

DEPARTMENT OF SCIENCE AND THE ENVIRONMENT
AUSTRALIAN INSTITUTE OF MANAGEMENT (N.S.W.)

1979 TECHNOLOGY ASSESSMENT WORKSHOP

ASSESSING TECHNOLOGY IN AUSTRALIAN SOCIETY
A SYNTHESIS

The Hon. Mr. Justice M.D. Kirby
Chairman of the Australian Law Reform Commission

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TECHNOLOGY ASSESSMENT : WHAT IT IS ALL ABOUT

Lord Chief Justice Hewart in 1927 wrote the New Despotism. Hewart on one occasion gave good advice to judges in my predicament :

"The business of a judge is to hold his tongue until the last possible moment and then to try to be as wise as he is paid to look".

Fortunately, we are not here to submit judges and lawyers to T.A.

In the New Despotism in 1927, Lord Hewart identified the dangers to English liberties arising from the great change of that time, namely the growth in the role and expectations of the government in society. His book was far-sighted. The change was radical. Yet it is only now in the 1970s that our social and legal institutions are beginning to catch up with the growth of the public sector. I refer to the creation in the 1970s of Ombudsmen, the establishment of the Administrative Appeals Tribunal, the enactment of legislation giving citizens a right to reasons, the introduction of a Freedom of Information Bill in Federal Parliament, and so on.

We are now on the brink of even greater social changes, the consequences of which we can but dimly perceive. This time

they come about as a result of the impact of science and technology. Their effects will ripple through every aspect of society. They will have consequences for levels of employment, the work ethic, levels of social and personal contentment, the sudden loss of the utility of some occupations and, consequently, the comparative position of people in the economic "pecking order". The last mentioned was the endemic issue of relativities which was mentioned by Group 9 in the second Syndicate.

We have been brought together because certain dangers of unrestrained technology have been seen. Just as Lord Hewart warned against the autocratic despotism of unaccountable public officials in 1927 so, in 1979, we must begin the long haul to protect our society against the despotism of technology. The mindless embrace of every new invention of technical wizardry will undoubtedly plunge our country into a chaotic despotism of a frightening order. Genetic engineering and human experimentation spring to mind as technologies that may need legal control. The adoption of technology requires consideration of environmental, employment and safety factors. More important, the position of the individual, his integrity, liberties, privacy and satisfaction, as a member of society may be put at nought, disregarded by the onward rush of the latest invention.

That is what Technology Assessment seems to be about. It is a safety check, requiring us to pause at an appropriately early stage and look beyond tomorrow. It is as Group 5 described it "an early warning system". We owe that much to ourselves, to say nothing of succeeding generations. We must adapt science and technology to the society we want and not be the hapless victims of wherever it wants to take us, in every case. Mr. Yates reminded us that we should plan for the future we want.

Nobody here believes that this is a vote for the Luddites. It neither embargoes micro-electronics nor forbids computerisation nor abandons C.A.T. scanners nor rejects word processors because they cannot make a nice cup of tea. It

simply says that every new development should be put to the test of rational humanity.

OUR FRAMEWORK OF ASSESSMENT

The framework of assessment was provided at the outset of this Workshop by Professor Freeman. He listed a number of factors for the purposes of comparing two technologies - nuclear energy and micro-electronics. He acknowledged that in addition to the factors of economic advantage, environmental impact, relative safety, technical reliability, ease of adoption and range of applications, other considerations had to be borne in mind when new technology was proposed. He and Dr. Cox agreed that such considerations as:

- * Individual privacy
 - * Liberties of the individual (which may be circumscribed by centralisation of power and control)
 - * Individual work satisfaction etc.
- were factors that had to be kept in mind in T.A. To these I would add such considerations as:
- * The vulnerability of society
 - * National sovereignty and State security
 - * The protection of language and culture

as considerations that are very much to the fore in European countries, especially in connection with the joint technologies of data processing and telecommunications. Group 6 of the Second Syndicate listed several other considerations, and there are, no doubt, many more that have not been mentioned at all.

