

and Ramsay on transnational companies.) But the threads are never pulled together. There is a lively and persuasive essay by Ford on the competitive necessity for Australia to develop a highly trained and flexible labour force. Why this should require industrial **democracy**, rather than the open or thinly-veiled authoritarianism of the more successful NICs, is not convincingly explained. For all their much-vaunted participative quality circles, even Japanese corporations rely on the obedience and conformity inculcated by a profoundly hierarchical society in which few Australians, except perhaps the super-rich, would choose to live.¹

And the future for industrial democracy (of whatever variety) in Australia? Quite rosy in the public sector, if the State and Commonwealth initiatives referred to in these two volumes come to fruition. Pretty bleak elsewhere, on the evidence cited by Cummings and Ramsay in *Diversity, Change and Tradition* on the way in which capital has been able to evade even the minimal constraints threatened by the existing arbitration mechanism. Some progress may result from the flow-on of the recent Commission decision in the job security case, but my reading of *Industrial Democracy and Employee Participation* is that little or nothing can be expected by way of new legislation from the Commonwealth Government. If mass unemployment persists, 'Treat 'em mean and keep 'em keen' may yet be the managerial watchword of the 1990s.

REFERENCES

1. See Gardner *et al.* in *Diversity, Change and Tradition*, p. 152, and M. Morishima, *Why Has Japan 'Succeeded'?: Western Technology and the Japanese Ethos*, Cambridge University Press, Cambridge, 1982.

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Technological Change, Employment and Spatial Dynamics, edited by Peter Nijkamp.

(Springer-Verlag, Berlin, 1986), Lecture Notes in Economics and Mathematical Systems, No. 270, pp. vii + 466, ISBN 3-540-16478-2.

Technological Change, Employment and Spatial Dynamics is a collection of twenty-two papers arising from an international symposium on "Technological Change and Employment: Urban and Regional Dimensions" held at Zandvoort, The Netherlands in April 1985. In addition to the conference papers the volume includes a brief introduction from the editor and concluding remarks by the editor and Manfred M. Fischer. The papers are divided under three headings. The first set is entitled 'General Reflections', the second 'Actual Trends' and the third 'Modelling'.

A major preoccupation of the book is with the current expansion of the information technology sector and its effects on employment growth and the regional distribution of employment. However this is placed in a more general context by many of the contributors who discuss, amongst other things, long wave theories, product cycle theories and urban-periphery models. All the contributors stress, to a greater or lesser extent, the need to consider the dynamics of what is a disequilibrium problem. In this more general discussion the papers make clear the necessity to distinguish product innovation from process innovation.

The first section of the book, 'General Reflections', contains six papers ranging from the quite general paper by T.R. Lakshmanan and Lata Catterjee, who consider, among other things, the importance of structural rigidities and institutional factors that contain the speed of industrial change, to the paper contributed by Peter M. Townroe which is based on a consideration of the United Kingdom (UK) service sector. In this latter paper Townroe argues that traditional industrial and occupational classifications may not be too helpful when considering the employment effects of the current growth in information based technology. This valid point is noted elsewhere in the volume. Elsewhere in this section John B. Goddard and Alfred T. Thwaites consider the relationship between innovation centres and regional policy; John F. Brotchie, adopting a more theoretical approach, discusses the notions of efficiency and robustness of a complex system; Dirk-Jan F. Kamann stresses the importance of dynamics and of the changing nature of demand, and Michael Storper, in a stimulating paper, argues that the introduction of new technologies leads to outcomes that are not necessarily efficiently superior, that become structurally rigid, that are unpredictable in advance and that are determined by minor rather than major factors. Although each of the authors in this section approaches the topic from a different perspective many of the general reflections are duplicated. In one sense this is a strength, as it exhibits a degree of consensus as to the major points of issue. However it does detract slightly from the flow of the section.

The second section, 'Actual Trends', contains eight papers of an empirical nature. Four papers use Dutch data, two are based on data for the Federal Republic of Germany, (FRG), one uses UK data and one Greek data. In addition some of the authors provide an element of international comparison. This section contains much of interest not least because of the variety of results obtained by different contributors. To some degree this variety may be explicable in terms of the different research designs of the studies undertaken, for example whether the results are survey based or not, and in terms of the different levels of both regional and sectoral disaggregation used. However it would appear that there is considerable room for further research both of a theoretical and an empirical nature which might go some way to unify the results.

