Technological Change and Employment. A Report to the Prime Minister *by ASTEC, prepared by the Technological Change Committee*
(AGPS, Canberra, 1983) pp. 168, ISBN: 0-644-02657-X.

The ASTEC report, *Technological Change and Employment,* takes as its starting point and baseline the report of the Committee of Inquiry into Technological Change in Australia (CITCA). The CITCA report is referred to as "valuable" (p.18), "a substantial contribution to public understanding of the issues" (p. 19), and a "comprehensive study of technological change" (p. 26). This evaluation is certainly at odds with the severe criticism the report received and with its subsequent quick demise as a policy document and as a reference for public discussion. Rather than being a valuable contribution, the CITCA report succeeded in diffusing the concern and debate over critical issues relating to technological change and employment.

The inadequacies of this ASTEC report to the Prime Minister illustrate how the CITCA report failed to lift the level of Australian research in this critical area. This review therefore confines itself to the issues and relationships where the ASTEC report is inadequate, particularly as a policy oriented report to a Prime Minister.

The report ignores the critical issues relating to the multi-cultural origins of technology being imported to Australia. It assumes a monocultural or Anglo-American technological world, yet technology is imported to Australia from a wide range of non Anglo-American cultures. The developers of such technologies often assume very different education, skills and industrial relations systems from those of Australia. A failure to understand these differences has resulted in considerable down time and underutilisation of some old and new technologies installed in public and private organisations in Australia. The problem is accentuated by the growing role of Australia as an export test market in some fields of technology. Researchers in Germany, France and the United Kingdom have been carrying out cross-cultural, plant-level studies for over a decade to understand multi-cultural differences in the relations between technology and employment. Not only does the report ignore these studies, but it tends to ignore important cross-cultural and organisational differences when quoting results of overseas research.

Although immigrants are mentioned in the report, it throws no light on the problems of relating multi-cultural technologies to Australia's complex multi-lingual, multi-ethnic, multi-national and multi-cultural workforce. For example, at the Australian Iron and Steel plant at Port Kembla, the workforce has come from over seventy countries of origin. What are the problems of adapting this workforce to the new processes imported from Japan, with its highly skilled and basically mono-cultural workforce?

The report generally tends to accept nineteenth century Anglo-American class concepts of workers, that is, skilled, semi-skilled and unskilled, even though it acknowledges that new technology blurs such distinctions (p. 107). In Japan, workers are more appropriately classified in terms of skilled and underskilled. One leading Japanese plant-level researcher even classifies workers in terms of skilled and sophisticated skilled. The values underlying these different forms of classification lead to very different policies for training and technological design.

The ready acceptance of conventional wisdom by the authors of the report leads them in some cases to restrict the concept of skills to trades and even to invent such nonsense concepts as "relatively unskilled" (p. 113). In discussing general trends, the report states that "highly automated production processes require not so much a high level of skill as a high level of responsibility to intervene when something goes wrong" (p. 118). Having worked in an oil refinery for a number of years, I would want to be confident that it was a highly skilled person who accepts responsibility to intervene in a crisis situation. (For a more detailed discussion of such inappropriate concepts see G.W. Ford, 'Human resource development in Australia and the balance of skills', *Journal of Industrial Relations,* September 1982, pp. 446-68.)

A Working Party for The (British) Council for Science and Society felt it necessary to set out what was meant by skill before embarking on their study of New Technology:

> A dictionary definition is "practical knowledge in combination with ability", which incorporates two of the essentials: aptitude and its development through practice. Instead of "practical knowledge", however, we should prefer to stress "knowledgeable practice", and to emphasise the element of control without which skill does not exist. . .
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> Because control is essential for the existence of skill, it follows that there can be no skill where everything is completely predictable. Screwing a nut onto a bolt demands at most dexterity, not skill. In a large measure therefore, skill is a response to the unexpected and unpredictable.

The report also accepts uncritically the narrow Anglo-American concept of a professional. Yet in a high technology society, such as Germany, the vocational counselling literature refers to 450 state approved professions. The relations betwen new technology, skill formation and responsibility require a broader concept of a professional than the one perpetrated by the elites in Australia.

The technologist's conventional claims that the introduction of new technology will get rid of dirty, dull, monotonous, and unsafe work is not directly challenged in the report. The plant level studies for the Jackson Committee on *Policies for the Development of Manufacturing Industry* found little evidence that technology had improved the quality of working life. In fact, those studies highlighted the appalling work conditions in many old and new industries. Similarly, the priority for the introduction of new technologies into offices in recent years has had little to do with improving the quality of working life. In fact, the reverse is true. Tenosynovitis has reached almost plague proportions in some offices because of the failure to develop appropriate new working arrangements with the introduction of new technology.

The German government's successful Humanization of Work Program has been addressing these concerns for over a decade. Yet this linchpin of the German government's technological change program is not mentioned in the report. An important result of this German program has been the re-education of technologists, educators and social scientists by actively involving them in collaborative, plant level, action-oriented research. Similar re-education programs are urgently needed for the isolated academics in universities and public service departments in Australia.

The report is not a well-integrated document. The writers do not appear to have been challenged by personal inter-disciplinary and collaborative field research. The report reads more like a literature survey than an action-oriented policy document. The following examples illustrate how the case studies miss out on critical issues and innovations that are not covered in the literature. The case study on the technically-efficient plastics industry does not mention the innovative skill formation developments in that industry. These innovations could be significantly curtailed by generous Federal government funding to bring the industry training back into the TAFE sector.

The case study of the printing industry ignores the innovative negotiations which allowed the industry to break through the barriers to adapting apprenticeships to new technologies. An understanding of these unique negotiations is essential if Australia is to unlock its unholy nexus of technology, skill formation and industrial relations. The case study of basic metals discusses the emerging technologies and levels of employment. It does not take up the very complex issue of preparing the existing workforce for these new technologies.

The case study in communications ignores the critical skills and industrial relations issues of policies which allow unlimited multi-cultural technologies into the national communication system. For instance, the authors show no understanding of the implications for Telecom of the different maintenance philosophies designed into PABX technologies from the UK, US, Germany, Japan, Sweden and the Netherlands.

The case studies highlight the elitist nature of the report. It tends to ignore or gloss over issues and innovations that are not the concerns of isolated academics, industry or public sector researchers. Like all ASTEC reports, the prime concern for innovation centres around more money for research and development. However, Roy Hofheinz and Kent Kalder in their study of *The Eastasia Edge: Why an Entire Region is Overtaking the West in Technology Exports and Management,* point out in the section on the Eastasian Policy Response, that "all this technology has not been fuelled by large research and development efforts" (p. 148). The broad nature of Japanese innovation in particular, needs to be better understood by Australia's self-interested isolated elites. A useful introduction is J.H. Galjaard, *A Technology Based Nation: an Inquiry Into Industrial Organizing and Robotizing in Japan* (Science and Technology Policy Research Group, Interuniversity Institute Management, Delft, 1981).

The elitist nature of the report can be further highlighted by the following quote:

> There is general recognition that innovation involves a complex interaction between scientists, engineers, economists and market specialists with additional need for venture capital and an expectation of profits (p. 33).

This ignores the actual and potential contribution of the vast majority of the Australian workforce. It ignores how Seiko developed the quartz watch. How long will it take before policy formulators realise that employment creating innovation is too important to be left to Australia's isolated elites? They have contributed precious little to any but their own employment in the past; why should the future by different?