such tests. There is also risk associated with accidents involving nuclear weapons, such as submarines being sunk and bombers crashing.

Catherine Caufield concludes her book with an Epilogue. She quotes long-serving committee member Lauriston Taylor as pointing out that radiation protection is a "problem of philosophy, morality and the utmost wisdom" (p. 248). Perhaps the doctors and physicists who have dominated the advisory and regulatory bodies have not provided the best mix to come up with answers to these difficult questions. Catherine Caufield has provided an immense amount of information in a very readable form. Up till now I feel that too much reliance has been placed on the experts, who often have had vested interests. Most experts agree that radiation standards need to be tightened further, and this book can only enhance public support for such changes. The book is well annotated and indexed, which will make it a most useful reference work. Although the book is written from an American viewpoint it is also relevant for Australians, and I hope that it will be widely read by doctors, scientists, politicians and the general public.

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Australia as an Information Society: Grasping New Paradigms *Report of the House of Representatives Standing Committee for Long Term Strategies* (Australian Government Publishing Service (AGPS), Canberra, May 1991), pp. xv + 82, $9.95, ISBN 0-644-14371-1.

In September 1990 the Australian House of Representatives Standing Committee on Long Term Strategies called for submissions to its inquiry into the development of Autralia as an information society, an expression which the helpful glossary included in the Committee's report defines as "a society in which time use, family life, employment, education and social interaction are increasingly influenced by access to information technology, e.g. television, telephones, radios, videos, computers; sometimes the term is used as a synonym for 'information economy', both [*sic*] others deny that economy and society are identical."

The Committee was required 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.

It was agreed that there would be three foci of the inquiry *viz.,* the need for a national information policy; the future of libraries; and the information issues pertinent to Parliamentary decision-making. This report, *Grasping New Paradigms,* deals principally with the first of these areas, although there is some consideration of the future role of libraries since it is inextricably linked to decisions about what a national information policy might be or even whether such a policy or strategy needs to be articulated.

Concepts like 'information society' and 'national information policy' naturally beg the question of what 'information' itself might be. Although the Committee adopts a fairly broad definition — data processed, organised or classified into categories to serve a useful purpose — it recognizes the inadequacy inherent in this definition. However the report argues that "it is more important to understand the processes that transcend sectors and the inter-relationships between sectors than it is to define static informaion" (pp. 23-4); and although the Committee does indeed distinguish between the hierarchy of data, information, knowledge and intelligence, the reader will find no suggestion that such related entities as judgement or wisdom might be equally important to a clever country.

Many will find Ch. 1, which discusses the central issue of Australia as an information society, the most stimulating; and some, the most novel. (It is still rare to find information economics accorded the importance it deserves in the economics department of Australian universities, and it is to be hoped that increased research and debate in this field will be one of the consequences of the dissemination of this publication).

The report demonstrates yet again our woeful export base of raw materials and low value-added products. It does this partly with the dubious aid of poorly reproduced graphs which do AGPS no credit. The argument that we are a passive information society is illustrated by our trade deficit in information technology of somewhere between four and eight billion dollars and our failure to develop, in the age of the information explosion, significant export-oriented information products and services. There is a useful and concise analysis of the information workforce (pp. 5-12) which relies heavily on Lamberton's analysis of data provided by the Australian Bureau of Statistics (ABS) to the OECD. It summarizes the difficulties attendant upon upon trying to define the information sector of the economy but argues that the information labour force is large and growing to the point where the typical employed Australian is an information worker. According to the ABS figures they comprised 41.5 per cent of economically active Australians in 1981. The currency of these figures is of some concern. The latest figures available for the components of the primary information sector as a contributor to GDP at factor cost date from 1977-1978, a fair indication of the importance which government and the public service attach to the information sector.

As might have been expected from a parliamentary committee chaired by a former minister, the bureaucracy does not emerge unscathed. Ten major commonwealth departments are identified as having important information-related responsibilities, a situation summarised by an illustration with the caption "Information responsibility in Canberra: commanding heights and prevailing fog." The Department of Industry, Technology and Commerce, we are told, equates information with information technology. The Department of Transport and Communication develops policy "on the run, in response to a crisis." The ommnibus Department of Arts, Sport, Environment, Tourism and Territories operates the National Library, the National Gallery, the Australia Council and the Australian Film Commission in isolation from one another and in a policy vacuum. The Department of Employment, Education and Training has responsibility for the Australian Research Council but does not press for funding of information research. There is little consultation between federal and state bureaucracies. It is not surprising, then, to learn that "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" (p. 15).

