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Australia 2020: Foresight for our Future

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Australia 2020: Foresight for our Future

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Major Issues

What are our hopes for the future? How far have we come would you say, Since Australia became a nation, On Federation Day. *Pamela Summers*

Forewarned is forearmed. *Anon*

Federation offers focus for future: The centenary of Federation promises to be a great celebration. But to be of lasting value, it must transcend celebration ... the centenary of Federation speaks to present and future generations. What kind of nation does Australia aspire to become? What must be preserved and what must be changed? Some questions are symbolic, some practical. If the centenary can direct popular energy into the challenges facing Australia, it will certainly be something to celebrate. *The Australian*, 9 November 2000, *Editorial*.

With the Centenary of Federation upon us, it appears timely to assess the kind of Australia that we want in the long-term future. The anniversary celebration provides an opportunity to reflect upon our past, present and future. Rather than looking ahead just to the completion of three-year parliamentary terms, we can consider scenarios applying two decades hence. This is the period over which defence, environment and other major external influences apply.

Each of us can consider a range of possible futures for Australia, but on their own they are not particularly useful in establishing a common sense of our collective destiny. Science, technology, the environment, economic factors and social influences can all effect individual views of the future. We need a means of assessing and factoring in all such influences so that even the future seems relevant to the lives of individuals and families.

While previous efforts in Australia to provide a vision of the future have often received a hostile reception, there now appears to be growing interest in futures work. In part, this is due to the growth of external forces outside our immediate control such as economic globalisation, global connectivity, knowledge systems and national innovation trends.

Current Australian policy processes largely dictate short-term responses to external trends but there have been calls from some commentators for more considered long-term approaches to policy formulation. One suggestion is that Australians should work towards broad consensus on a defined range of possible future scenarios, as distinct from specific predictive or deterministic exercises, or reliance on maintaining the status quo approach.

There are systematic, scientific ways in which to consider the future, under the banner of foresight techniques. Futures methodologies include environment scanning, visioning, forecasting, scenario planning, trend analysis and other means. Their application overseas begs the question of why there has not been more serious study and appreciation here.

The use of foresight techniques is a systematic means of technological assessment that could be suitable for the task. Whereas futurology may be biased or limited in outlook, foresight takes a broader step-by-step approach involving consultation among many stakeholders towards a long-term view and focused on technology outcomes.

The private sector has been most active in the use of foresight thinking to date, including leading companies. There has not been as much activity within Australian governments although this is changing, as evidenced by the operation of a futures forum within the Public Service. This paper does not in itself offer any scenarios or visions for the future.

The practical application of foresight has had a mixed history battling with the interests of entrenched viewpoints, limited resources and communication restrictions. The private sector has tended to lead the way, given its preoccupation in gaining strategic advantage. Australia has made some efforts in public sector foresight work, but they have languished as they have in the United States, given changes of governments and direction.

However, public technology foresight programs are active throughout Western Europe and Asia. In Britain, despite a change of government, the national foresight program has flourished with continuing support. It has brought together a range of disparate interests and reflects a whole of government approach to assessing the future.

Some Australian Government departments have recently taken up scenario planning to assess the future, such as for our defence and social services. A forum exists for the consideration of approaches to this task. This paper proposes an expansion of such effort through a response group formed within the Department of the Prime Minister and Cabinet to ensure a whole of government approach.

The Centenary of Federation offers Australia the opportunity to reassess its progress and direction. A specific Foresight Program could be the centrepiece of such an exercise, assuming wide public consultation plus sufficient resources and commitment from the Federal Government. A start could be made through a modest effort within one portfolio.

Introduction

Australia's Destiny

During the 1998 Federal Election campaign, *The Australian* newspaper published an editorial titled 'Future is the missing election issue'.¹ It read in part:

What's missing is any feeling that the Prime Minister and the Opposition Leader have a sense of the future. As the old century ends and a new century beckons; as our society struggles to cope with unending change; as globalisation both threatens and tempts us; as economic turmoil in our region upsets our views of our place in the world—our leaders have nothing to say ... They need to offer their thoughts about the kind of society they would like to see; about how we might meet the challenges, problems and opportunities facing us; about how we re-order our relations with our region to make our place in Asia meaningful in hard times; about what this means for our relations with the power and financial centres of Europe and the United States ... Leadership requires a sense of vision.

