REFERENCES

1. T.D. Mandeville, D.M. Lamberton and E.J. Bishop, *Economic Effects of the Australian Patent System,* commissioned report to the Industrial Property Advisory Committee, 2 volumes, AGPS, Canberra, 1982.

The Future of Urban Form: The Impact of New Technology *edited by John Brotchie, Peter Newton, Peter Hall and Peter Nijkamp*
(Croom Helm, Kent and Sydney and Nichols Publishing Company, New York, 1985) pp. 374, $A44.50, ISBN 0-7-99-3255-3.

Less than a decade ago high technology and information technology were hardly household words and rarely a subject of national policy. Today commissions on technology, innovation and developments proliferate at all levels of government throughout the world. Despite a great deal of ignorance as to what the new technology is and what changes it will bring about, the concepts are seized upon as a panacea for all sorts of contemporary ills — slow economic growth, unemployment, and urban decline. Yet even the experts are baffled by the many contradictions inherent in the introduction of new technology. Current technical capability could rapidly accelerate the decentralising trend in urban agglomerations that has been occurring for several decades in Europe and the United States. At the same time, however, technology and innovation are facilitated by densities of commercial, production and marketing services, other information-based industries and the ease of personal contact — factors that would seem to favour urban locations. *The Future of Urban Form: The Impact of New Technology* is designed to stimulate our thinking about the ways in which new technology may influence urban development.

The 25 essays cover a wide spectrum of technological changes and their consequences for living and working in metropolitan areas. The authors — principally urban planners, but also scientists and economists — are concerned with the transition of post-industrial states to information-based societies. They speculate on the impact on national settlement systems of four changes: automation in manufacturing production, microprocessor and telecommunications in service and information sectors, energy prices and shortages, and the substitution of energy and vehicle technology.

The volume is a product of a workshop held in Waterloo, Canada in July 1983, sponsored by the International Council for Building Research Studies and Documentation. Of foremost concern was to discern the ways in which socio-technological changes are "altering space needs and locational requirements of industry and transport . . . as well as of individuals and families." Throughout, the authors' objectives are to describe major socio-technological changes — specifically those relating to the information revolution — and to predict their probable effects on urban configurations, relationships of land uses and densities.

The wide-ranging essays are clustered in nine different parts. The first two parts place the information revolution in an international context and examine

recent trends in manufacturing and service sectors of North America and Europe. Parts 3, 4 and 5 discuss innovation in development, communication and transport, and information systems. Part 6 considers institutional influences, particularly the role of the state in the process of change and in designing social policies. Subsequently, parts 7 and 8 examine approaches to modelling urban systems and sketch possible scenarios. The final part theorises about the implications of the future urban system for planning.

An ambitious task and the book can only touch on these subjects: the discussion ranges across urban systems in eight countries. Although the material is diverse,the authors make it manageable. The essays are succinct, averaging from 10 to 15 pages. Cross references to other articles are both frequent and useful. Thus in a relatively few pages the reader can acquire a familiarity with major technological changes that are likely to influence our lives in the next two or three decades. A disappointing shortcoming, however, are the frequently skimpy bibliographies. This is especially regrettable because of the range of recent international literature and research known to these authors. One of the principal reasons for acquiring a collection such as this is to have readily at hand full and up-to-date bibliographies. The editors should have insisted on these.

Since 20 of the contributors are British, North American or Australian, an Anglo-Saxon perspective predominates. (There are also three contributors from the Netherlands, and one each from Sweden, Austria and West Germany.) Although this perspective does not detract from the richness of the potpourri, it does make generalisations and forecasts suspect.

What, then, is to be learned? The articles do offer a colourful collage of technological achievements and probabilities and give a good insight into the trends of the immediate future. For example, we learn that high technology industries in the leading countries are highly dependent on government initiative and funding. Contemporary urban planning requires a new classification of industrial activity, one in particular that will distinguish knowledge-based components from the manufacturing process in high technology. The urban physical structure exhibits a high degree of inertia in relation to activity changes. Bio-engineering has conflicting requirements that will likely maintain locations near airports in metropolitan areas. The capability for in-vehicle communication exists to provide instant traffic messages, estimate delay time and indicate diversion routes. Automatic monitoring of vehicle movements and mechanical performance offers opportunities for distributed road pricing, road-user advice and regulatory possibilities as well as improvements in road safety, but also raises questions of social acceptability. Freight transport will continue to be greatly affected by automation and containerisation will primarily be by road. Communications expenditures are increasing more rapidly than transport expenditures; the aggressive growth in household expenditures for communications suggests an imminent trade-off in transport expenditures. Social, rather than technical and cost, factors underlie the slow diffusion of recent advances. Electronic shopping will have the greatest impact on the location and form of retail stores and shopping malls, which are likely to offer a more diverse mix of services. The gap is widening between the technological potential of urban information systems and the actual utilisation in the planning process; advanced information systems available to large firms will enable them to exert an even

stronger influence on public planning decisions. Largely undefined is the role governments can play in inducing social and institutional changes for the technologically dominated future. And so on. . .

