony Ablong (QLD)

5   Australian Land Information Council (ACT)

6   School Libraries Section
Australian Library and Information Association
Western Australia Branch

7   Dr Doug Seeley (SA)

8   Australian Library and Information Association
Tasmanian Branch

9   Community Information Networkers SA Inc

10   Victorian Community Information Network

11   Library Studies Department
South Australian College of Advanced Education

12   Mr Craig Bradshaw (WA)

13   Mr Mark Balnaves (VIC)

14   Dr Richard Collins (VIC)

15   Records Management Association of Australia

16   Australian Academy of Technological Sciences and Engineering

17   University Library
University of New South Wales

18	Australian School Library Association
19	ICL Australia
20	Women's Electoral Lobby (ACT)
21	Australian Library and Information Association Queensland Branch
22	Australian Council for Adult Literacy
23	Women's Legal Resources Centre (NSW)
24	Mr Kevin Davies (QLD)
25	Mr Owen Loneragan
26	Northcote Library and Information Services (VIC)
27	Curriculum Directorate of the South Australian Education Department
28	Australian Library and Information Association New South Wales Division
29	Department of Information Services RMIT Victoria University of Technology
30	Mr John Mills (NSW)
31	Mr Tony Healy (NSW)
32	Mr S B Aungles (NSW)
33	Mr Roger L Burritt (ACT)
34	Professor Mairead Browne (NSW)
35	Mr Greg Tucker (VIC)
36	Dr Roger Clarke (ACT)
37	Australian Computer Society Inc (NSW)
38	Mr Stephen Coates (NSW)
39	Infosafe (Australian Centre for Occupational Health and Safety) (VIC)

40   Library,
      Victoria Institute of Technology
      (Footscray Institute of Technology)

41   Dr Michael Garbuctcheon Singh (QLD)

42   Mr Edward S Teiffel (NSW)

43   OTC

44   Australian Library and Informaiton Association
      Northern Territory Branch

45   Mr Alex Byrne (NT)

46   Dr F Geoffrey Jones (VIC)

47   Australian National Parks and Wildlife Service

48   Department of Social Security

49   Asia Pacific Special Interest Group
      Australian Library and Information Association

50   Confidential Submission

51   Australian Library and Information Association

52   Dr Arthur Chesterfield-Evans (NSW)

53   Mr William Balmain (SA)

54   Mr Robert Clark (NSW)

55   Brotherhood of St Laurence

56   Dr Ross Harvey (VIC)

57   Telecom Australia

58   Master Builders' Construction & Housing Association Australia

59   Ms Christine Heal (WA)

60   Vice-Chancellors' Conference of New South Wales
      Library Sub-committee

61   Consumers' Telecommunications Network (NSW)

62	Australian Database Development Association
63	Council of Social Service of New South Wales
64	State Libraries Council
65	CSIRO
66	Australian Council of Libraries and Information Services
67	Australian Society of Archivists Incorporated
68	Mr Peter Drahos (ACT)
69	Department of Administrative Services
70	Ms Jenny Stanzel (NSW)
71	Special Libraries Section Australian Library and Information Association
72	National Library of Australia
73	Community Information Support Service of South Australia
74	Mr F Upward (VIC)
75	State Library of New South Wales
76	City of Port Melbourne
77	Information Technology & Communication Unit University of Wollongong (NSW)
78	Australian Consumers' Association
79	Mr Herbert Compton (NT)
80	Australian War Memorial
81	Australian Library and Information Association South Australian Branch
82	Victorian Public Library and Information Cooperative
83	Geelong Regional Library (VIC)
84	State Library of South Australia