It might seem then that, despite the political process and best intentions, Australia does not yet have a set of desirable scenarios for its future other than those that exist in the business plans of the larger corporations that operate here. There are competing visions with competing policy prescriptions but less in the way of any formal assessment of the future. Some may argue that any prescriptive approach is akin to centralised planning with all of its autocratic connotations. But given the complex, global environment in which we now live, a laissez faire approach appears insufficient too. This do-nothing or 'status quo' option would maintain that we leave our future 'to the market' or such other orthodoxies. In other words, our fate will always be in the hands of others, especially overseas corporations, with no say on our part.

The limited period of the Australian electoral cycle is also a barrier to long-term vision. Yet some policies, such as those required for defence purposes, require an outlook that extends for one to two decades ahead, not just a few years. The prevailing market and social forces may be viewed as inevitable, along with the limited outlook stemming from three-year parliamentary terms. There is a need to look much further ahead, say twenty years.

We can consider where Australia will be in the year 2020 and whether it will have a high standard of living for all. On the other hand, it may have become a nation of poor means and a deteriorating environment. Globalisation may have taken control of the economy but perhaps we could have become a world power on the global information highway with great influence and wealth. If we desire such an outcome, we need to consider how to get there and whether it is left to private sector or public initiatives, or a mixture, for the creation of wealth, social harmony and satisfaction in the future.

It is possible to consider a vast range of scenarios and outcomes for future Australia, but assessing their desirability is a tricky matter. This requires broad input from a wide range of perspectives before we can suggest the best ways ahead for the nation. However, at present such an explicit process does not regularly occur.

Before exploring the way ahead, we need to recognise the importance of recognising our futures by choice, not by default. To do so requires defined techniques and approaches that are the subject of this paper. This 'centralist' view is in itself controversial when compared to current approaches. However, futures analysis assists in the selection among policy alternatives and does not aim to control the future or work against market or social forces.

While the paper stresses technological issues, wider application of future assessment techniques is possible to all disciplines. This paper does not attempt to provide a vision of the future. However, to set the thought processes working, it is interesting to consider some possibilities that future thinkers have identified.

Technology Assessment

The new century may feature revolutionary information systems, bioengineering, new materials, energy systems and renewal programs.^{2,3} An issue is how to assess the possible positive and negative effects arising from these new technologies. Humanity will test the balance between sustainability and the preservation of natural systems. While there may be some benefits from new technologies, such as seawater desalination and regional power grids, on the other hand, greenhouse warming may continue along with forest destruction. Clearly matters of controls over technological progress may be crucial to better understanding of the ecological future of our small planet and its local regions. Possible disastrous scenarios, including biological epidemics, natural catastrophes such as an asteroid impact, nuclear accidents and/or overpopulation effects, also need consideration.

The adverse social effects of technological and environmental changes may be far-reaching, although technical development may help solve many problems too. The interdependence of centralised systems and globalisation might actually lead to the failures of networks and economies along with a rise of criminal activities, or improved efficiency. The global economy might maintain development gaps and consumerism to the detriment of privacy, social aspirations, spiritual and religious values. The nature of the march of

technology, global on-line access and electronic commerce may generate alienation and unemployment as we enter a period of great and rapid change, but it might also lead to better unity and communications, interdependence and direction for all societies.

Outcomes

A recent large study, the United Nations University Millennium Project came up with a list of plausible scenarios and outcomes for the new century.⁴ While not universally accepted as desirable, these visions involve matters of sustainability, government, economics and social conditions in providing a view of the future. The scenarios cover a range of issues that certainly provide food for considered thought. While these may appear as plausible scenarios, the question arises as to how to orient our nation to best influence current and future developments.

There are many possible outcomes having varying possibilities, but even for negative events, there are ways to prepare for them and mitigate their deleterious effects.^{5,6} Indeed, some argue that whether or not life is improving depends to an extent on how we measure progress and plan for it.⁷ Others consider that any option theory best ignores the future. However, the current arrangements that we use may not necessarily be the best and warrant further evaluation.⁸

A noted futurologist, the late Robert Theobald, suggested that the future would belong to those individuals who direct their belief systems in response to political, business, academic and media opinion.⁹ He believed that only radical changes in direction could avoid massive breakdowns throughout the world. His desired future stressed ecological integrity, social cohesion and effective management initially sought through consensus conferences. These integrate lay people, with an expert panel, into decisions made about matters of science and technology, before reporting to a wider audience.

