

Chapter 12 by Richard Pope traces the developments of computer technology in the travel industry over the past five years during which progress in the adoption of such technology, as a marketing and competitive tool, by airlines, travel agencies, and holiday tour operators has occurred at a remarkable rate.

Ling Suen and Tom Geehan, in Chapter 13, describe developments in information and communication systems directed to the needs of public transport users, while David Jeffrey, in Chapter 14, surveys advances in information technology in the form of route guidance and vehicle information systems which have potential for enabling better use of existing road capacity.

Appropriately the final chapter by Peter Bonsall and Howard Kirby introduces the subject of artificial intelligence which 'implies intelligent-seeming behaviour in computers' (p. 354) and expert systems which '... involve rules and relationships devised to express human knowledge and judgmental processes' (p. 354). The Chapter provides a short review of what expert systems can do and discusses the scope for applying expert systems in transport.

The contributions in this book are well written and the chapters are organised in a logical way. One can agree with the editors that the book's main appeal will be to the 'serious student of transport systems' and the 'specialist practitioner'. The book is very informative and many of the chapters provide lengthy bibliographies and some include editorial notes which assist the reader in identifying links between the various chapters. The book should also meet the editors' belief that it will be of some interest to the 'technically minded layman'. Certainly this layman who has an interest in the economics of the transport sector found some of the chapters useful, not only in terms of the technical information provided, but also from the point of view of the economic and institutional implications which are raised by developments in information technology. While the latter are not discussed to a great extent they are identified by the editors in the opening chapter and by some of the authors. From this reviewer's perspective it is a pity that more attention wasn't given to a discussion and analysis of the economic and institutional issues.

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**Deregulating Telecoms: Competition and Control in the United States, Japan and Britain, by Jill Hills**  
(Frances Pinter, London, 1986) pp. viii + 220, ISBN 0-86187-568-0.

The topic of changing market structures involving resource reallocation, wealth redistribution and shifts in economic power and control has always interested economists, public administrators, policy-makers and legislators. This book on changing market structures in the telecommunications industry through the process of deregulation in three industrialised countries (the

United States, Britain and Japan) should be equally interesting to those professions concerned with the effects of technological change and the consequential result of a transfer in power from one socio-economic group to another.

Its main focus is on the process and consequences that technological convergence of the computer and telecommunications transmission industries has had on pressuring conventional market structures, market boundaries, product types and product styles in regulated environments to change. The author suggests that the processes of deregulation differ among countries but the outcome is always the same: a transfer of power at the national and international level away from elected governments towards private companies (p. 1). This book is about winners and losers as control, ownership and power are transferred from a regulated to a deregulated, liberalised or privatised environment. It contends that the recent bout of deregulatory fever in telecommunications industries in the late 1970s and early 1980s has been promoted by big business user groups harnessing the advantages of technological convergence and product unification to pressure for lower rates on the public telephone network, or to allow the establishment of independent competitive long-line by-pass transmission systems to be introduced. The author suggests that as telecommunication market structures change in response to calls for greater economic efficiency the redistributive wealth and power effects are neglected. Hills attempts to redress this situation by examining who does benefit and lose from deregulation or re-regulation at the national and international level.

Chapter one reviews the social and economic arguments developed in the economic and political science literatures supporting the case for regulation of certain economic activities. The case of natural monopolies, market failure, consumer protection, externalities and the national interest are all cited as acceptable justification for government intervention to control the behaviour of firms in markets where competitive forces have failed. She suggests that regulation has failed to achieve its stated objectives but rather has served the ends of the regulators and small compact producer groups that have continually outlobbied those groups that regulation was intended to protect: the consumers. It is argued that privatisation and liberalisation of the supply side of the telecommunications market is no solution. Both types of market adjustment will give greater choices for access to different communications systems for certain groups of consumers while excluding others altogether. The concept of the universal telephone service will be destroyed.