85   Queensland State Government

86   National Women's Consultative Council

87   Australian Library and Information Association
Victorian Branch

88   Shire of Warringah (NSW)

89   Australian Council of Libraries and Information Services

90   Shire of Corio (VIC)

91   South Australia State Government

92   Logan City Council (QLD)

93   Department of Defence

94   Local Government Library Association (WA)

95   Australian Library and Information Association
Western Australia Branch

96   Mr George Zdenkowski (NSW)

97   Department of the Arts, Sport, Environment, Tourism
and Territories

98   Federal Bureau of Consumer Affairs

99   Professor Joyce Kirk (NSW)

100   Community Information Association (NSW)

101   Department of Transport and Communication

102   Technilib (VIC)

103   Privacy Commissioner
Human Rights and Equal Opportunity Commission Australia

104   State Library of NSW

105   Mr John Levett (TAS)

106   Professor Mairead Browne (NSW)

107   City of Fremantle (WA)

LIST OF WITNESSES

SYDNEY - 31 JULY 1990

Private Citizens

    Professor Don Lamberton

    The Hon. Justice Michael Kirby

CANBERRA - 13 NOVEMBER 1990

Australian Computer Society

    Dr Roger Clarke
    Director, Community Affairs Board

MELBOURNE - 16 NOVEMBER 1990

Australian Academy of Technological Sciences & Engineering

    Emeritus Professor John Bennett
    Fellow

    Mr Clyde Garrow
    Technological Information Committee

    Dr John Zillman
    Honorary Secretary

Private citizens

    Mr Mark Balnaves

    Mr Henric Beiers

    Dr Richard Collins

Victorian Community Information Network

Reverend Fredric Holland
Chairman

Mr Graeme Shrapnel
Project Worker

SYDNEY - 3 DECEMBER 1990

Australian Council for Adult Literacy

Ms Narelle Callanan
Executive Officer

Mr Sean Kidney
Director, Social Change Media

CSIRO

Dr Robert Frater
Director, Institue of Information Sciences and Engineering

Consumers Telecommunications Network

Ms Edwina Deakin
Project Officer

Mr Adam Smith
Coordinator

Private citizens

Prof. Mairead Browne

Dr Arthur Chesterfield-Evans

Mr Robert Clark

Women's Legal Resources Centre

Ms Helen Campbell

CANBERRA - 12 DECEMBER 1990

Australian Council of Libraries & Information Services

> Mr Gordon Bower
> Executive Officer
>
> Mr Warren Horton
> Member, National Council

Australian Library & Information Association

> Ms Averill Edwards
> Immediate Past President
>
> Mr William Miller

Master Builders Construction and Housing Association / Australia Pacific Projects Corporation Pty Ltd

> Mr David Chandler
> Managing Director, Australia Pacific Projects Corporation Pty Ltd
>
> Mr Joram Murray
> Executive Director, Master Builders Construction and Housing Association