An Australian futurologist, Richard Slaughter, believes that while some patterns are in decline, others are in resurgence. While there is a decline in dependence on resource use, he suggests that reviving nations view nature as a sustainable community requiring the redefinition of employment, within a global, long-term 'foresight' perspective. This requires constituencies of support to develop a hierarchy of knowledge. Slaughter believes that a means to achieve this might be the establishment of an organisation with a clear role to map national and overseas foresight work and develop a skill-transfer strategy.¹⁰ To this end, he is now Director of the new Australian Foresight Institute that offers graduate courses at Swinburne University of Technology.¹¹

An ecologist, Doug Cocks, suggests that the selective accumulation of capital, including institutions, intellect, natural systems and built environment, along with a capacity for social learning, are the keys to our long-term survival. He also offers a variety of future strategies including conservative development, economic growth and post-materialism as

food for thought.¹² They would be useful for scenario planning exercises to ponder, although people must be able to relate to plausible futures in order to assess them.

Policy Development

Under current conditions, it is often left to a short-term combination of political processes and government programs to develop responses to the future. The electoral process provides a mandate for a government's broad policy settings in terms of goals and intended actions. Governments promulgate policy principles based upon the desired outcomes and there will be many in the bureaucracy who will claim that all is well and policy is in good hands.¹³ However, this attitude should not prevent the consideration of other useful tools.

Policy makers have a good grasp of subject matter and regulations in order to support government decisions. However, they also have to consider the public interest, legislative restrictions and the wider debate on such issues. The influence of the media also deserves mention here. Policy makers can receive support from corporate planning and program management activities. Successful strategic planning will define issues with input from all of the important parties and result in informed decision making, implementation and monitoring of policy impacts. Some forms of futures assessment may well assist the task.

The policy process is becoming increasingly subject to commercial and community demands for input. There are stronger calls for greater levels of accountability. However, the increasing complexity of issues, limited time and linkages to other policies may well complicate the policy development process too. The process may become one of 'putting out bushfires' and 'creating policy on the run'. There may not be much of a view to the long-term future in practice. Meanwhile, technological change continues to increase apace.

Thus ways of assisting the policy formulation and advice process might include creative thinking, brainstorming, forecasting, modelling, scenario planning and wide consultation. These are also the techniques of futures assessment and foresight when formalised in a systematic manner. Another technique is back-casting, as distinct from forecasting, to identify current inadequacies and consider options for overcoming them, mindful of the decisions made in the past. Details of some strategic planning activities appear later in the paper and it is important to note their usefulness when considering programs having long lead times, such as for national defence.

This paper introduces the concept of foresight as a systematic approach to the assessment of various competing futures. Foresight can be a useful tool to assist the policy process. The paper describes some experiences gained with foresight techniques in overseas nations as well as Australian initiatives. The paper proposes a more formal application to the government policy agenda here, within a whole of government approach.

Futurology and Foresight

Futurology

While it is not possible to foretell the future, it is useful to examine present trends and determine their possible consequences. It may also be possible to form choices among competing policies. However, we should be wary of falling into the trap of futurism. Futurism actually has a long history including predictions of utopias and social reforms that have waxed and waned.¹⁴ The reasons for futurism's past failure are varied but often relate to an ironically limited or prejudiced vision towards a desired future rather than recognition of more plausible realities. Nonetheless, combining a view of the future with tangible strategies can lead to creative value and useful change on occasion.

There is a variety of techniques and options available with tools and applications to suit different issues. Methods may include forecasting, management science, critiques, historic analyses, speculation and networking. Futures forecasting necessarily involves a range of input views, as reflected in the common use of the 'Delphi' feedback technique. Delphi uses a secretariat to solicit opinions from interested parties, before refining their ideas and re-seeking opinions several times, to finally arrive at an agreed and perhaps published outlook statement. Another way of viewing the process is the use of tools to address issues and themes, before developing them into perceptions, capacities and concepts for the future. These approaches may appear abstract, as often there are no clear choices ahead, but they demonstrate that prescriptive approaches are not necessarily the best means to view the future as they limit focus.¹⁵ Equally, forecasting may be too prescriptive with limited vision of external factors, with either favourable or unwanted effects. There is a need for a wider approach.

There may be a temptation to follow technological determinism, that is the idea that technology provides a logical sequence of development that pervades society regardless of its effects. There may well be a strong link between technology adoption by society and its culture. But technology is never purely beneficial. It has negative and positive effects, plus winners and losers. There is a need to distinguish between desirable sustainable development and economic growth; the use of foresight techniques is a means of technological assessment that could be suitable for the task. Whereas futurology may be biased or limited in outlook, foresight takes a broader and systematic approach, involving many parties and viewpoints organised behind a credible and endorsed organisation.

Foresight

Foresight can have a number of biases such as technology, rather than considering other areas such as politics, social demographics and ecology. We must guard against the

promotion of sectoral interests at the expense of consensus, or attempts to facilitate simple ideas and solutions that may be driven by political expedience or business imperatives.

