worked, and in certain respects fulfilled criteria of use, accuracy, and reliability. But the reason that they failed to catch the technical imagination was that they did not meet the main need of the times. They were time-consuming to install and operate. They were possibly more costly to use than paper and pen methods. The tables to which they could be applied had already been calculated in many forms, and were in wide circulation. On the other hand the inventors and certain supporters were mesmerised by the technical advances embodied in the machines, and this blinded them to the realities of potential demand and use. Lindgren concludes that Babbage must have come to realise all this, but it did not preclude him from actively encouraging Scheutz and his son. In some ways they were additional foils to Babbage's utopian grandiosity.

The most important lesson to be drawn from this fascinating episode, intelligently and imaginatively detailed by Lindgren,[1] is alluded to by the author himself as he concludes that although the potential applications of the electronic computer seem boundless, like the difference engines might there not be problems which the computer has found and which could be solved in a more appropriate fashion? Lindgren's title *Glory and Failure* is well-chosen. There was a limited glory for Scheutz and his son, who succeeded where Babbage faltered because they were engineers and craftsmen. But the overall failure of the collective endeavours of all three arose because people were not entirely captivated and fascinated by the technology as an end in itself. Lindgren's 'case study' is a useful corrective to those who are less sceptical of inventions and technological wonders.

NOTES AND REFERENCES

1. Babbage may indeed have a very strong claim to be a founder of certain principles adhered to by computer scientists — he claimed his work was practically complete, when it was far from ready; he relied on the unsung efforts of his programming team; he was constantly over-budget and under-schedule; he delivered systems which never worked.
2. Joseph Weizenbaum, *Computer Power and Human Reason: From Judgement to Calculation,* W.H. Freeman, San Francisco, 1976, p. ix.
3. Brian Winston, *Misunderstanding Media,* Routledge and Kegan Paul, London, 1986.
4. The author, in the preface to the second edition, notes that material relating to calculating machines, computational tables, and Babbage's Analytical Engine, have been omitted. Perhaps it might be suggested to his publishers that a companion volume dealing with these be forthcoming in the future.

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The Globalisation of High Technology Production: Society, Space and Semiconductors in the Restructuring of the Modern World *by Jeffrey Henderson* (Routledge, London and New York, 1989),pp. xxiii + 198, $32.95, ISBN 0-415-06076-1 (pbk).

Henderson has adopted a political economy approach to the internationalisation of the semiconductor industry. He sets the international development of the industry in the theoretical context of the new international division of labour. However, he is critical of much of the literature, arguing that it overemphasises the role of foreign capital and neglects local firms. In addition, it does not take

into account changes over time in the structure of the industry.

In ch.3 Henderson lays the foundation for the emphircal chapters. He explains the nature of the semiconductor industry and considers technical change in the industry in relation to the labour force. He also reviews the emergence of the semiconductor industry in the US and provides a brief account of the reasons for the emergence of Silicon Valley.

The core of the book is in the empirical chapters on East Asia (ch. 4), Hong Kong (ch. 5) and Scotland (ch. 6). He examines the role of these countries in the global strategies of US electronics firms and points out that the East and Southeast Asian region has emerged as a far more sophisticated production location than its early low-wage assembly role of the late 1960s and 1970s. Hong Kong has emerged as a regional testing centre for these transnational corporations.

Henderson highlights the integrated nature of transnational corporations' production networks, but also links the operations of these firms with those of local firms. The strength of the book is that it is well-integrated around the theme of the internationalisation of production. He sets out the theoretical framework in the introductory chapters, examines a number of case study countries and then pulls the themes together in the conclusion.

The book's focus on US electronics firms is unfortunate, since he neglects the dominant position of Japanese firms in parts of the electronics industry. This dominance was emerging in the late 1980s; however, the book chiefly refers to events in the early-to-mid-1980s, even though it was published in 1989. I would have liked to see a consideration of the relative strengths and different corporate strategies of US, European and Japanese transnational corporations in the electronics industry. The electronics industry is fiercely competitive and an understanding of its growth and locational dynamics needs to be grounded in the competitive rivalry and strategic alliances amongst firms in the industry. Why were US electronics firms successful and European firms unsuccessful? What were the factors behind the rise of the Japanese firms?