The point is made that in conducting T.A. we have to keep before us a whole multitude of considerations. There is no easy checklist. Technology is so various. A smelter at Gladstone may have important environmental considerations. It may be of little relevance to individual liberties and the vulnerability of society. Micro-electronics may have little impact on the environment but may require close attention of those concerned with individualism and personal liberty.

CONSULTING SOCIETY

The one thing everyone has so far agreed is that we should allow society to decide. Professor Freeman stressed the importance of this. At the temple of democracy we are all worshippers. But in the business of technology it is not so easy. As Dr. Farrands pointed out, sometimes the technology gets up its own steam, in the hands of many individuals in society and is not terribly susceptible to friendly persuasion in favour of this or that assessment procedure. At the moment, apart from the environmental impact studies, there is really no routine machinery for submitting technology to assessment. Things proceed very much in an ad hoc fashion, responsive to public controversy or the prescience of an individual official.

Most of us would have supported Professor Freeman's call for public participation in the business of assessment. But it is easier said than done. As Group 5 of the Second Syndicate pointed out, some people will simply not be stirred into participation. Some technology is just complicated. If we have learned nothing else in the syndicates, it is that the multitude of factors that have to be taken into account in weighing this or that technological "advance" are almost limitless. The individuals responsible for decision-making are varied. The groups in society affected by technology who must be consulted are diffuse. The community generally has a legitimate interest. But it is difficult to reach out to the community. Some people are just not interested. Others only read a garbled, alarmist or trivialised version of the problem, and despair.

As we pass into this technological revolution, a great responsibility will fall in the next decade upon the media in Australia. If they indulge in the sensationalising, personalising and trivialising of technology impact, or even worse, ignoring it altogether, they will do our country a great disservice. The media in Australia are in relatively few hands. They must sell newspapers or attract viewers. Until now, they have not had a great deal of help in communicating the issues of technology assessment in a

rational and balanced way. If we are serious about community participation, new means must be found, and articulate technologists and social scientists must come forward to help the media to bring the issues to the community in a balanced and reasoned fashion. Balance is not necessarily boring. This point was stressed by Group 10 of the Second Syndicate.

We have inherited in Australia a generally secretive method of doing the business of government. I would have been interested to know from Professor Freeman, from whose country we inherited this system, what new initiatives are being taken to Britain, to consult the community, the whole community and not just the "expert" community. There is a growing realisation that without turning decisions over to the "consensus of the ignorant", an expression used by Professor Lamberton, we must at least go beyond the "experts". There is an increasing openness of government in Australia. These are hopeful signs. As has been said, they are in part themselves the products of the new information sciences. It is much more difficult to be secretive in the age of television, instantaneous telecommunications and the photocopier. So attention must obviously be given to adapting the new technology to the communication of the issues of T.A., at least to those who are willing to hear. I congratulate the sponsors of this seminar. It is a good example of government communicating with key groups in society. It is especially good to see so many representatives of the Trades Union movement taking a vital and articulate part in these proceedings. May there be more of it.

SYNTHESIS OF SYNDICATE 1

The Technology

The First Syndicate exposed us to the study of ten new technological "advances". I remind you of them :

1. The impact of micro-electronics on the urban environment
2. Containerisation
3. Micro-electronics and small business

4. Introduction of ethanol as a fuel additive
5. Wired teletext
6. The Gladstone Smelter environment impact study
7. Self-service banking
8. Word-processing
9. The C.A.T. Scanner
10. The use of hazardous chemicals

Similarities and Differences

These developments had a few common themes but were otherwise quite different. Common was the fact that they all represent the introduction of technology having more than an insignificant, local impact (real or potential) on Australian society. The chief differences seem to be three :

1. The time of introduction

e.g. The Gladstone smelter is there already.

Containerisation is well established.

A few C.A.T. scanners have arrived.

Word processing has started its office "take-over" bid.

Wired teletext is not really with us yet, nor is the use of ethanol as a fuel additive on any scale.

These points were made by Group 8 in the Second Syndicate. A key, first question is when T.A. should be carried out. It can be premature. But it can also be redundant if the vital decisions are already made and "assessment" is mere window-dressing.