The report suggests that a national information policy would overcome this fragmentation and allow education and industry policies to reflect the new imperatives of an information-based economy. It proposes a number of critical elements that would need to be included: the right to know; industry policy; 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 effective and efficient information use; promoting critical evaluation of information; consumer information; and copyright. It is at this point readers may begin to feel that *The Hitch-hikers' Guide to the Galaxy* got it wrong, and that answer to the riddle of life is not 42, but 'information'. In this collection we have some large cans of very live worms, and while there is obviously a common thread running through these issues, to try to link them in a set of consistent policies would be a nightmare; nor would it necessarily be desirable. In many of these areas there are legitimate but irreconcilable interests, where the public good is best served by ongoing debate. In others, the speed of technological change will outstrip all but the most general of guiding principles. Yet in some areas the Committee has found it possible to propose more specific policy guidelines. These relate to the establishment or support of particular kinds of information products or services, standardisation, adoption of codes of ethics, market research, preservation and conservation activities, more stringent policing of privacy law, inclusion of information skills as a crucial element in educational programs and industry practice, improved access to information and consumer education programs. It reveals an encouraging concern with the content and use of information, as well as with the machinery and techniques for its management, although those proposals which embrace the economic arguments characteristic of the last decade sit oddly at times with others couched in the populist rhetoric of the early 70s.

As might have been expected from some of the honourable members responsible, the report contains intriguing asides which are neither strictly relevant nor fully developed. The following is typical:

> 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? (p.17).

It is disappointing that so few people chose to make submissions to the inquiry and that these few were largely drawn from a comparatively narrow range of the community, which is to say from the ranks of those who would clearly categorize themselves as belonging to the information professions. Those identified by the Committee as most at risk from the paradigm shift or those whose lives have been changed by it went unrepresented.

This report is best seen as an initial contribution to what should be a vigorous national debate rather than a definitive statement. Its central argument rests on the thesis that "Australia must recognize the centrality of information as a central organizing principle, a tool for understanding, and a vital element in trade expansion." It calls for the adoption of new paradigms about the nature of work, and about the kind of country we might become. As the authors themselves recognize, old paradigms die hard. I recently lent this book to an

economist of my acquaintance. "What did you think of it?," I asked. "I didn't understand a word of it.", he said.

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Telecommunications in Canada: Technology, Industry and Government *by Robert E. Babe*
(University of Toronto Press, Toronto, Ontario, 1990), pp. xv + 363, $CAN24.95, ISBN 0-8020-6738-7 (pbk).

Perhaps more so than many industrialised countries, Canada's economic, political and cultural heritage has been understood to rest on the means and modalities of communication. This country's prospects for the 21st century are considered by industrialists, government policy-makers and some in the academic community, to rest on its capacity to shape an information economy in accordance with national cultural economic and political aspirations. Whether because of close geographic proximity to the United States, industrial resource-based growth or other factors, the history of political and economic decision-making which informed Canadian telecommunication development is a reflection of the evolving Canadian State. This history exhibits all the tensions between continentalism (or regionalism) and nationalism which have shaped industrial development in Canada.

Robert Babe's aim is to set out a realistic analysis of the recurrent patterns of decision-making in Canadian telecommunications. He seeks to show that the role of corporate and governmental power has been central to the implementation of advances in industrial devices. These devices include telegraphy and telephony, broadcasting and cable, and service applications such as videotex and Integrated Services Digital Networks. In exposing the locus of power in decision-making the author hopes to establish a foundation for human responsibility with respect to the development of technical systems.

This book is more than a history of telecommunications. It is a much needed illustration of how myths are instrumental in perpetuating and propelling the exercise of political and economic power. The myths which Babe sets out to critique are the following.

First, he attempts to show that Canada as a political, economic and cultural entity "persists despite, not because of, communication media" (p. 7). This view is contrasted with the perceptions of Canadian political figures and policy analysts who have argued that Canadian autonomy has been achieved in large part because of the structure of communication and the successful deployment of technological nationalism. This strategy is often said to have enabled Canadian industry to perform at the technological frontier in the production of systems ranging from cable, to satellites and digital network sytems. Babe challenges the view that technology-push strategies have provided a buffer to the forces of continentalism and the globalisation of markets.

The second myth concerns the technological imperative, i.e., progressive innovations in engineered artefacts are necessary, inevitable, and ultimately capable of explaining human phenomena. The author argues instead that "procedures, machines, and equipment are introduced by *people* — particularly by agglomerations (corporations and governments) — and only in being wielded do they 'shape' our ends" (p.12). Implicit here is the question as to whether