Private citizens

> Mr Roger Burritt
>
> Mr Peter Drahos

MELBOURNE - 15 JANUARY 1991

Australian Database Development Association

      Miss Lea Giles-Peters
      Committee Member

      Mr Peter Mathews
      Committee Member

      Ms Elizabeth Oley
      Chairperson

      Mr Neil Speirs
      Committee Member

Private citizens

      Dr Frank Jones

      Mrs Kathleen McLennan

      Ms Susan McKemmish

      Mr Franklyn Upward

Telecom Australia

      Mr Edward Benjamin
      Director, Corporate Affairs

      Mr John Burton
      General Manager, Marketing & Corporate Customer Division

      Mr David Mattiske
      Director, External Affairs

      Mr Robert Murphy
      Director, Information Strategy

      Mr James Park
      General Manager, Switched Networks Research

      Mr Michael Pickering
      Manager, Policy Development

      Ms Gail Thomson
      Manager, Strategic Analysis

Victorian Public Library & Information Cooperative

   Miss Bronwyn Hughes
   Chief Librarian, City of Fitzroy

   Mr Conrad Lannan
   Regional Librarian, Wimmera Regional Library Service

   Mrs Margaret Smith
   President

   Mr Colin Watson
   Regional Librarian

BRISBANE - 16 JANUARY 1991

Private citizens

   Mr Anthony Ablong

   Mr Kevin Davies

Queensland Government

   Mr Kenneth Pope
   Chairman, Information Policy Board

Records Management Association of Australia

   Mr Graham Dudley
   Federal President

   Mr Francis Shepherd
   Federal Treasurer

State Libraries Council

   Mr Desmond Stephens
   Chairperson

ADELAIDE - 17 JANUARY 1991

Community Information Networkers of South Australia

Mrs Hilary Gardner

Ms Carolyn Gerhady

Mrs Meredith Nunan
Chairperson

Community Information Support Service of South Australia Inc

Ms Yvonne Allen
Coodinator

Curriculum Directorate, Education Department of South Australia

Ms Sandra Gapper
Project Officer

Ms Anne Hazell
Coordinator, Library Services Unit

Department of Library Studies, University of South Australia

Miss Mary Keane
Senior Lecturer

Dr Maureen Nimon
Senior Lecturer

Private citizen

Dr Douglas Seeley

South Australia Government

Ms Sophy Athan
Manager, Executive Services, Libraries Board

Mr Euan Miller
Director, State Records and Information Policy

SYDNEY - 26 FEBRUARY 1991

Australian Consumers Association

Ms Jacqueline Isles
Policy Officer

OTC Limited

Ms Gitte Backmann
Manager, Strategic Business

Mr Rodney Masterton
Regional Manager Asia, OTC International

Mr Tom McAlary
Manager, Policy Coordination

Public Libraries

Ms Sue Boaden
Library Services Manager, Warringah Shire Library

Ms Jennifer Borrell
President, Metropolitan Chief Librarians Committee

Privacy Commissioner

Mr Kevin O'Connor
Privacy Commissioner

Mr Timothy Dwyer
Executive Assistant

State Library of New South Wales

Ms Alison Crook
State Librarian

Mr Rishpal Singh
Government Departments Consultant

Ms Janette Wright
Director, Public Libraries and Extension Services

University Libraries

Mr John Shipp
Vice-Chancellors' Conference of NSW Library Sub-committee

Dr Christine Henderson
University Librarian, University of New South Wales

CANBERRA - 8 MARCH 1991

Australian War Memorial

Mr Paul MacPherson
Deputy Director, Education and Information Services

Ms Anne-Marie Schwirtlich
Senior Curator, Printed and Written Records

CSIRO

Mr Peter Langhorne
Director, Corporate Services

Mr Geoffrey McAlpine
Principal Projects Officer, Office of the Chief Executive
and Board

Mr Bernard Mithen
General Manager, Information Services

Department of Defence

Air Commodore David Bowden
Director-General, Communications and Information Systems

Mr Phillip Liddicoat
Assistant Secretary, Materiel Policy

Mr Arthur Skimin
Chief Executive Officer, Archives and Historical Studies

Department of Transport & Communications

Mr Christopher North
Assistant Secretary, Communications Policy Development and Planning

Dr Neil Primrose
Assistant Secretary, International Policy

MATRIX OF INFORMATION POLICY ISSUES

(This Matrix is taken from "A National Information Policy for Australia" by the Department of Science published in December 1985).

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
SCIENTIFIC & TECHNICAL INFORMATION (STI)	Are Australia's STI services adequate? How could they be improved? What is the appropriate role of the private sector in STI?	What are the STI needs of the community? How should they be provided?	Do we have adequate access to the world's STI? Is the proportion of STI generated in Australia acceptable?	How can access to overseas STI be ensured? Is there undue dependence on overseas STI resources?
INFORMATION INDUSTRY	What is the potential contribution of the information industry to economic growth? Is government action needed to fulfil that potential? Can the government act to promote efficiency in information use? What should be the relations and arrangements with the public sector? Are intellectual property provisions adequate?	How can the private sector contribute to improved information supply in the community? Will the growth of the information industry lead to inequities (eg by "commoditisation" of information?) How can this be avoided? Do restrictions need to be placed on the acquisition, and use of information by the private sector? How should any restrictions be imposed?	Are controls on the ownership of the Australian information industry appropriate?	How can balance be achieved between: commercial independence and accountability; economic benefit and protection of privacy and sovereignty?