Foresight then is the systematic process of developing a range of views of possible ways in which the future could develop, and understanding these sufficiently well to be able to decide what decisions may be taken today to create the best possible tomorrow. More specifically, technology foresight can be a combination of systematic efforts used to assist planning in technology and science towards innovation and improvements in the quality of life. Foresight is not forecasting, which as previously stated, may assume that there is only one unique future.¹⁶ The foresight process often proceeds in three phases:

- the first phase of information collection and summarisation phase can involve many sources such as experts, papers, networks or surveys to provide a foresight overview
- the second foresight phase of interpretation uses activities, skills and people to translate and understand the knowledge gained from phase one to define outcomes, and
- the final evaluation phase may utilise workshops, reports, networking or seminars to produce a commitment to action, a policy determination and funding allocation.

In a simpler sense, sometimes brainstorming can identify issues and appropriate actions for application. There are also general methodologies and processes available for scenario planning and prioritising.¹⁷ By gaining understanding, going through the process can be as valuable as the obtained results. The program of consultation involved in the ecologically sustainable development (ESD) process also is a useful study. This involves all levels of Australian Governments as a mechanism by which Australia is implementing global Agenda 21. The ESD view to the future highlights environmental concerns shared by many disparate parties. By agreeing on action programs, synergistic common strategies may be achievable.

Ignorance of the foresight technique has lessened wider involvement despite leading corporate applications, so that most effort has come from science and technology sectors.¹⁸ Yet for some sectors, strategic planning may not be effective. In the electronics industry, the future of technology is unpredictable, outside a short time frame, due to the sheer number of developments and the high rate of change. Even so, major trends are definable or follow "Moore's Law" for the growth rate of technical capacity. This law, formulated by Intel co-founder Gordon Moore, states that the number of transistors that a chip can hold doubles every 2 years, while transistor size has shrunk over 5 decades. Best performing companies anticipate multiple scenarios and develop contingent strategies. Their forward view may best be collaborative or essentially collective shared-understanding. The establishment of networks of experienced people, including those representing the private and public, are a useful organisational arrangement from which to draw advice and ideas.

Foresight in Practice

The Australian Commission for the Future, the Australian Science, Technology and Engineering Council and the United States Congress Office of Technology Assessment were all active in futures assessment until their non-forecasted closures. They have however left a legacy of published policy studies and experiences, which this paper will briefly report on. While, their very own demise remains telling, on the other hand the success of foresight activities in Britain and elsewhere has transcended changes in government to provide an appreciation of long-term future issues.

Australian Efforts

With Federal Government support, the Australian Commission for the Future commenced operation in 1985. However, the Commission had a rocky road over the years, with steadily decreasing budgets and critics scorning its relevancy and objectivity in a country preoccupied with short-term outlooks. However, its operation is also said to have been limited in perspective and poorly administered.¹⁹ By the time of its demise in 1998, the Commission acted as an independent, non-profit 'futures' organisation concerned with the long-term development of a just and creative Australia, mindful of technological changes.

Critics decried the Commission as self-seeking and superficially covering areas that it had no business to be concerned with, such as foreign affairs, the greenhouse effect, labour trends or population studies. Among its other studies were the predicament of youth, the ecology of health, sustainable environments, skilling Australians, technological change and law, management and work organisation, education futures, biotechnology and the information society. In hindsight, the list of topics still appears relevant, covering a range of whole of government issues, whether the Commission's reports are today of use or not.

The Australian Science, Technology and Engineering Council (ASTEC) was established as a statutory authority in 1979 under the *Australian Science and Technology Council Act 1978*. Initially, ASTEC provided independent advice to the Commonwealth Government on a wide range of policies and programs related to science and technology. This included early studies on marine science, energy resources, robotics, space science, electronics, animal health, nuclear science, information technology and telecommunications, research and development, education skills plus science and technology policy. These were generally well received, or judged academic at worst, but rarely criticised or condemned.

In later years, ASTEC became more wide ranging, covering such issues as future directions, developing long-term strategies to meeting future needs as a major forecasting study. In the study entitled 'Matching science and technology to future needs 2010', ASTEC applied foresight processes to come to a better understanding of the forces shaping the long-term future. Among the topics for study were literacy, community well being, water life cycles, sustainability, information networks, population ageing, young

people's aspirations and the maritime industry. ASTEC noted that while overseas studies had identified the importance of precision manufacturing and materials, these did not emerge in its foresight work. This major foresight exercise in Australia carried out by ASTEC between 1994 and 1996 had a direct cost of around \$1.5 million.²⁰ The ASTEC effort might be criticised on the grounds of a lack of depth and superficial treatment, perhaps due to inadequate resources. However, the project was not able to address some specific national priorities, so its outcomes were rather a selected mix.