The chapter on the East Asian electronics industry makes a number of useful points. However, many of the points have been made elsewhere: it is largely a distillation of material from the published literature and relies heavily on research by Allen Scott and the United Nations Centre on Transnational Corporations.

I found the chapter on the Hong Kong electronics industry disappointing. Many of the tables referred to manufacturing in Hong Kong in general, rather than specifically to the electronics industry. While Henderson argues that Hong Kong's role in testing electronics components qualifies it as a regional core centre, I would have liked to see him present more evidence to justify this argument. Certainly, Singapore has acquired this role, but it appears that the Hong Kong electronics industry has a much more restricted role and is being bypassed by developments in other East and Southeast Asian countries.

Chapter 6 on Scotland is an interesting case study. However, it needs to be set in the context of the European electronics industry and in terms of developments elsewhere in the UK. How successful is Scotland in competing against other low wage European locations? How was Scotland's growth in electronics related to the UK Government's regional and industrial development policy?

Overall, the book is quite a sound synthesis of the published literature on the internationalisation of US electronics firms up until the mid-1980s.

Unfortunately, it does not shed much light on the recent growth of Japanese electronics firms and their global corporate strategies. In order to understand the growth of the electronics industry we need a broader analysis of the nature of competition and coalitions amongst the major firms from the US, Japan and Western Europe, as well as with newer firms from South Korea, Taiwan and other East Asian countries.

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Mapping and Measuring the Information Economy *by Ian Miles and contributors Tim Brady, Andy Davies, Leslie Haddon, Nick Jagger, Mark Matthews, Howard Rush and Sally Wyatt*
(Library and Information Research Report 77, British Library Board, 1990), pp. ix + 275, £25.00, ISBN 0-7123-3212-x.

This is a report produced for the UK Economic and Social Research Council's Programme on Information and Communication Technologies. The contents have a wide range: *Issues in Information Technology and Society,* which examines some meanings of the 'information economy'; *Data and Data Sources,* which discusses the main types of statistics and both official and unofficial sources; *Research and Development,* which is a guide to data on IT-related pure research and scientific activity, government support for R&D, and industrial R&D; *The IT Heartland,* which examines the availability of data on the activity of such sectors as electronic components and instruments, computers, software and computer services, telecommunications services and equipment; *Diffusion,* which considers data providing an overview of expenditure on the uses of IT across British industry; *Major IT Applications and Applications Areas,* which outlines data on a number of major applications (e.g., word processors, robots, data communications) and a number of major user areas (e.g., IT use in manufacturing, service sectors, the public sector); *Work and Employment,* which discusses statistics relating to IT employment, education and training, industrial relations, and the work and employment consequences of IT; *Consumption,* which deals with data on household expenditure on and use of IT-related consumer goods and services; *Social Implications,* which sets out a few areas where statistics are available: social attitudes, computer crime, privacy and surveillance; and *Conclusions,* which draws the discussion together, assessing the usefulness of existing statistics and making recommendations for new data.

It is important to make clear that for this study "the information economy. . .hinges upon the application of new IT" (p. 10). A charge of "crass technological determinism" is brushed aside (p. 11): the "information economy is a shorthand description for this complex of changes associated with — *not* caused by in a simple deterministic sense — IT and its diffusion through the formal economy and society at large" (p. 11).

The strength of this work is that it reports on a great deal of statistical material. Nevertheless, I kept on looking for results of some processing of these data rather than pleas for more new data. I hoped there would be some theoretical insights to advance understanding beyond the opening assertion that new IT is what matters.

There are several reasons why such theoretical insights did not emerge. The first relates to the concept of an economy. Miles and his fellow contributors concede "that an information component might be said to have been a feature