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
TRADE IN INFORMATION	What is Australia's standing, capability, comparative advantage as an information exporter? What is the potential economic benefit from trade in information? Is government action needed to realise that benefit?	Do limitations need to be imposed on transborder flows of personal data?	Should export or import of certain types of information be regulated? What is the effect of the OECD Declaration on TBDF? What is the impact of existing tariff structures?	How is the economic value of overseas information weighed against trade imbalance, and other national concerns?
INFORMATION TECHNOLOGY (IT)	Is the IT infrastructure in Australia adequate for industry demand and growth? Is government action needed?	Is publicly available IT adequate for meeting community information needs? Do new developments in IT pose new threats to personal autonomy and civil liberties?	How can the integrity of IT based systems be safeguarded against unauthorised or illegal access?	---
TELECOMMUNICATIONS SERVICE INFRASTRUCTURE	Is the telecommunications infrastructure adequate to allow for growth in the information industry and efficient use of information resources? What role should private sector take in the provision of ancillary services?	How can the equitable availability of services to all be assured? How can the community be involved in planning? Are greater safeguards needed to ensure privacy and confidentiality of telecommunications traffic?	Is Australia in a position to capitalise on electronic information resources overseas?	How can balance between social and economic considerations in service planning and provision be struck?

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
MEDIA	Would further regulation or deregulation have a beneficial effect on the information services provided by commercial media?	What role can the media play in community information supply? What restrictions should be imposed on ownership and content of media? What forms and degree of censorship are appropriate? How can the choice of information and media outlets be maximised?	Is the extent of Australian ownership acceptable? Is the degree of Australian content adequate?	How are commercial freedoms balanced against community needs and national concerns (eg cultural sovereignty)?
LIBRARIES & COMMUNITY INFORMATION	Does the Australian library system cater adequately for the needs of business and industry?	Which sections of the community do not use or have access to these services? How can services be extended to those who do not currently use them? What resources are needed? What kinds of information should be distributed via these services? What should be the respective roles of libraries and other information services? How should libraries balance their services to various interest groups?	What are Australia's needs for overseas information, and are these needs being met? Are we too reliant on overseas document/information suppliers?	Are resource sharing and coordination arrangements effective?

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
GOVERNMENT INFORMATION	Is adequate information provided on government policies and programs relating to industry? Are information and extension services to industry adequate? Are government information gathering programs excessive? What is the appropriate role of the private sector in retailing government information?	What sorts of government information does the community need? How should it be made available? Can objectivity be assured? Do restrictions need to be imposed on the gathering of information or on the storage and use of information by government.	--	How is equitable access balanced against cost recovery? Are government information programs effective and efficient?
EDUCATION	Are education programs for information professionals adequate? How can education for information use be included in the wider education system?	Should education for information use, and use and awareness of IT be included in syllabuses? How could this be done? How can education promote an understanding of the role of information in a democratic society?	Is Australian research in information related matters adequate? What is the value of Australian participation in international information research programs?	--

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
LEGAL SAFEGUARDS ETC	Are intellectual property provisions adequate? What are the best means of regulating information activities where this is deemed necessary?	Is the FOI Act achieving its objectives? Should it be extended to certain information held by the private sector? What action is being taken on the protection of privacy? What action is needed to combat computer-related crime and illegal surveillance?	Do current international arrangements provide an appropriate environment for the growth of the Australian information sector?	How are freedom of information provisions balanced against considerations of privacy, civil liberty and national security?
ECONOMIC AND FISCAL MEASURES	Do current taxation provisions promote efficiency of information supply and use? Do these provisions discriminate between different information media?	Are current taxation provisions relating to information equitable?	Are current taxation and tariff provisions appropriate?	How should governments balance revenue raising considerations against those of social equity or economic development.