Unfortunately, the output did not seem well directed or received while ASTEC itself faced problems. There was no mechanism available to facilitate the uptake of proposals arising out of the forecasts. In December 1997, Prime Minister John Howard announced changes to the science and technology advisory structures in the new Commonwealth Government. This involved the combination of ASTEC and the Prime Minister's Science and Engineering Council into a new high-level policy advice, but non-statutory body, the Prime Minister's Science, Engineering and Innovation Council. This represented a considerable change to previous ASTEC work. ASTEC's demise was associated with a reduction in Australia's effort towards foresight or technology assessment, aside from a few private think tanks and some more recent government department and agency effort.

Australian Government Initiatives

Within the Australian Public Service (APS), the Public Service and Merit Protection Commission has sponsored the establishment of the APS Futures Forum for people interested in the analysis of the future and the creation of strategy. The Forum exists to inform members of developments in futures methodologies; allow members to share lessons learned; sponsor training in futures techniques; share the output of futures exercises; and establish a network of people within the Australian Public Service.

As listed on the Forum web site,²¹ a number of Australian Government agencies have active programs in aspects of futures assessment, as follows. Together or individually such projects suggest an underlying interest in the future of Australia that needs further and wider development.

The Department of Defence has coordinated futures projects in its Futures Analysis Section, Strategic Policy Branch, of the Strategy and Ministerial Services Division. The Department has established a network of people within the Department with futures expertise. The Defence Futures Forum, as it is known, provides a forum for exchange of ideas on approaches, methodologies and analysis of futures activities, and fosters awareness throughout the Defence organisation of ongoing and planned futures activities within Defence and elsewhere. Within the Department, there are a number of futures activities currently under way including those concerning strategic interest (up to 20 years), future warfare to 2025, national support policies and support capability priorities. The Royal Australian Air Force uses futures techniques to avoid strategic surprise while

the Australian Army considers matters of future warfare. The Royal Australian Navy explores a range of alternative futures and their implications for the 'Navy of the future'.

The Attorney-General's Department Office of Strategic Crime Assessments (OSCA) uses a number of futures techniques in developing strategic assessments of the criminal environment, looking ahead five years. Methodologies used include scenario generation, Delphi studies, dynamic modelling, and environmental scanning. Examples of topics include scenarios on aspects of international and Australian illicit drug markets, illegal fishing in the Southern Ocean, the future of terrorism, law enforcement impacts of the Asian financial crisis and developments in computer crime.

The Department of Education, Training and Youth Affairs has prepared a small number of plausible future scenarios relating to the areas in which the Department works. It undertakes its futures work through the provision of facilitation and systems analysis services related to scenario planning.

The Department of Family and Community Services conducts futures activities in two main streams of facilitating scenario planning, and communicating trends in the policy and operating environments and their implications for business plans. Different scenarios of the social policy environment until 2015 were developed for a senior executive conference. In the 1998 Strategic Policy Framework, scenarios of the social policy environment until 2005 were created to identify possible strategic opportunities and direction for the Department. A six-monthly publication is produced for department staff to draw attention to the impact of emergent trends in relation to its strategic objectives. This publication, "Policy Outlook", places emerging social policy issues in the context of existing scenarios and is intended to facilitate an outward and forward-looking focus for staff.

In the Department of Transport and Regional Services, the Transport Directions project gave advice on the Commonwealth's transport directions to 2010, involving identifying transport policies and strategies, testing the robustness of strategies using scenarios, and developing a package for release. Scenario workshops involved Australian Public Service participants and an external workshop convenor.

The Department of Veterans' Affairs held a Review of Health Care and Services for the veteran community. This involved an internal review of its health care and service delivery to the veteran community. It took the view of formulating strategic directions that would guide policy and planning in the provision of health and community support services till the year 2007. The Review comprised a number of discrete projects including the Future Directions Project. Scenario planning was the methodology chosen to assist this project. The future strategic direction project was completed in July 1999. The Repatriation Commission endorsed a new set of strategic directions entitled 'Towards Better Health for the Veteran Community'.

Other government agencies are also active. In the Australian Taxation Office, scenarios have played a role in clarifying thinking about the future of the organisation. The use of scenarios in the Office has apparently helped its executives in making strategic decisions. It is understood that similar considerations apply to Centrelink and Telstra and to some other government departments and agencies. Through the involvement of interested parties and in recognising the changes lying ahead, such exercises provide an appropriate strategic response to future challenges. But they remain as individual and uncoordinated agency efforts and do not represent a collective effort towards a national assessment if needed.

