

through his case studies of AT&T, BT and NTT. His conclusion is quite interesting: 'Although these beasts are operating in an increasingly similar global selection environment, their visions, strategies, and chosen competences are, as we have shown, significantly different.' He then posits the question of whether these differences will remain functional, or will aid their growth in an increasingly difficult environment. The answer, for him, lies in the future.

What then can we make of such a book. First, being a collection of papers its advantage is that it lays out some of the various issues that need to be considered in this important area of telecommunications, but that breadth is also its disadvantage. It is a book that has appeal to a multiplicity of disciplines, without concentrating upon anyone. You need to be an economist, know something about monopoly and competition policy, an organisational theorist, well-versed in strategic thinking and have some awareness of the technical background of telecommunications and its developments outside the traditional voice and text market. In addition, being a sociologist would help. However, the book's strength lies in its empirical base. Throughout the papers there are many case studies of the development and application of telecommunications to new areas, and to new markets. Some of those are in Eastern Europe, others in retailing and reorganised manufacturing industries. Many of these case studies are in depth, and are based upon extensive interviews with senior managers in the industry, but there is a weakness. Case study analysis of people who are already in the sector is with those whose mind-sets are already in a path-dependency mould. It is the 'newcomers' to the industry who are most likely to possess the imagination to see the potential of telecommunications, and sometimes that is along time being accepted (I write this review on the day I read of Arthur C Clarke, the well-known science fiction writer, being conferred with a honorary degree from Liverpool University by satellite to his home in Sri Lanka. He was the first to propose in 1945 the use of geostationary satellites to carry broadcast signals around the globe. Now we think of it as commonplace).

The book has something for everyone in. Not being at the conference I am not able to judge how successful the conference was, or how typical of the papers those selected are. Thus, all I can say is that they do represent a good cross-section of some of the issues that policy makers, strategic thinkers and managers will have to deal with in the future, and for that we must thank the Editor.

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**Framing Technology: Society, choice and change** edited by Lelia Green and Roger Guinery (Allen & Unwin, Sydney, 1994) pp. xxxvii + 214, \$22.95, ISBN 1-86373-525-9.

Discussions of technology and of its impact on society are considered by some to be the legitimate preserve of a technological elite with a specialised knowledge of a narrow field and, in some cases, a vested interest. *Framing Technology: Society, choice and change* sets out deliberately to challenge such a perspective and takes a broad view both of technology and of its effects. This is strikingly illustrated by the breadth of contributions, from such diverse fields as media, economics, information systems, medicine, management and sociology. In the introduction, Lelia Green offers a working definition of technology which "includes ways of doing things as well as the machinery with which they are done." (p. xxviii). Judy Wajcman in the first chapter suggests a three-layered definition of technology

consisting of objects, activities and knowledge. The introduction argues for the importance of understanding the framing of technological discussions. This concept of framework is the basis for the arrangement of the material.

Like Caesar's Gaul, this book is divided into three parts: Framing the Individual, Framing the Communal and Framing the Global. 'Framing the Individual' deals with aspects of technology primarily affecting individuals. 'Framing the Communal' considers technology as it affects communities "usually in terms of the nation-state, but sometimes on a more local or global stage." (p. xxxi). 'Framing the Global' discusses the impact of technology at the global level and examines transnational corporations (TNCs), imbalances between the first and the third worlds, coverage of the Gulf War (1991) and the environment.

Part I ('Framing the Individual') consists of five chapters. The first is the distractingly-titled 'Technological a/genders: technology, culture and class'. Judy Wajcman challenges the theory of technological determinism and the view that technology is neutral. The demise of the gas refrigerator is used as an interesting example of the role of economics in the course of technological development. The economic significance of unpaid domestic work and the male domination of the design process are also explored. In 'Virtual reality fakes the future: cybersex, lies and computer games' David McKie explores some of the hype surrounding virtual reality (VR) and its future and exposes some of the more fanciful assertions ('VR will represent the greatest event in human evolution'). Claims of universal access and cyberspace democracy are challenged by observations on the unavailability of the telephone network to the majority of the world's population and the largely white, male, middle-class background of most participants. One drawback of this chapter as with much other writing on VR is that it comes across as a forum for the use of jargon and the coining of neologisms, thus obscuring the message.

