of young people better. He argues that any serious attempt to incorporate a recurrent education perspective into schooling would have major curriculum implications. In the third Section Smith considers the calls for greater diversification of the curriculum. He argues that a rethinking of the post-compulsory curriculum is required, but that reform is severely inhibited by the pressures of assessment and credentialism.

In the fourth section he considers the relations between schools, TAFE and training. Smith suggests that seeing TAFE as a vehicle for lifelong learning, and with recurrent education and open education as the underpinning values, what he terms as 'a return to the Kangan concept', would give the sector an identity and a rationale that it sorely needs. He also stresses the importance of closer working relations between education and labour market authorities, and between those authorities, employers and unions. In the fifth section Smith considers school in relation to work and unemployment, and in the sixth section he examines aspects of youth policy, although recent developments render some of this discussion dated. In his view policy development for the education and training of young people cannot proceed in isolation from aspects such as job creation, income support and taxation. In the concluding section Smith argues strongly that curriculum and youth policy questions are indivisible in relation to the needs of teenagers, and that a clear view of the aims of schooling is essential.

The book covers a wide territory, and brings to the attention of the non-specialist reader a broad range of views, opinions, studies and research. It tends to raise more issues than it solves, but it is open and honest about doing so. Also it does not wholly meet the challenging aims the Centre set for itself in 1984. I found the book worth reading, but suggest its length could have been reduced and remain unconvinced that, although it has a useful perspective to contribute, recurrent education is **the** answer to our educational problems.

C. Selby Smith
Graduate School of Management, Monash University

The Defence Science and Technology Organisation and National Objectives: *A Report to the Prime Minister by the Australian Science and Technology Council* [ASTEC]
(Australian Government Publishing Service, Canberra, 1986), pp. vii + 70, ISBN 0-644-05488-3.

In an era when the Minister for Science proclaims the need to make science part of the political culture and as politically important as sport, environmental and women's issues and the arts, there is, to my way of thinking a high level of radical confusions about in Canberra.[1] In the era when Australia's defence spending is large by world standards and yet the country's research and development (R&D) effort low by OECD (Organisation for Economic Co-Operation and Development) standards there is additional cause for concern (always assuming radical confusion was one in the first place).[2] And in an era when the Government is bent on buying state-of-art defence equipment from its major ally, the United States, when **that** country's defence industries and military procurement processes are in dire need of reform,[3] concern is

inescapable. To labour the point, when full, or nearly free expression is juxtaposed in the same text with disciplined intellectual endeavour; when high levels of dependence are misrepresented as components of a declared self-reliance in defence matters; and when the Australian tax-payer subsidises the excesses, inefficiencies and criminal fraud of the US military-industrial complex we are, in effect, witnessing a standing reproach to logical policy-making. For this reason ASTEC's October 1986 report on the DSTO is worth referring to.

DSTO is to government scrutiny what free-fire zones were to the artillery in Vietnam: an enemy repose deserving of all that it gets, the rolling thunder of a barrage in the first instance and reviews without end in the second. Twelve, to be precise, over recent years. Almost harrassment for an organisation that, in 1985-86 had an annual budget of $160 million and a staff of 4,300, 1,100 of which were research scientists and engineers. For all that, though, DSTO is the largest concentration of scientific and technical manpower in Australia after the CSIRO, and here the aforementioned context of national R&D and defence expenditure give particular force to the findings of the ASTEC Report.

Paul Keating's attempts at national self-depreciation to one side, Australia is a developed country. Nevertheless, it spends only one per cent of Gross Domestic Product (GDP) on R&D. This comnpares (unfavourably) with 2.7 per cent in the US; 2.6 per cent in West Germany and Japan and 2.5 per cent in Sweden. Within the OECD countries Australia ranks equal sixteenth (with New Zealand) in a table of 22 countries for which comparisons are available. Closer examination reveals that, whereas non-university government spending keeps pace, porportionately, with the OECD leaders, in the areas of industrial and university R&D respectively, Australia is but an also-ran.[4] A consequence of this state of affairs is that we are dependent on imported ideas and technology across much of the defence indusrial spectrum.

If Australia was a low-level defence spender this client status would, perhaps, matter little, but Australia, to the contrary, ranks 17th in the world, spending more on a *per capita* basis than Belgium, Denmark, the Netherlands, Canada and Japan. In the year in which the ASTEC Report was released this amounted to $7.2 billion representing 9.4 per cent of total Commonwealth Government outlays and 2.7 per cent of GDP. Significantly, defence spending in real terms has not only risen at a considerably faster rate than Commonwealth outlays in total over the last decade, but the proportion of total defence spending devoted to the purchase of new capital equipment, e.g. the F/A 18 fighter for the RAAF, has more than doubled over the last five years, from 13 per cent in 1981-82 to 27 per cent in 1986-87. And just as significantly, the latter period also saw a marked decline in the percentage of overall defence expenditure spent in Australia: from 57.6 per cent in 1981-82 to around 33 per cent in 1986-87.[5]

Just in case there is a suspicion that I am trying to create the impression that DSTO is guilty of creating these untoward circumstances, please let me now disclaim the notion. The DSTO is not guilty and could not possibly be guilty of such a widespread malaise; rather, it is at the one time only partly responsible and a victim of a much larger default in Australian public policy. That default, however, is beyond the scope of this review and must remain as described by the indicators I cited in the previous paragraphs. The nature of the limited liability of DSTO is, of course, found in ASTEC's report. And, limited though it might be, the liability unearthed is damning.

