

since neither is all the evidence in yet (nor will it be for a long time); nor is the task of elaborating the implications of our theoretical positions in the light of available evidence an easy one. Still, one would wish that the discussion of problems in chapter 9 had an implicit case being argued as strongly as the case for European co-operation is in the concluding chapter.

This is not, then, the book to turn to if you are looking for provocative new arguments about the social implications of IT. But even if you think you are familiar with the field, some of the material is likely to be news, and you will be far less frequently inclined to throw the book out of the window than is the case for other popular books on the topic. As an introduction to the field, especially as a lucid account of the core technologies and their applications, this is excellent. One awaits with interest the results of Forester's future editorial work . . . I hear that he's busily working on collections dealing with superconductors and with broader social aspects of IT than those covered in his earlier books.

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The Geography of De-Industrialisation edited by Ron Martin and Bob Rowthorn. (Macmillan, London, 1986), pp. xxiii + 365, £30.00 H/B; £8.95 P/B, ISBN 0-333-37124-0 and 0-333-37125-9.

De-industrialisation is a term first coined in the late 1970s to cover the dramatic fall, both relative and absolute, in traditional and uncompetitive manufacturing sectors among western industrial nations. As an economic and social phenomenon it becomes a symptom of a country's poor economic performance when the decline in manufacturing is not compensated by growth in other export earning sectors, commonly involving advanced technology and producer services such as R and D, finance and high-order management activities. The end result of de-industrialisation is usually a fall-off in job growth and export earnings, greater import penetration and increasing balance of payments and overseas debt problems.

All of the above has a geographic impact, especially when traditional, slow-growing industries have been concentrated in particular cities and regions. In this case, market forces often lead to a regrouping and revival in the already growing and prosperous areas of a country, rather than those in most need of industrial restructuring, thereby accentuating any existing socio-economic inequalities between regions.

This volume of Martin and Rowthorn is primarily concerned with the British experience, where there has been a spectacular contraction in net manufacturing employment of three million jobs in the last 20 years (half of this occurred since the commencement of the Thatcher government in 1979). The editors note that in the same way that Britain was the first country to industrialise, so it has been the first to de-industrialise. Yet there are many lessons here for Australia, due to the growth of import penetration and the polarisation between growing and

declining regions within our metropolitan areas, and between our large cities and country towns.¹

The editors' preface sketches the major parameters of British de-industrialisation: the impact of job contraction on manual and unskilled workers, the sharpening socio-economic divide between the older, heavily urbanised areas and the more attractive rural parts of the country. The ten essays that follow set out to examine the causes and outcomes of industrial contraction and job loss from a number of perspectives, with an emphasis on the behaviour of British capital and the effect of government policies.

Rowthorn leads off by suggesting three hypotheses for the severity of the British case. Two of these revolve around rather mechanistic explanations for the decline in the share of manufacturing employment within a framework of a general theory of trade specialisation, development and structural change. The third hypothesis is based on the weak performance of post-war British manufacturing industry; a universally accepted proposition but hardly an incisive explanation for either causes or outcomes.

The most challenging theoretical piece is by Doreen Massey who argues that a major factor shaping the internal geography of production and jobs has been the UK's changing role in the international division of labour. Massey charts how export oriented sectors, e.g. coal, ships, cotton, iron and steel, flourished in the last century when Britain had a dominant role in world trade and politics. It has been the decline of that dominance, and the instability of the trade cycle, which led to the long-term collapse of regions such as south Wales, the north-east of England and Scotland since the inter-war years. Moreover, according to Massey, much of that decline is of industry which would not ever have been there had it not been for a previous era of UK international economic dominance. She identifies an important split within British capital: a highly dynamic international manufacturing and finance sector, and a relatively backward domestic industrial sector. A major conclusion is that a continuing political commitment to allowing unrestricted investment overseas, by multinational companies, is part of what lies behind the structural weakness of the UK economy, and its high degree of vulnerability to de-industrialisation.

A chapter by Dunford and Perrons then describes the main processes of change in the manufacturing sector and relevant government policies since the war, highlighting the shifts over time between industrial sectors and linking these to change in industrial organisation and regional employment. They concur with Massey that de-industrialisation in the UK case has involved the relative abandonment by big business of domestic production, even in advanced manufacturing areas such as chemicals and electronics, and that services have not yet filled the gap. Henwood and Wyatt follow, with a piece on how new industry structures and technologies have affected women's jobs, both within manufacturing and services, across the regions of Britain. One conclusion is that new information technologies have opened up greater opportunities for working at or nearer home, which could be advantageous to women if other forms of paid work are not available.

In a group of chapters covering specific locational outcomes, Rhodes returns to the issue of how to specify the regional dimension of manufacturing contraction since the mid-1960s. He observes that regional structural characteristics determine in part the impact of the forces of international competition, technologies and innovation. In the main, these characteristics are the region's geographical and industrial legacy from the past: so those regions

which have de-industrialised most rapidly are those with a large share of declining industries, large conurbations, old firms in large factories, and with a very low propensity to generate new firm start-ups. Government policy is yet another salient factor, as some regions suffer an additional burden of being discriminated against by government spatial policy. He concludes that without a national approach to re-industrialisation, regional initiatives will fail and the gap between the industrial and declining north and the 'high tech' south will widen. An appropriate regional policy would be to encourage the modernisation of manufacturing industry in assisted areas through more resources and a broadening of policy to encompass the programs of the public sector as a whole.