'The technology of television' by Albert Moran explores the economic, social and political relevance of TV at a time of considerable change. He considers TV one of the three most important inventions of this century. Susan Oliver in 'Anticipating tomorrow: technology and the future' treads the ever-treacherous sands of prediction, highlighting *en passant* some of the failures of that discipline - the paperless office, telecommuting, the workerless factory. She raises the comparative importance of the needs of science and technology as opposed to the wider needs of society. The need for a strategic vision, both at the country level as well as the global is correctly emphasised, citing Japan as a possible model. In 'Till death us do part: technology and health' David More and Elizabeth More consider some of the difficult questions posed by technological developments in health care. These include questions of cost, public policy, inappropriate application of technology, the quality of health care and such ethical questions as the trade in human organs.

Part II ('Framing the Communal') contains five chapters starting with Len Palmer's 'Regulating technology'. The author deals with three basic questions - what is regulated? how is technology regulated? who does the regulating? The whole question of regulation is seen as an essentially political struggle, particularly at the international level, most noticeably the New World Information and Communication Order (NWICO) debates at UNESCO in the 1970s and the increased politicisation of the International Telecommunications Union (ITU). In 'Australia's information society: clever enough?' Trevor Barr examines definitions of an information society from various countries including Australia, Singapore and the United States. In considering the pay TV debate in Australia, he draws attention to the exclusion of the public from the debate and the preoccupation with delivery systems and organisations and the scant attention paid to content.

'Universal suffrage? technology and democracy' by Julianne Schultz illustrates the importance of technology in forming public opinion and its relationship to that slippery concept, the public interest. Attention is drawn to the role of information in the functioning of a

democracy and the risk of control of that information by vested interests, thus undermining the democratic process. In 'Dataveillance: delivering 1984' Roger Clarke examines the risks to individuals and society through surveillance of data by the use of information technology (IT). The dangers inherent in the proposed Australia Card (dropped after widespread opposition), some of which also apply to the extended use of the Tax File Number (TFN) are highlighted. These include large-scale computer matching and other uses going well beyond the original proposed use by the tax office. 'Electronic neighbourhoods: communicating power in computer-based networks' by Lynda Davies and Wayne Harvey explores the impact of networks and some of the associated issues including politics and power. The problems and effects of the globalisation implicit in the use of networks are also considered.

Part III ('Framing the Global') consists of four chapters. In 'The multilocals: transnationals and communications technology' Dick Bryan considers the role of transnational corporations (TNCs) and the importance to them of communications technology. It also explores the economic significance of TNCs and some of the criticisms levelled at them - their exploitation of cheap labour, their undermining of national sovereignty and other issues of national interest. In 'Missing the post(modern): cores, peripheries and globalisation' Lelia Green suggests that concepts of core v. periphery have a reduced significance in the age of the global network and are of greater relevance to industrial than to post-industrial societies. Michael Galvin's 'Vectory in the Gulf: technology, communications and war' examines the role of the mass media in the reporting of war, with particular reference to the Gulf War in 1991. He draws attention to some of the selective and propagandist reporting of the war despite the wealth of technology brought to bear on it and the apparently comprehensive nature of the coverage. In the final chapter, 'A sustainable future: living with technology', Adrienne Kinnear explores the differing viewpoints on sustainability and the impact of technological change on the environment, particularly in relation to historical changes in methods of food acquisition.

The reader who seeks a narrow focus on technology should look elsewhere. This volume is a good example of the wide range of fields which have a legitimate interest in discussions of technology and a worthwhile contribution to make. The variety of the contributions make it eminently readable and strongly support the view that the debate on technology and its societal impact belongs to all of us. The introduction states that a key aim is the encouragement of wider questioning. On this basis it has been clearly successful.

The arrangement of the material into three sections (individual, communal, global) is, in my view, somewhat artificial and not wholly successful. While some overlap is inevitable, it is not clear, for example, why chapters three and four ('The technology of television; Anticipating tomorrow: technology and the future') are of particular relevance to framing the individual. Similarly, the content of chapter six ('Regulating technology') has at least as much relevance to the global as to the communal. Such minor considerations apart, this volume has much to recommend it.

The contributions are clearly written, well argued and thoroughly researched. The contributors have taken to heart the theme of wider questioning and are likely to have the same effect on the reader. The scope of the material might at first seem daunting. However, the result is that this collection of essays has something to offer the reader with either a generalist or a specialist point of view. A worthwhile feature is the annotated bibliography (in addition to references) at the end of each chapter, giving a brief commentary on published material of particular relevance to the topic discussed. Also useful is the ten-page 'Abbreviations and glossary'.

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