Asia-Pacific Outlook

In the wider public domain, The Futures Foundation exists to help Australian organisations explore the future, to identify and enjoy its opportunities. The Foundation is a small, independent not-for-profit organisation, funded only by member contributions.²²

The New Zealand Foresight Project 2010 commenced in 1997 and has sought to successively set science and technology budget priorities. Under the Ministry of Research, Science and Technology, the project aims to discover a route to a more desirable future through priorities developed from strategic thinking across disciplines.²³ Among the foundation parameters considered are legal frameworks, the education system, immigration, economic investment, social culture and the media. There has been some criticism of the apparent inclusion of politicised materials in some foresight documentation, but at least the exercise has involved wide consultation.

In Asia, the APEC Centre for Technology Foresight began in 1998 based in Thailand. It coordinates efforts in Japan, Australia, Canada, New Zealand, United States, Korea, Malaysia and Taiwan. While the APEC project is a new and untested exercise, it has already produced some assessments of water supply management, information technology and sustainable city issues across Asian countries.²⁴

Since 1971, Japan has produced a thirty-year Technology Forecast Survey every five years. The Sixth Technology Forecast Survey, 'Future Technology in Japan Toward The Year 2025' study began in 1997. In this Technology Forecast Survey, the National Institute of Science and Technology Policy conducted a comprehensive survey of around 4000 experts active at the front line of research and development. Using the Delphi method, it asked them about the time of realisation of over 1000 topics of technological development, their importance, and their expected effects and other aspects, about the direction of science and technology in the coming thirty years to 2025, in fourteen fields of survey.²⁵

American Hiatus

The United States Office of Technology Assessment (OTA) was established by Congress in 1972 to provide congressional committees with analyses of emerging, difficult, and often highly technical issues. Services included major assessment reports, background papers, briefings, and testimony covering a diverse subject range. OTA explored complex issues involving science and technology, helped Congress identify policy options, and provided foresight about new developments that could have important implications for future federal policy. OTA did not advocate particular policies or actions, but pointed out their pros and cons sorted out the facts and provided options. Nonetheless, it did become a very large and costly organisation and separate from the Congressional Research Service, which provides direct support for all Members of the House and Senate and their staffs.

The United States Congress abolished OTA in 1996, apparently judging that the OTA's later studies and reports were of decreasing relevance to policy issues. An opposing view contends that the OTA was a victim of budget stringency and partisan politics.²⁶ Its demise might also be attributed to the fact that it reported to committees, rather than members of Congress. The Act that created OTA was not repealed, so strictly speaking OTA still exists, but is not funded. Alternative avenues of using small public policy institutes or consultants are under review and private American think tanks provide a multitude of foresight type reports. In some senses then, the legacy of OTA lives on in terms of corporate and private think tank futures assessments.

Recently, the United Nations Industrial Development Organisation, in cooperation with the International Centre for Science and High Technology in Italy, launched a Regional Program for Latin America and the Caribbean, with the objective to promote, encourage and support technology foresight initiatives in the region. The Program aims to establish an open community network for creating and promoting knowledge sharing and the dissemination of technology foresight expertise among institutions in the region.

European Heritage

The United Kingdom's Foresight project formally started in March 1994 under the Conservative government, with the setting up of a series of subject panels for research. Initial discussion identified these activities as being the main wealth creating segments of the British economy, although a certain amount of overlap existed between them. The panels consulted widely, calling in experts from leading companies, research institutions and opinion formers in their fields. Regional workshops were also used, to make sure that those with an interest in the subject could also make contributions.

The sixteen panels were: Agriculture, Natural Resources and Environment; Chemicals; Communications; Construction; Defence and Aerospace; Energy; Financial Services; Food and Drink; Health and Life Sciences; Information Technology and Electronics;

Leisure and Learning; Manufacturing, Production and Business Processes; Marine; Materials; Retail and Distribution; and Transport. The aim at all times was to be as practical as possible, with the emphasis very much on recommendations which would help in decision making and lead to useable results, of genuine value to the smaller businesses.

The new Labour Government endorsed the program by launching a national consultation for Foresight's second phase to start in October 1998 with completion by November 2000. In reorganising the program, the Labour government broadened the exercise by inviting social scientists, natural scientists and industrialists to focus on the government's social environment priorities. The new exercise is explicitly to examine social policy priorities such as the implications of ageing, the future of cities, crime control, social cohesion, education and training, and social development. The panels may merge to reflect the new emphases and do away with the Delphi technique to focus on group outputs.