Hudson focuses in his chapter on the peripheral north-east region (mainly North Yorkshire, Tyneside and Teeside, and Newcastle) and demonstrates how post-war state policies on nationalised industries — coal, steel and ship building — contributed to the de-industrialisation process. Reductions in public expenditure on regional policy since the end of the 1970s were also important, causing the north-east to cease to be an attractive location for private sector investments. Hudson also exposes the role of organised labour in this region, and comments that their attempts to prevent plant closure and job loss have generally been unsuccessful. Fothergill, Gudgin, Kitson and Monk examine the effects of de-industrialisation on traditional British manufacturing cities *per se*. They argue that the cities' demise as centres of production, and the consequent growth of smaller towns, is the product of an overall slowing in the economy, shifts in economic growth which favour services, and a particular spatial effect which involves some characteristics of the cities themselves; inadequate premises suitable for expansion, high rents and wages etc. The British context is important here for, unlike Australia, 'green belt' restrictions and other constraints have set a ceiling on the amount of land available for new factory development: manufacturing growth has therefore been literally squeezed out of the city. The policy implications infer that even when recovery occurs the decline in manufacturing jobs in Britain's largest cities is set to continue.

The final three contributors explore existing and forward looking policy issues more fully. Martin mounts an attack on conventional New Right approaches to the industrial sector along the lines adopted recently by Stretton in Australia.² Martin argues that if the combined economic impact of recession and Thatcherism has been regionally divisive, so too are the signs of recovery. Daniels looks at the role services might take in contributing to the revival and restructuring of the British economy. The trends towards an internationalisation of producer service provision leads to a concentration of the growth in British finance and banking in the south-east, and a low tendency for this sector to provide much mobile investment. A policy implication is that initiatives will be required to assist producer services to expand or start up in areas of under-provision. The concluding chapter by Morgan deals with policies for industrial innovation and assesses their adequacy and existing spatial bias. The dominant link between public sponsored R and D and defense has caused the south to gain most from this 'cutting edge' activity, with perhaps central Scotland the only other area benefitting. One of the major implications is that an exclusive focus on the so-called 'sunrise' industries can only have profoundly uneven social and spatial consequences.

All in all, this volume provides a useful treatment of recent changes in the British spatial economy, albeit at an aggregate level of analysis. Although the chapters contain fairly diverse perspectives there are many common threads,

e.g. agreement on the geographical patterns of industrial decline, the key role played by British firms' penchant for international investment, and the damage inflicted by the Thatcher government's monetary policies. On the question of policies necessary to tackle the uneven spatial consequences of decline, the authors agree generally that nothing short of a full national commitment to industry policy would provide a framework for regional policies to work.

REFERENCES

1. See, for example, G.J.R. Linge, 'Australian Manufacturing in a Recession: a Review of the Spatial Implications', *Environment and Planning A*, 11, 1979, pp. 1405-30.
2. H. Stretton, *Political Essays*, Georgian House, Melbourne, 1987.

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Science Speaks to Power: The Role of Experts in Policymaking by *David Collingridge and Colin Reeve*
(Francis Pinter, London, 1986), ISBN 0-86187-640-7.

It has been over a decade since Dorothy Nelkin's observations on the controversial impact of technical expertise alerted scholars to the importance of questioning the value of scientific arguments advanced in political debate. In so doing, she focused contemporary attention upon questions that have been implicit in the history of science since the Scientific Revolution. When Bacon wrote of the value of science in the 'effecting of all things possible' for the 'relief of man's estate', he omitted to mention who would decide what was possible, and whose estate would benefit. Today, with allegations over the *Vincennes* affair raging around the world, the practical significance of this enquiry has suddenly forced us to ask again: how far can decision-making, affecting the lives of many, depend unalterably upon our faith in science? The question is not entirely empirical; it goes to the source of our belief in the rationality of science, and by extension, to our confidence in the proposition that if only decisions can be made more 'scientific', then consensus, harmony and fraternity will be the inevitable result.

In a series of studies on the control of environmental hazards, appearing from the early 1980s, David Collingridge has examined a number of instances where practical decisions, based allegedly on sound technical advice, have produced anything but harmony. Here, with Colin Reeve, he goes beyond the accumulation of experience, and asks whether this condition may be **necessarily** so. Generalising from cases where technical expertise has produced more bickering than better policy, Collingridge attacks what he calls the twin myths of rationality and the power of science. With a vigour reminiscent of Descartes, he embarks upon an analogous sceptical enterprise: but, with an inverted Cartesianism, his 'method' is to expose the fallacy of two modern beliefs. The first of these is that uncertainty in decision-making may be reduced by the acquisition of more information (the 'power through information' hypothesis); the second is that