It must be stated however that the concept of the universal telephone service is a consequence of social objectives based on a certain set of value judgments that economic and social welfare will be improved if most of the population has reasonable access to telephone services. Cross-subsidisation of service types from urban to rural, business to residential and peak to off-peak have been used to achieve this objective. Efficiencies in capital investment and network allocation have suffered as a consequence. To maintain the concept, and objective, of universal telephone services at just and reasonable rates may no longer be a valid social objective as the quality of the network, the range of services on offer and voice, data, video, telex, and telegram outputs become more joint in their production process. Value-added network services (VANS) may be more appropriate.

Hills also condemns, and blames, economists for this latest redistributive effect resulting from privatisation and liberalisation of the telecommunications industry. She concludes that economists have promoted the concept of economically efficient market structures through the process of deregulation, and encouraged competitors to contest the market. She maintains that 'while economists have sought to peddle their wares on the basis that they are objective truths, the reality of the situation is that they contain normative perspectives' (p. 45). Here, Hills ignores that she is merely trying to rank one set of value judgements (*viz.* her own) at a higher order than those of economists who contend that markets should determine price and output combinations under contestable conditions; economic welfare will be maximised and a certain distribution of income and wealth will follow. Any major distortions in this distribution that are considered as undesirable can be corrected by traditional budgetary redistributive policies where the value judgements and subsidies are made explicit, not hidden in cross-subsidisation pricing. Moreover, it would appear that the author has overlooked the prospect that with such technological developments, industry restructuring and boundary re-definition, the redistributive effects and market behaviour may have occurred regardless of the discretionary deregulation decisions taken by the legislators. One cannot hold back the tide of change whether natural or technological.

Chapters two through five deal with the processes, pressures and consequences of deregulating telecommunication industries at the national level for the United States (US), Britain and Japan respectively, with Chapter five comparing the liberalisation and privatisation styles between the latter two countries. Here, the major focus is on the impact of technological change and the emergence of by-pass technology that assisted AT & T's competitors to gain a competitive foothold in supplying long-line services, convincing the FCC that AT & T's regulated monopoly power should be weakened. It is about the role that technological change and the attitudes of a sympathetic administration towards an open-skies satellite transmission policy played in forcing AT & T to abandon its protected monopoly of basic service in voice and public network systems and compete against enhanced digitalised voice data and video services. Hills' account of the background to the 1982 Consent Decree decision for AT & T to divest itself of its operating companies is accurate and updates, most credibly, the events since the implementation of the decree. Attention is focused on how AT & T pressured and lobbied first, the FCC, and then Congress to preserve its monopoly position by taking over its major competitors. Re-regulation has occurred since divestiture with State authorities being responsible for local network supply and tariffs.

Throughout this Chapter a concise and accurate account of the events and processes of market restructuring and responses to competitive and technological elements is presented, finally concluding that after deregulation little has changed as AT & T still controls over 90 per cent of the telecommunications markets but the way is now clear for tariff restructuring for users in the public telephone network. Little evidence is given to substantiate the claims that consumers will lose through higher tariffs as a direct result of de- or re-regulation. Again, the change in the quality of the service and its influence on what people are prepared to pay for a higher grade and flexible service is ignored. When discussing winners and losers from tariff changes, product quality changes must be recognised.

Chapters three, four and five analyse the restructuring processes in Britain and Japan and compare the different styles of adjustment of the publicly owned telecommunication entities. Interesting comparisons are made for these two countries. It is alleged that privatisation and deregulation in Britain was a consequence of government policy and philosophy responding to the need to improve productivity levels, correct poor export performances by British telecommunications equipment manufacturers, to reduce the Public Sector Borrowing Requirement and to dilute the power of public sector trade unions. The Beesley Report supported the proposal for liberalisation, giving the government justification to proceed and force interconnection of competing networks into the British Telecom public telephone switching network. In contrast, Japan's liberalisation policy was prompted by the Ministry of International Trade and Industry (MITI) in response to market and technological pressures. Fearing penetration by IBM into Japan's domestic telecommunication's market, MITI mobilised a joint venture between five local equipment manufacturers and the Ministry itself and then persuaded the MPT to abandon its concept of a protected domestic basic network and offer a wider range of services.