Critics complained that the first exercise did not achieve lateral thinking. However, it did encourage wide cooperation and joint projects worth US\$167 million.²⁷ In late 2000, all foresight panels published their reports and recommendations for action. These reports are the culmination of over a year's intensive research, debate and discussion among previously dispersed parties. The United Kingdom Department of Trade and Industry has great faith in its foresight studies, which continue now as active exercises. The fact that the program has continued without any hiatus, despite a change in government, speaks volumes about its perceived worth to the British nation. Further details are available on the Internet.²⁸

While not a foresight exercise as such, there is a British institution that provides its Parliament with advice on the many current political issues that are technically based. The United Kingdom Parliamentary Office of Science and Technology (POST) operates under the House of Commons Department to provide Parliamentarians with information and analysis to enhance their understanding of science and technological issues. Some seventy-five per cent of its funding comes from the House of Commons with the rest through the House of Lords. Supervised by a Select Committee including three external scientific reviewers, POST has been subject to successive triennial reviews. In July 2000, the House of Commons Information Committee recommended that POST should be established on a permanent basis with parliamentary funding from 1 April 2001. With an annual budget of around £250 000 and five staff, POST produces regular analytical reports on technical issues with staff also spending a third of their time on select committee report work. POST has a mailing list of 600 including the 400 members of Britain's Parliament and a web site.²⁹ The success of POST suggests that Australia's Parliament might also consider a similar in-house operation here.

Among private entities, the British Chatham House Forum operates at the home of the Royal Institute of International Affairs to provide analysts and planners from business, government and other organisations with a multi-disciplinary approach to strategic foresight. The Royal Institute of International Affairs is an independent research organisation working to promote the understanding of key international issues. The Forum

offers a framework within which to understand the future and make preparations for its many uncertainties. The Chatham House scenarios provide a useful range of outlooks available, free of charge and from copyright, at its web site.³⁰

Elsewhere in Europe, Ireland has an active foresight program addressing eight sectors involving government, industry and public inputs. Ireland's first Technology Foresight exercise, conducted by the Irish Council for Science, Technology and Innovation (ICSTI) identifies key technologies in eight sector areas for the national economic development. Recommendations are outlined to address the opportunities and challenges associated with these technologies. The initiative is jointly supported by the Office of Science and Technology and the federal agency Forfás which also provide a Secretariat to the Council.³¹

Germany has had a pilot foresight study with various techniques applied over the past decade. The FUTUR strategic dialogue of 1999 aimed to contribute to the development of 'sustainable' visions through a strategic dialogue. The challenge to be met is to prepare decisions that are technologically feasible, socially acceptable and demand-oriented, and which are both economically and ecologically reasonable. FUTUR has been launched with the issue 'Mobility and Communication'. Results are to be available by 2001. Further subjects and issues will be selected in accordance with the requirements of science, industry and politics, and as they emerge during the process.³²

In 1998 the Danish Board of Technology decided to initiate a study to analyse and assess the feasibility of a Technology Foresight program in Denmark, in order to provide politicians and other interested parties with a basis for developing a Danish program.³³ France, Spain and the Netherlands are also active in futures assessment.

In the summer 1998, the Norwegian Minister of Labour and Government Administration launched the Norway 2030 scenario-based foresight exercise. It was to be finished in October 2000. The process consists of two phases, the first scenario learning phase in which four cross-ministerial working groups create twenty (4x5) partial scenarios on four selected thematic issues, and the second scenario study phase in which a smaller group creates five main scenarios in which they focus at the Public Sector.³⁴

OECD's Vision

According to the Organisation for Economic Cooperation and Development (OECD), shaping the future in order to realise economic and social goals is one of the fundamental challenges of human society. The OECD organised a series of meetings around the theme of 'people, nature and technology: sustainable societies in the 21st Century', to consider matters of technology, economy, society, environment and government.

The conferences coordinated with the Expo 2000 world exposition in Germany in which Australia participated with an apparently successful display, despite the low overall attendances at the event. In the past, world expositions provided a view to the future, albeit a technically deterministic one. Now these events have difficulty in depicting human aspirations and achievements, and in attracting crowds.

The OECD International Futures Program³⁵ is designed to help decision makers in government and industry come to grips with the challenge of identifying the important trends which will shape the future. It offers monitoring of the long-term economic and social horizon, an early warning system for emerging domestic and international issues, pinpointing of major developments and possible trend breaks, analytical appreciation of key long term issues, and dialogue and information sharing to help set policy agendas and map strategy. The program consists of four elements:

- OECD Forum for the Future—a platform for informal high level meetings with the aim of testing new ideas, developing fresh perspectives on problems and advancing the understanding of strategic economic and social issues
- OECD Futures Projects—focussed, multi-disciplinary research and policy analysis on special themes, largely as spin offs from Forum for the Future conferences
- OECD Future Studies Information Base—a documentation system providing the key findings and conclusions of published and unpublished literature selected from the worldwide output of futures analysis, and
- OECD International Futures Network—a global network of some 600 people in government, industry and business, and research institutions who share a common interest in long term developments and related policy issues.

