

Technology Transfer: A Communication Perspective edited by F. Williams and D.V. Gibson

(Sage Publications, London, 1990), pp. 302, £13.95, ISBN 0-8039-3741-5.

The codirectors of the Technology Transfer Research Group at the University of Texas at Austin have brought together 14 papers about technology transfer as a communication process. "In [their] broad view, technology transfer reflects all or some components of the process of moving ideas from the research laboratory to the marketplace. In brief, technology transfer is the application of knowledge" (p. 10). Important questions for both the scholarship and practice of technology transfer are seen as: How can we organise so as to enhance technology transfer? What should be the roles of US universities, state agencies and industry as players in the technology transfer environment? What is distinctive about the communication process of technology transfer?

For the modelling approach, which is indebted to Wilbur Schramm, David Berlo, Marshall McLuhan and Everett Rogers, "technology [is] more than physical products; it is information that is put to use. . .Technology transfer. . .is the iterative movement of this applied knowledge via one or more communication channels, with its communicating agents (scientists, clients, or "sources" and "destinations") being dyads structured as groups or organisations" (p. 13).

Earlier work is grouped around the appropriability, dissemination and knowledge utilisation models. The Group's communication-based model emphasises several important characteristics of interpersonal communication: technology transfer is "an ongoing, iterative process" (pp. 15-16); feedback is pervasive; technology is often not "a fully formed idea" (p. 16); the technology transfer process "is often a chaotic, disorderly process involving groups and individuals who may hold different views about the value and potential use of the technology" (p. 16); and the model is not unidirectional.

The opening essay by George Kozmetsky describes technology as a key resource for competing in the global marketplace. The two papers in Part II examine the environment of technology transfer as it occurs both within and outside of organizational structures. Specific contexts of technology transfer, e.g., research consortia, university-industry linkages, new business ventures, provide the five chapters in Part III. Part IV deals with the interests of other nations and transfer across international boundaries (i.e., papers on Mexico, Japan, Italy, Bangalore and multinationals). The concluding chapter reports a preliminary bibliographic study.

The topic of this book is important and most of the chapters are rich in detail. A disappointing feature is that the communication-based model tends to get lost in the detail and does not emerge clearly. The initial definitional basis is sound: technology is information. However, the papers have more to say about organizational details than about the information flows and stocks. The fundamental motive is said to be transfer and the test of success profit; but Veblen long ago noted that profit could be made by hindering as well as aiding production!

Economists have not neglected diffusion to the extent suggested in this book. Rather a charge of neglect of the economic dimension can be laid against some of the contributing authors. Take the following statement: "*Technology transfer* as thus defined usually involves some source of technology, possessed of specialised technical skills, which transfers the technology to a target group of

receivers who do not possess those specialised skills and who therefore cannot create the tool themselves" (p. 45). While transfer may arise from such inability, in many cases there is a choice between domestic effort and foreign acquisition based on costs and competing uses for resources. Similarly, economic considerations may help in understanding network boundaries, although precise definition in terms of attributes and activities (p. 18) may need to give way to fuzziness that reflects the uncertainties and experimental behaviour of the "chaotic, disorderly process".

I have a number of queries. For example, Table 1.1 (Kozmetsky, p. 37) shows that by 1983 51 per cent of US GNP "was derived from information technologies" (p. 36). No definition of information technologies is given; the source is dated 1968 and no explanation of the projection is given; and we are left to guess what *derived* means in this context. Elsewhere information is referred to as "the world's most traded commodity" (Bozzo and Gibson, p. 230), but much of the information economy development is trade in information-related services rather than in information itself. Because of the limits on information as a tradable commodity, much of the information flow is internalised. And another query: What does *global* imply. Often this buzzword seems to mean only international. It may well prove useful to cling to the old-fashioned distinction between local, regional and international.

To sum up, a useful item in the library.

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International Telecommunications in Hong Kong: The Case for Liberalisation
by Milton Mueller
(Chinese University Press, Hong Kong, 1991), pp. xiii + 137, \$HK60.00, ISBN 962-201-509-3.

Milton Mueller's book presents a vigorous advocacy of free market microeconomic reform of which his research benefactor (the Milton Friedman lecture fund) should be justifiably proud. Mueller maintains that an existing 25-year licence giving Cable & Wireless a monopoly on international telecommunications until 2006, should be rescinded on the grounds that it is and will increasingly be, a serious impediment to Hong Kong's economic growth. With the transfer of Hong Kong to the People's Republic of China in 1997, he presents strong argument for immediate action.

Traditionally, telecommunications has been regarded and still is in many quarters as a natural monopoly. Modern technology however, is making competitive communications more feasible, particularly for customer premises equipment, long distance services and value-added services. Deregulation of telecommunications is an infrastructure model that is gaining support in a growing number of countries, following the example of USA, UK, Japan and more recently New Zealand and Australia.

Paradoxically, the initial move to competition in its country of origin, USA, was inspired not by poor service or free-market ideology but by an initial quirk in the legal system which opened up a chink in the AT&T monopoly armour (the Carterfone decision of 1968) that a growing army of communication lawyers