	INFORMATION AND ECONOMIC GROWTH AND DEVELOPMENT	INFORMATION AND THE CITIZEN	NATIONAL SOVEREIGNTY AND SECURITY	CROSS-ISSUES AND CONFLICTS
CROSS-ISSUES AND CONFLICTS	How should economic efficiency be balanced against social and other national concerns? To what extent should government regulate and/or assist the development of the private information sector? How should interaction between the public sector and private sector be determined?	What should the respective roles of the public & private sectors be in provision of information to the community? To what extent need government regulate information flows for reasons of social equity or civil liberty? On what charging basis should publicly funded information services be operated?	How should economic efficiency be balanced against national concerns such as maintenance of national jurisdiction and reduction of vulnerability caused by imbalances in Australia's information trade?	How should information activities be monitored and measured? What is the value of planning and community debate in the development of information resources? Are new institutional and/or funding arrangements needed?

EXTRACT FROM "ISSUES UNDERLYING TECHNOLOGICAL INNOVATION IN AUSTRALIAN INDUSTRY"

The following is an extract and a diagram from "Issues Underlying Technological Innovation in Australian Industry" by Clem Doherty (Principal, McKinsey and Company and Director MFP Australia Research Ltd) for the Prime Minister's Science Council in 1989.

Working through the MFP project has provided me with some important insights into the issues surrounding innovation and wealth creation in the Australian context.

1   *Long-term thinking about significant, perhaps even predictable, technological discontinuities is seldom done in Australia and is very difficult even for people best equipped for the task. However, for those who do it and attempt it with some rigour, the results are rewarding and can lead to very different strategic approaches being adopted in their businesses.*

2   *There is a lack of basic knowledge about what the Australian and world markets need in terms of products and services. As the market definition becomes international and we try to think further down the track about market demands, say 20 to 30 years, the paucity of knowledge becomes acute. The researchers and scientific community, on the other hand, have a reasonably good knowledge about what is happening in their fields around the world.*

3   *There is a lack of contact and, generally, minimal information transfer between research and development areas and marketing and sales areas. Although these think tanks were conducted at an industry or sector level, many people who should have been in regular contact were meeting each other for the first time. If contact had been established it was usually between people with similar responsibilities (eg. the research people know each other). This has been typical of many of Australia's large and medium-size companies. Those that are now making contact find it very rewarding.*

4   *Due to a lack of market knowledge and the lack of disciplined inter-connections between the marketing and sales areas and research and development areas, the economic value of research and development is not well understood.*

5   *The domestic focus and resulting lack of an international perspective in many sectors, particularly key service sectors, appears to limit research and innovation to the perceived value it will provide in delivering increased benefits to domestic customers.*

6   *International companies which define Australia as the relevant market for their Australian subsidiaries, or define distribution and sales as the relevant functions to be performed, necessarily limit their subsidiaries' scope for innovation to these areas. Some of these companies, particularly in the information sector, would like to backward integrate to some degree but have found the necessary industry infrastructure lacking. Some international subsidiaries are finding the traditional free transfer of research and development to overseas headquarters does not reward the local, Australian-based subsidiary for the effort it puts in and, as a result, have actually set up "skunkworks" operations and are beginning to license local product innovations back to their own parents.*

AUSTRALIA'S FUTURE GROWTH INDUSTRIES

Key growth industries of the 21st century where Australia has competitive advantage

Agriculture	Mining	Tourism	Next Generation Core Industries

• Strong commodity demand
• Major wealth creation opportunities in
  - Product innovation
  - Marketing
  - Branding
• Agricultural biotechnology
	• Continued base with cyclical markets
	• New materials
	• Mineral processing
		• Consolidation followed by strong growth in the 1990s	• Knowledge industries
			• Information intensive
			• Media and entertainment
			• Education
			• Health
			• Telecommunications/information services
			• Transport services
			• Environment