Our Future

An Australia 2020 Vision Project

With the end of the last century and the Centenary of Federation, it may be appropriate to commission more work on Australia's future destiny and strategic directions. While such futures forecasting or technology assessment have not been of much interest here over past years, they could be used as techniques to help map projects and challenges. We need only consider the contentious matters of Australia's population level, sustainable development, energy and greenhouse production to be aware of the many possible factors already identified which could effect the futures ahead. A two-decade outlook would seem to offer an appropriate long-term period to suit most government department interests.

Australia should not miss an opportunity to embrace the long-term future as we celebrate Federation and enter the new century. Equally, it would do well to avoid the pitfalls experienced in the earlier futures exercises. Nonetheless, Australia would probably also do well to reconstitute some form of formal and funded technology foresight exercise. It may well be able to utilise existing institutions and funding mechanisms as a preliminary step. Australia's Chief Scientist, Dr Robin Batterham, however, recently offered a cautionary note, suggesting that our federal system of States and Territories made a research foresight approach similar to that in Britain and New Zealand a difficult task to achieve.³⁶ This suggests the need for a modest and considered approach but with a commitment as well.

Were Australia to proceed with this idea, the Commonwealth Government would need to establish the parameters, funding and operation. The proposed output and identification of appropriate subjects for study would be matters for wide consultation to determine. One possible means to proceed could be the creation of a response group or network within the Department of Prime Minister and Cabinet to facilitate a 'whole of government' approach to future issues. This department already contains other whole of government agencies such as the Office of Indigenous Affairs, the Office of National Assessments and the fore-mentioned Public Service and Merit Protection Commission with the APS Futures Forum. It may be feasible to create such an internal section without requiring significant resources or restructure. Any effort in this regard might do best to encourage the involvement of other interested parties, such as the respective sections of departments and at least those with some expertise in the subject areas as a feedback group. This would help to provide an overall balanced assessment of future trends and possible policy responses.

An alternative to the Department of Prime Minister and Cabinet proposal is the Productivity Commission model. The Commission now has a very broad focus with recent reports into hospital management, gambling, and broadcasting. Every six months, the Treasurer reports to Cabinet with an update on the Commission's work in progress and seeks agreement to the forward work program. The Commission then works with other departments and agencies on the authority of the Cabinet decision, involving wide

consultations. However, the Commission does require a significant resource base in order to provide its assessments of the present and future at a whole of government level.

Since the demise of the Commission of the Future and ASTEC, Australian governments do not appear to have made any specific and ongoing program commitment to scenario planning or foresight, aside from a series of individual agency or departmental initiatives. Australia could do well to take a whole of government initiative and think further ahead than the few years characterised by our electoral cycles or budgetary periods. With a view to the future, we may well commit better to the tasks ahead with a sense of meaning and unity as a nation and improve the policy process. Nonetheless, it will be important to ensure a means to facilitate actions on proposals coming out of the foresight process.

Conclusions

The three foresight programs in Commonwealth countries, namely Australia, Britain and New Zealand have generated substantial amounts of long-term information on which to build. Resource and time constraints may have limited the amount of data collected, as foresight exercises can require certain commitments. The influence of the responsible agency within the existing bureaucracy can determine the effectiveness of foresight outcomes, such as demonstrating potential innovations and providing action agendas.

In establishing a technology foresight program within Australia, it is necessary to study the relationship of science, technology, innovation and government. By observing the relevant Australian government structures it may be possible to improve the quality of consultation through a whole of government approach. The quality of consultation processes will be a crucial factor, with increasing importance placed on appropriate communication strategies to ensure wide involvement and collective focus on key issues.

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- sustainable development for land, water and oceans through energy efficiency actions
 - long-term perspective planning at personal, corporate and political levels
 - population growth rate checked through female rights and education programs
 - peace paradigm for coexistence extending economic cooperation across regions
 - science for appropriate-technology in genetics, biotechnology & information systems
 - global ethics and thinking assisted by literacy, education and medical support
 - democratic institutions, reconciliation, freedom, equity and self-determination
 - non-violent conflict resolution with United Nations reform and global cooperation
 - ecologically based agriculture predicated on alternative progress indicators, and
 - global philosophies, value systems and thought towards environmental security.
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