Hans-Jurgen Ewers using FRG data, notes the shift in employment growth towards small firms but questions whether these trends will persist. David Gleave highlights the heterogeneous performance of the service sector industries in the UK whilst demonstrating the steady growth of the information based industries since 1960. Franz-Josef Bade contrasts traditional sectoral development theory with the experience of the FRG manufacturing sector, some parts of which have experienced employment

growth. Bade stresses the role of functional change and relates the phenomenon of urban job loss to this functional change. Maria Giaoutzi shows that the Greek data conform to the pattern that whereas process innovation is independent of region, product innovation is concentrated in the core regions. The four papers based on Dutch data concentrate on different aspects of the general problem of the influence of technical progress on the spatial and structural distribution of employment. Els Hoogteijling, Jan William Gunning and Peter Nijkamp note the large differences in innovation rates between industrial sectors, but are not able to demonstrate any clear relationships between these differences and the differences in output or employment growth rates. They also find that firms outside the major cities are no less innovative than those located in the major centres. Jan G. Lambooy and Chris van der Vegt discuss the relevance of segmented labour markets and investigate the efficacy of training programs with respect to the urban unemployment problem. J. Hendriks argues the case of coordination of regional initiatives in the training of new entrepreneurs. Finally in this section Huub Bouman and Bram Verhoef point out that the hi-tech sector in The Netherlands has not been immune from the effects of recession and suggest that larger firms may have better prospects due to their larger expenditure on research and development.

The final section, 'Modelling', contains eight further papers that present a variety of models that shed light on various aspects of the discussion of the earlier parts of the book. The models differ widely although all contributors recognise the need for a dynamic approach. Peter Nijkamp and Jaques Poot find that endogenising technical change leads them to a model of spatial interaction that is akin to models of population dynamics. Dimitrios S. Dendrinos develops a model of spatial employment dynamics that is rich in solutions and which significantly qualifies the results of classical migration theory. Gunter Haag develops a simulation model of residential and labour mobility. Richard H. Day and Kenneth A. Hanson, in one of the more challenging papers in this section, describe a model of technological change and the demand for labour in which agents' choices are restricted not only by resource constraints but also by confining adaptations to a neighbourhood of current practice. They recognise however that this type of non global optimisation model, which they refer to as 'adaptive economising', is difficult to apply and test. Jan Rouwendal constructs a model in which, under certain conditions, lagging regions can overtake leading regions, though here it is recognised that the model needs some further work to make it more realistic.

The last three papers in the section are more of a mixture of theory and empirical work. Roberto P. Campagni examines the urban life cycle theory and applies it to the experience of cities in northern Italy. Borje Johansson and Charlie Karlsson examine product cycle theories using data on the Swedish information technology industry and note the important effects of labour force competence and the network properties of individual establishments. Using Austrian data, E. Brunner and U. Schubert describe a model designed to examine regional labour markets, however data limitations force them into many simplifications. In particular they are not able to incorporate explicitly expenditure on research and development in the model that they estimate.

Overall the book contains many interesting and stimulating facets. As is often the case with proceedings of conferences the authors present a variety of

views and approach the problem from different standpoints. The general informed reader may find some papers less helpful than others but both he/she and the researcher in the field should welcome this collection. There are two further observations that are pertinent.

First, it is unfortunate that the papers are overwhelmingly European in accent. Although references are made to the United States (US) experience in technological change and employment consequences I would have welcomed some reporting of research in this area using US data. It would also have been useful to have been given a perspective from the experience of less developed countries. However the editor cannot be blamed for this as his contributors were those contributing to the Zandvoort symposium. Second, the further into this book one reads the more one is impressed by the degree of consensus that exists between researchers in the field as to the important concepts and factors that have to be considered in any study. However none of the 'Modelling' papers here encompasses the whole range of issues raised in the first section, or are capable of explaining the diversity of results of the 'Actual Trends' section. Of course one should not expect this type of synthesis in a collection of conference papers. However it does suggest that there is a need for a book which presents a unification of the theory and the empirical evidence.

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Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition by the *National Academy of Sciences, National Academy of Engineering and Institute of Medicine*
(National Academy Press, Washington DC, 1987) pp. 321, ISBN 0-309-03738-7.

The constitution of the United States (US) ensures its citizens all sorts of inalienable rights, but not (presumably through some oversight of those who drafted the document) the right to export. Even now, at least in theory, Americans may export nothing without the permission of their government, and increasingly, the express permission. Licences of multifarious sorts are required before items are exported. Sometimes a licence may be self-issued, sometimes its acquisition may be a quick formality, sometimes months or even years of uncertainty may be involved in the application, and sometimes a licence may be denied. This last will occur if the item is deemed to be in short supply, or if there are foreign policy or national security implications in its export to specific destinations. The most recent legislation to support this procedure is the *Export Administration Act* of 1979 as amended in 1985, and by far the most important purpose of the legislation is to prevent items which may be of military use reaching the Soviet bloc.

The US and her allies are as one in their agreement that supplying their most likely enemy with guns and bombers and such like (and even the equipment to make them) is not a particularly clever idea. That is why, ever since the end of