Although the authors do a good job in revealing what will become possible, the nature of the changes and implications for daily life and work, they are less convincing in predicting the urban form. The book is intended to be future-oriented, but, unfortunately, the crystal ball remains opaque. After 360 pages of text, the reader is still unable to visualise what our cities will look like in the year 2000. The editors caution initially that the impacts of technological change will affect different urban areas in different ways, depending upon their particular labour force-amenity mix. The articles, however, are replete with superfluous disclaimers, the future being "hard to predict" with "few precedents". Prognostications are tempered by alternative scenarios and caveats — perhaps occupational hazards of futurologists. The most judicious and generalisable conclusion is by one of the authors on transport: "it is easier to say what will become possible in the future than to guess what use, if any, will be made of the new opportunities" (p.138).

As for the employment potential of these technological changes in urban areas, the authors share a pessimistic forecast. The general gist of the articles reinforces a broadly shared view that the required skills of the future will be more sharply divided into highly technical and low skill-standardised production. The low wage, low skill jobs are being shifted from metropolitan areas, often to branch plants in less developed countries. Highly skilled personnel place priority on the amenities and quality of life in their place of residence and work, thus influencing locational decisions and employment away from former industrial agglomerations.

Another common theme is that the implementation of new capabilities will be determined in large part by political, institutional and socio/cultural as well as technological factors. Given the importance of these factors in mediating the impact of technological change, one might expect they would be more fully incorporated into the analysis of future urban form. But a technological and physical planner's bias, not surprising in light of the authors' expertise and backgrounds, precludes more than a brief handling. The centrality of the vision of a technocratic society, "the myth of the machine" as Lewis Mumford once warned, tends to lose the "man concealed in the works". The book does not succeed in specifying how social, cultural and political preferences influence which of the new technologies will be accepted and where.

Thus, essential questions remain open:

- What economic, social, political, cultural and educational activities will be most likely carried on in urban centres?
- Who will want to work in urban centres of the future?
- Who will want to live there?
- Who will *have* to live there?

These questions must be answered before appropriate urban policies can be designed.

A section on the public policy implications of the new technology — what opportunities await resourceful planners and what adaptive efforts will be necessary — would have enriched the book. Given that contradictory effects

on urban development confound predictions regarding future settlement patterns, a high degree of flexibility in urban planning and use of urban structures is required. Goddard has suggested that the ability to exploit these new fields may well depend on the speed of the response and the inherent infrastructure, industrial and institutional capacity of the individual city.[1] Guidelines are urgently needed for policies that would harness the benefits of technological changes for people who live in cities and in particular for those groups that will lose substantially during restructuring and the innovation process.

These criticisms notwithstanding, the book is uncommonly informative, stimulating and even fun for the general reader or for a classroom introduction to the subject. Urban planners and economic development policymakers also will benefit from acquiring a sounder basis for integrating sectoral/regional/urban policies with the requirements of technological advances. Upon that basis urban scientists might be better equipped to insure that human needs are met by the technological revolution.

Joanne Fox Przeworski
Consultant to Organisation for Economic Co-operation and Development
Paris

REFERENCES

1. J.B. Goddard *et al,* 'The impact of new information technology on urban and regional structure in Europe' in A.T. Thwaites and R.P. Oakey (eds), *Regional Economic Impact of Technological Change,* Frances Pinter, London, 1985.

Technology, Work and Industrial Relations *edited by Russell D. Lansbury and Edward M. Davis*
(Longman Cheshire, Melbourne, 1984) pp. xv + 253, $18.95 (pb),
ISNB 0 582 68892 2.

The general impression which emerges is that, like most British employers, most Australian employers introduce new technology first and think about consequences (in terms of industrial relations etc.) second. Attempts to secure union and workforce participation are rare.

The book consists of four parts. The first contains reviews of technological change and industrial relations in Australia from different perspectives: academic, employer and trade union. The second presents case studies related to these issues in the banking and finance industries, in television and broadcasting, in water, sewage and drainage and in retailing. The omission of any case study material on manufacturing is, perhaps, surprising, although manufacturing is of less relative importance in Australia than, say, in the USA, Japan or Britain. The third part of the book is concerned with relationships between technological change and the design of jobs and the quality of working life; on implications of technological change for