2. The extent, pervasiveness and distribution of the impact

e.g. The Gladstone smelter is local.

e.g. Nothing could be more pervasive than micro-electronics.

These points were emphasised by Groups 3 and 4 of the Second Syndicate. Whether T.A. is necessary and how it should be carried out depends upon the precise type of technology involved.

3. The extent of community say possible in the introduction and assessment of technology :

e.g. Hospitals are largely funded publicly, so (donors apart), C.A.T. scanner introduction will, in fact, depend heavily on public decision-making.

e.g. The introduction of micro-electronics to small business will be the result of multitudes of decisions made in the individual factory or business.

This replicates the example given by Professor Freeman concerning early decisions on nuclear energy.

The reports of the syndicates demonstrate the fact that T.A. is a very specific activity: specific to the precise technology involved, its initial capital cost, the urgency and social utility of its introduction, the availability of practical alternatives and the extent of the likely adverse social repercussions. Its utility and necessity may differ from case to case.

The Questions - tele-text is not really with us yet.

I remind you again of the questions Syndicate 1 asked :

1. Who are the principal decision-makers in the introduction of technology?
2. Which groups in society are likely to be most affected?
3. What types of effect will it have?
4. What groups must therefore be consulted or participate in assessment?
5. What resources are necessary for assessment?

The Answers

An examination of the responses to the questions asked of the First Syndicate reveals some common themes and some novel points.

In terms of principal decision-makers these points were made :

1. In most cases the user of the technology received pride of place (e.g. word processing, micro-electronics)..
2. But as a reflection of the growing role of the public sector and its functions as a guardian of community attitudes, the government was assigned an important role in some cases.
e.g. Ethanol as a fuel, the introduction of word teletext (in view of the telecommunications monopoly), the introduction of C.A.T. scanners (in view of the cost) and the use of specifically dangerous chemicals.
3. In many cases, the Unions were listed because of their institutional importance in Australian industrial relations and the fears, never far from the surface in the past 2 days, that technology means unemployment or at least re-deployment.

In addition to these obvious cases, some novel issues were raised:

4. The importance in some industries of the international dimension - a frank acknowledgement of Australia's minor position in the world technology league (containerisation, wired teletext). Professor Lamberton and Group 2 stressed this in the Second Syndicate.
5. The State/Federal dimension which follows our Constitution and imposes rigidities on us so far as assessment and decision-making is concerned. This point was picked up by Group 9 in the Second Syndicate.
6. Chance factors, e.g. a decision to donate a C.A.T. scanner introduced the first item of this technology to this country.
7. The important role of manufacturers, agents and advertisers in pre-empting decisions by sales and other pressure.

So far as groups affected, the obvious front-runners were :

1. The employee, for fear of loss of job or who may stand to gain new employment arising from new technology.
 2. The Union, whose position was perceived by some groups to be different from employees themselves.
 3. The employers who may be displaced unless they keep up with change and who seek to maximise profit by the use of technology.
 4. The consumer and society as a whole.
- Other groups affected, who were identified, included:
5. Local residents (in the case of containerisation road use).
 6. The taxpayer: It was pointed out that in some technology, e.g. C.A.T. scanners, the cost is so great that opting for it will mean, in fact, that society decides against other significant social benefits that could otherwise be bought for the same devotion of resources. In other words, "some-one pays" in some industries or for the introduction of

The most prevalent effect mentioned, (a Leitmotiv through all the groups) was unemployment. Only some groups perceived the observe of this effect, namely the increase in leisure which technology has the potential to bring. Are we, as a society, ready for so much leisure? Can we develop a new social ethic in time to replace the "work ethic"? It will be recalled that Mr. Mayne urged that we should begin to "ease" people into "meaningful leisure".

Different groups outlined the economic, social, environmental, workplace, political and legal importance of the technology under study. The way in which it would redistribute wealth, change work pattern, improve job satisfaction for some and abolish jobs for stress were all mentioned. An interesting factor mentioned by one group was the consideration of professional pride. If one hospital has a scanner, comparable hospitals must also have one. Several groups mentioned legal implications e.g.

when does it become negligent not to have and use the latest, generally available technology to reduce risks.