These chapters are of interest in that they direct the reader's attention to the different motivations and responses to the deregulatory pressures in different cultural and social institutional settings. But perhaps the most interesting point of all coming from these chapters is the recognition that economic agents with vested interests will preserve the *status quo* and protect their own economic interests. Hills uses the case of ISDN and VANS to pursue this point. In Japan the introduction by the MPT of integrated service digital networks (ISDN) integrating voice, data, video, telegram and telex as a single service, on a single network, and charging by time and system space for bits of information rather than facility access, would substantially disadvantage large business users and would curtail the expansion of the newly established VANS. It is argued, and quite successfully, that internal pressure from big business and external pressure from US manufacturers of switching and transmission equipment influenced the MPT to privatise Japan's domestic telecommunications carrier, NTT. Again, these chapters add to the major theme of the book in assessing 'the interests which new technology has served and its political role in the redistribution of resources' (p. 9), but do not convincingly establish that diffuse consumer groups will be worse off, even with rate restructuring. Little is said of the impact of new service offerings on consumer choices and preferences.

Undoubtedly the most exhilarating chapter in the book is Chapter six, which deals with deregulation of international communications. Here, the author clearly expounds the thesis that there is a deliberate attempt by the US to establish its dominance over world service trade by owning and controlling international transmission and end-facility telecommunications equipment. This will be to the detriment of third world nations as the US vies for world trade supremacy. Hills also shows justified concern for the loss of control and ownership of domestic telecommunication networks in Europe operated by the PTTs. She fears loss of sovereignty and control in the European market as the US invades with its fully integrated service offerings for world interconnection. In terms of future world trading patterns, the dependence of the third world on the US and loss of sovereignty over national assets, such

fears could indeed be well-founded. International forums such as the United Nations and the International Telecommunications Union should be used to ensure that the transmission from a regulated monopoly supplying international satellite transmissions to a competitive market arrangement is achieved smoothly, allowing for adjustments with minimum distortions to existing trade patterns.

Summing up, this book is informative and interesting and covers the major developments in telecommunications, giving an important update and overview of the events. In some places it is difficult for the non-technician to read due to the plethora of technical terms and abbreviations used, but overall it is well written for a complex topic integrating economics, engineering, politics and behavioural strategies. For public policy makers, economists, bureaucrats and equipment manufacturers interested in recent developments and potential directions in the area of telecommunications and technological change, their book shelves should not be without a copy.

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**The Tender Ship: Governmental Management of Technological Change, by Arthur M. Squires.**

(Birkhäuser, Boston, 1986) pp. xix + 247, SFr62, ISBN 0 8167 3312 X.

Arthur Squires, University Distinguished Professor of Chemical Engineering at Virginia Polytechnic Institute and State University, is deeply concerned that 'our culture (in the United States) is at grave risk' if we do not drastically change the power of the 'sterile, obstructive governmental bureaucracy' over engineering development for public needs.<sup>1</sup> He writes, in a discursive popular and semi-technical vein, to sensitise the educated audience 'outside technology' to the way in which bureaucratic practices have led to costly abandoned ventures and recognised failures in the United States (US) government-supported technological innovation in the post World War II years. By offering proposals for reform, he hopes to stimulate debate on needed changes.

Squires bases his argument on the contrast between the successful management, during World War II, of problems such as enriching Uranium-235 fuel for the atom bomb and the postwar mismanagement and sometimes tragic conclusion of poorly understood development problems such as matching the M-16 rifle with appropriate ammunition for Vietnam combat. His diagnoses of what went right or wrong and his remedies draw on his own mixed experiences with government development, including an extended apprenticeship on the U-235 project; extensive sifting through failures and