from this than the position of an individual firm in a competitive environment, in terms of extracting resources for investment at high risk in innovation, out of that environment. Consider a situation where the management of Schlurps was composed of the most creative individuals imaginable, and they had also absorbed everything that Rickards could teach them about systems thinking. The firm could still not be innovative, even in the least degree, if the economic environment in which it was operating did not provide some means whereby Schlurps could appropriate the results of its investment in generating new information.

Stimulating innovation, therefore, is more a question of getting the wider environment right — especially in terms of a Patent system that works properly — than it is of getting systems thinking adopted within firms. If our institutional structures no longer work so as to put resources behind the most creative individuals, and tend to reward 'fast seconds' more than innovators, we cannot expect the kind and volume of innovation that is needed. Come to think of it, the lack of 'spark' in the Schlurps management, noted above, may in fact have been no more than their correct preception that the firm's environment was simply not such as to make creative effort on their part worth while. They recognised how far pioneering doesn't pay.

There is a great need for books that can make academic research and thinking available in a form that is useful for those who have to make ideas actually work in practice. Tudor Rickards has come up with one that does this admirably within the limits of the systems perspective he has set for himself. Any firm which buys books at all should certainly add 'Stimulating Innovation' to its library.

William Kingston

Trinity College, Dublin

Computer Related Technologies in the Metal Trades Industry. A Report to the Prime Minister by the Australian Science and Technology Council (ASTEC) prepared by the Technological Change Committee Australian Dubling Comburge, January 1086)

(Australian Government Publishing Service, Canberra, January 1985).

There is no doubt that manufacturing industry in Australia has performed unsatisfactorily in economic terms. During the last ten years, over 180,000 jobs have been lost in this sector and its competitive viability has been increasingly called into question. At the same time the advanced industrialised countries in Europe and North America have been developing competitive industries based in part, on best available technology; and the newly industrialised countries, including some of Australia's close neighbours, have experienced dramatic economic growth partly based on their manufacturing performance.

The challenge confronting Australia is to develop a viable manufacturing sector that can compete effectively against imports, and in world markets more generally. Reliance on the export of primary products is no longer adequate. Agricultural markets are less open to Australia than they once were, and resource based commodity trade faces competition from other sources in a market whose immediate prospects are relatively stagnant.

The metal trades industry is the largest segment in manufacturing and achieving economic viability in the metal trades is crucial. For this reason alone, this Report is important. The terms of reference set for the Technological Change Committee were broad and there can be no complaints on this score. The Report itself is more narrow in focus and addresses three issues. First, it discusses the contribution that new computer related process technologies can make to improved performance in firms in the metal trades industry. Second, the influences that favour or restrain adoption of these new process technologies are examined, and finally, pertinent industrial relations, skills and training issues are studied. Seventeen recommendations are then made to the Prime Minister on the basis of the Report. These recommendations are aimed to assist in transforming the metal trades industry into a productive, competitive and vigorous sector.

While the intentions and aim of the Report are laudable, the Report itself suffers from several shortcomings. First, in general terms, when attention is narrowly focussed on process innovations, the tendency is to overlook the type of products being produced and whether they are what customers or particular market segments demand. There is overwhelming evidence in the literature that commercially successful firms are those who meet the demands of customers. This is fundamental and obvious but it is insufficiently examined in this Report.

Successful firms are not necessarily those that produce the lowest priced or the highest quality product. Success comes from getting the mix of price and quality correct for the particular group of customers for whom the product is intended. This product assessment demands ongoing communication between market customers and the producer about needs, both now and in the future. Furthermore, this assessment should then influence the particular process innovations chosen. Whizz bang production processes that may appeal to the solely technically motivated, are not necessarily the answer for commercial success.

While I am sure the writers of this Report would agree with this general view, the narrow focus on process innovations led to a tendency to overlook this aspect. The definition of design used also heightened this concern. Design can be considered widely as being part of research, development, marketing, and production. Treating design as simply product specification, also leads to a less than comprehensive view of its overall importance.

More specifically, the recommendations were not always as well supported as they might have been. Recommendations 1 and 2 concern the abolishing of State preferences and the establishment of uniform technical standards in Australia. Both these moves should encourage larger scale operations in theory, but there was no examination of what was actually likely to occur. What states would benefit/lose most from this policy change? How significant would it be?

Recommendation 4 suggested that high labour costs should be alleviated. The Business Council survey of labour on-costs was cited as evidence of relatively high on-costs but the problems associated with this survey were not recognised. A recent report by the Advisory Committee on Prices and Incomes on labour costs has suggested that labour on-costs in Australia are not out of line with those in other developed countries. While it is true that Australian labour costs more than that in less developed countries, no one would seriously suggest paying Australian labour at, say, the going Taiwan labour rate. The correct strategy must surely be to compete in a higher quality goods market with a highly skilled workforce — as does West Germany, Sweden and North America. Labour costs are of course important but this recommendation fails to recognise the wage restraint achieved with the Accord, and the on-cost position was not well investigated.

The recommendations concerning research and investment incentives and direct grants are no surprise but could have been better backed up. Study overseas suggests that R and D performed and paid for by private industry is more directly commercially productive than both government funded research and that performed by government. This might suggest that financial incentives to encourage firms to work in this area may be preferable to other options and reference to this work would have provided more foundation to these recommendations.

One of the problems in the metal trades area is that of firms getting to know what technology is available and what it can do. This is recognized in the report and recommendations are made that aim to improve advice. Whether or not the changes suggested for the CSIRO and MASCAM are sufficient is a debatable point and a wider array of alternatives could have been canvassed on the basis of successful practise in other countries in this area.

The introduction of new technology necessarily involves industrial relations and work organisation issues. The chapter dealing with these matters is not well integrated with the rest of the Report and the labour substitution effects of some new technologies are given short shrift. It is insufficient in an aggregate sense, and on public interest criteria, to argue that natural wastage can adequately deal with the labour substitution impact. At an early stage in the report the expected labour impact of computer aided design is discussed. This type of evidence should have been examined further as it is precisely fears about job loss that can motivate Luddite behaviour which, in the long term, can be most detrimental to jobs. All in all, a rather disappointing Report, given the importance of the topic. While many of the recommendations seem reasonable, they should have been based on more adequate foundations.

Kerry Schott Canberra

Industrial Innovation: Its Place in the Public Policy Agenda, by Kristian Palda

(The Fraser Institute, Vancouver, 1984) pp. 211.

Palda's book has been deceptively hailed as an important contribution to public debate and assessment of Canadian industrial innovation policy — a timely corrective to the largely bureaucratic and academic determination of policy in this field. Deceptive, because this study is yet another round in Palda's long-standing feud with the Science Council of Canada. His first