So far as resources needed for T.A. were concerned, many groups stressed the need for better statistics (e.g. micro-electronics and urban environment, containersiation and small business micro-electronics). An important point made in several reports was that we must face squarely the cost/benefit, risk/benefit equation raised by new technology. The clearest case of risk/benefit is that of dangerous chemicals. Owning up to that equation is hard and yet every country makes its assessments. Several reports stress the importance of gaining data on alternative available technology and the reliability and likely time span of the technology at a time when yesterday's invention is so quickly superseded by today's.

The question on consultation leads naturally to the Second Syndicate reports.

SYNTHESIS OF SYNDICATE II Consultation

Amongst the groups identified as having to be consulted, the following recurred :

1. The government and its agencies, Federal and State.
2. The Unions.
3. Suppliers of alternative technology.
4. Staff of organisations affected.
5. The community generally, by public debate of a constructive kind, to avoid the dangers which ignorance may bring in its train.

Special groups to be consulted varied according to the nature of the T.A. issue. In the case of urban environment, local government was obvious. In the case of containerisation, road authorities and local communities were mentioned. In the case of the C.A.T. scanners, the organised medical profession, house doctors and the Health Funds were noted. Many groups urged the importance of industry-wide consultation.

This suggestion gains strength by Dr. Hockel's observations. Employers, as well as employees, can be sent to the wall by new technology. This was picked up by Group 9 in the Second Syndicate, which reported that many small businesses were suspicious of technology.

The Models for T.A.

The Second Syndicate faced various models for effective structuring of T.A. in Australian society. They were :

1. In-house assessments
2. Impact statement assessments
3. Public inquiries
4. National assessment agency
5. Regulatory or other advisory bodies

To these, I would add two variants :

6. The Parliamentary Committee - to which appropriate expertise is added or available
7. The special University school - publicly funded and available to assist government and society in T.A.

Needless to say, these models are not necessarily alternatives. In-house assessments, whether of a formal or implicit kind, will continue to be made wherever new technology is introduced, either in the government or the private sectors.

In-House Assessments

Most groups agreed that in-house assessments, whether in a private or governmental organisation, were necessary, would generally occur and would continue to occur, whatever happened about organised T.A. But are such assessments enough in view of the unfolding technology we have studied? Groups 3, 5, 6, 9 and 10 of the Second Syndicate thought not. Why are in-house assessments insufficient, on their own? Group 1 explained that often the "ripple effect" would not be fully appreciated by the bodies immediately concerned. They may not have the knowledge or the sensitivity to consider or perceive long-run effects or effects on remote groups.

Furthermore, Group 3 suggested that, in doing their assessment, they may look at the problem from a narrow or even selfish point of view whereas there may be other interests at stake, not least that of the community as a whole.

Special Assessments

The groups of the Second Syndicate then turned to consider the alternatives for special assessments. The first to consider was the impact assessment model, presently provided for in the Environment Protection (Impact of Proposals) Act 1974 (Cth). Most groups reported that such assessments were insufficient. Some thought them unsuitable. Group 1 considered they generally came too late, at a time when the technology had been introduced and an assessment was redundant. Group 5 considered they would be too costly, particularly if laid down as a mandatory rule, whatever the form of technology, and required at the level of the individual firm introducing new techniques. Other groups considered the machinery too cumbersome for the pervasive nature of most new technology. Group 3 proposed that if an environment impact statement was obtained, the inquiry could be expanded to one of the technological impact, if any. In fact, it was pointed out that environment inquiries do, in practice, tend to scrutinise impacts other than those of a purely environmental kind.

So far as public inquiries of an ad hoc kind were concerned, the groups that reported on this were divided. Groups 5 and 6 opposed public inquiries. Group 6 thought it was the "last resort". Group 5 expressed fear that public inquiries, after the mode conducted in Australia, tended to descend into an adversary situation in which parties were frozen into committed positions. Groups 2 and 3, however, expressed themselves in favour of this form of inquiry, the latter pointing out that it is sometimes a useful way to involve the public and to secure publicity about an issue.