Insofar as shortcomings in DSTO's operations, practices, and policies are concerned there is plenty of blame for all to share. Instead of behaving essentially

as a technology and science organisation, DSTO was found to have atrophied at many levels into just another bureaucracy. Public service regulations and the demands for paper to be processed have had an enervating effect on personnel and a resultant drop in productive output. The same factors have also reduced autonomy and initiative and induced otherwise scientifically active officers to recognise that advancement was to be obtained from administrative or desk assignments instead of laboratory research. To make matters worse, many of those who still want to be 'real' scientists take up the exit option while those who remain frequently are deaf to the advice and needs of industry and, whether as a consequence of it all, or initial disposition, the defence forces instinctively opt for imported products over locally produced goods. There is an almost (Monty) Pythonesque reference to this last-mentioned characteristic in an account of how DSTO and industry actually interface with the overall process of procurement of defence equipment in Australia (as opposed to the way in which they ought to):

Ideal Scenario

The RAN requires a better target to simulate sea skimming missiles:

- A Staff Target is raised by the RAN;
- A joint feasibility study is conducted, involving DSTO **and** Industry. Part of the feasibility study is devoted to export potential of the device and the expected world market requirements;
- A Naval Staff Requirement (NSR) is raised, which includes not only local requirements, but perceived world market requirements;
- The Development Phase is conducted jointly by DSTO and Industry, under an agreed and strong Project Management Organisation;
- A market drive is conducted by Industry at a suitable period of the Development Phase;
- Production, tooling etc is provided with export sales in mind, i.e. for quantity production;
- The resulting product not only satisfied the RAN requirments, but achieves significant export sales.

Typical Scenario (already repeated several times)

A given Service (e.g. RAN) requires a better target device to simulate sea skimming missiles.

- A Staff Target is raised by the RAN;
- DSTO conducts a feasibility study;
- Resulting from the above the RAN raises a NSR;
- DSTO conducts prototype development;
- Industry is then asked to bid for production of targets;
- The targets are specifically developed for RAN requirements, no export orders are secured, the quantities produced are small, hence estimated unit costs are high; the project is cancelled at the pre-production stage and the RAN buys a US-made target.[6]

To be fair, ASTEC does conclude, overall, that DSTO is a 'well-managed organisation, which contributes substantially to Australia's defence goals' but the 70 substantive pages of the Report underlie the extent to which it needs to reform. Unfortunately, in the interests of brevity and presumably economy, the submissions made by the universities, individual academics, industry and

government are acknowledged but not included, and so the reader is left with, to my way of thinking, a somewhat antiseptic precis at some stages of remove. This is not to imply that the report misrepresents the respective views but it is to suggest strongly that the originals would have better conveyed the full flavour of criticism and comment to the wide, interested audience. Skimping in this regard foreshortens debate.

Debate, hopefully, there will be, and reform, too, but the fact ASTEC discovered that many of the recommendations of earlier reviews had not been implemented does little to dispel the lingering frustration and cynicism in which many view DSTO. On the other hand, the subsequent announcements (in October 1987 and March 1988) by the Minister for Defence Science and Personnel, Mrs Ros Kelly, that DSTO is to be reorganised and its commercial potential developed will provide a corrective. And whatever other criticism might be levelled at the current Government, its record of promoting debate and achieving change in defence policy is encouraging to say the least. The test will be, I suppose, whether DSTO reverts to being a free-fire zone in a few years time.

In the interim, ASTEC has presented DSTO with an agenda for reform which is demanding and exciting. It is to become more autonomous, flexible, goal-oriented, generally interactive and policy-relevant. In short, despite ASTEC's award of plaudits in management and contribution (mentioned earlier) it has to be reborn. The Report to the Prime Minister, therefore, provides certain central criteria by which progress towards technological and scientific maturity in Australia will be assessed. For now, when industry continues to be more interested in corporate takeovers and financial speculation rather than R&D investment; when universities continued to receive pittances for basic research, and when increasing foreign ownership and/or control of many of Australia's industries seem a natural progression, it enjoys the status of a charter, but a charter, nevertheless, which could, if not acted on, within a short period assume the status of an indictment.

REFERENCES

1. Barry Jones, Minister for Science, speech given to the centenary dinner for the Faculty of Science, Melbourne Univesity, as edited and reported in the *Sydney Morning Herald,* 30 July 1987.
2. See "Defence spending large by world standards", *Pacific Defence Reporter* (Supplement: A Special *Industry Report,* February 1988, p. 4; and "Australia's R&D low by international standards", *FAUSA News,* 2 June 1987, p. 8.
3. See, for example, Jacques S. Gansler, "Needed: A US Defense Industrial Strategy", and Thomas L. McNaugher, "Weapons Procurement: The Futility of Reform", *International Security* 2, Fall 1987, pp. 45-104.
4. *FAUSA News, op. cit.,* p. 8.
5. *Pacific Defence Reporter, op.cit.,* p. 4.
6. *ASTEC Report,* p. 42.

Michael McKinley
Australian National University.