So far as a regulatory or advisory body was concerned, a number of groups urged the utilisation of already existing federal agencies or bodies. Amongst those listed was the Australian Science and Technology Council (ASTC), the National Energy Council (NERDC), Industries Assistance Commission (IAC), and the Australian Bureau of Statistics (ABS). Group 2 proposed that any regulatory or advisory body should find a place for the unions to be represented. Group 8 stressed the need to involve community groups, which continue to proliferate in modern Australian society. Many groups emphasised that we should not bureaucratise the process of technology assessment. "In this area, above all, we should beware of "paralysis by analysis".

New National Initiatives

The groups in Syndicate II also examined two possibilities for an on-going procedure of technology assessment at a national level. First was the proposal for a national Technology Assessment Council of some form. Most groups reported the view that there was a consensus that such a body was not needed for all T.A. decisions. Indeed it would be inappropriate for some of a minor nature. Some groups opposed the idea of an agency altogether. Group 7 feared that it would be too bureaucratic. Group 1 feared that such an agency might be transformed from advisory only to regulatory and thought this would be a bad thing. Group 2 feared the onset of institutional rigidities.

Yet a majority of groups reported in favour of some form of assessment agency. Group 3 saw it as a means of concentrating advice and information to the community affected by technology advances. It could also provide a means of concentrating community opinion. It did not need necessarily to be a governmental institution. Private trust organisations in the United States were cited as an alternative model. Group 6 felt that an advisory body would be acceptable, so long as it stuck to its advisory function. Group 7 felt that it was a good idea and should be modelled on the Productivity Advisory Council. Group 10 shared a similar view.

An alternative to the agency proposed, was the establishment of a special Parliamentary Committee. Group 10 had no confidence in this idea. What was needed, in its view, were expert bodies reporting directly to the Parliament, without the interposition of a Parliamentary Committee, perennially reconstituted. Group 6 thought the idea of a Parliamentary involvement deserved only low priority. It was, in its view, the "last resort".

The majority of groups who reported on this alternative seemed to favour some Parliamentary involvement. Groups 1 and 7 thought it would be satisfactory if only the committee could get the appropriate expert help at the highest level. Group 3 thought it was a good idea because Parliament, at least, is answerable at the ballot box and thereby sensitive to public opinion. Group 5 proposed that the idea was worth exploration. Before it was implemented in Australia, the working of the United States O.T.A. should be examined, for it is an organ of the Congress. Criticisms of O.T.A. were mentioned, including that it had been responsive to particular Congressional demands and therefore unable to provide the on-going monitoring of technology that was preferable.

There were, of course, other suggestions. It is not possible to list all of them. On a micro level, Group 8 suggested that industrial democracy would provide appropriate mechanisms for consultation between management, employees and unions about the introduction of particular technology. On a macro level, Groups 4 and 5 pointed to the utility of governments utilising the universities, the academies, and the C.S.I.R.O. as extant means of securing technology assessment of the highest order.

CONCLUSIONS

It would be bold to draw any general conclusions from this Workshop. However, three at least stand out as having achieved a general consensus. The first is that some form of technology assessment would appear to be accepted as a desirable procedure, at least in respect of some

technology and at the appropriate time. Secondly, we appear to be embarked upon the usual Anglo-Saxon solution for "routine" machinery that will reduce conflict and potential conflict to an orderly method of resolution. The normal English machinery of routine is, of course, a committee. Thirdly, a firmly consensus emerged that the government and the Department of Science were to be congratulated for organising this exercise. The co-sponsors and those who have participated are also to be congratulated. There is a lot of talk nowadays about "open government" in Australia. This exercise over the past two days, and the fact that it has been held in the public with the presence of the media and wide coverage of its themes, show that the open discussion of complex and sensitive issues is a reality in Australia. This is not a sign of indecision. It is a sign of maturity and self-confidence in administration. I hope there will be more of it.

* This is the text of a summary given by Mr. Justice Kirby at the close of a Workshop on Technology Assessment organised at the Kingsgate Hyatt Hotel, Sydney, on 25 and 26 July 1979 by the Department of Science and the Environment, the Australian Institute of Management (NSW Branch), the Bank of New South Wales and the Australian Council of Trade Unions.