By Leon Peres*

THE SCIENCE OF BEING IMPORTANT

Dr. Walter Boas[1] has drawn attention to the need for Australian scientists to participate more in the making of public policy in those areas of national activity that rest directly on scientific or technological bases. In other countries, particularly the United States, scientists are very actively involved in political decision-making over a very broad range of activities. Whether or not scientists are an ascendent, a political elite as Professor Robert C. Wood suggests,[2] there is no doubt that in American politics and policy-making, scientists are important. In Australian policy-making by contrast, and as Dr. Boas laments, they are not.

The influence that American scientists have been able to exert derives fairly directly from the critical underlying rôle of science and technology in matters of national security. By demonstration from the military field, and because of the simple fact that defence expenditure has a profound effect on other sectors of society, there has been an organisational as well as a technological fall-out in the field of civil science and technology.

There might not be many aspects of Australian public policies that approach the urgent degree of priority that Americans attach to national security, but the problems that Dr. Boas has listed are among the most important confronting our governments. They are problems that have arisen from the growth of science or they are problems in which science might be able to provide solutions.

There are many reasons why scientists should have a say in these matters. Dr. Boas has suggested that the scientist can bring special qualities to the decision-making processes because his train-

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1 Walter Boas: "The Importance of Being Scientific", *Australian Quarterly*, June, 1966.

2 Robert C. Wood: "Scientists and Politics: The Rise of an Apolitical Elite" in R. Gilpin and C. Wright (Editors)—*Scientists and National Policy Making* (Columbia University Press, 1964).

ing and his way of thinking make him particularly suitable to suggest solutions to our national problems. In this Dr. Boas follows a long line of social thinkers from Francis Bacon through Comte to Veblen who have argued in one way or another that science and scientists are capable of bringing rationality, order and harmony to social and political processes. This may be the kind of belief that will eventually persuade scientists to take political action but, judging from the controversies that scientists sometimes get themselves into, it does seem to be a myth. It is not necessary to go quite so far as to share this myth in order to agree that scientists should have an influence in policy decisions. Very few people would dispute that men who are immersed in an activity should have something important to say when decisions about that activity, or upon which it bears, are being taken. It seems probable, for example, that substantial economic benefits flow from scientific discoveries, and those who appreciate that a discovery might be made can certainly change our thinking about a particular matter. But the benefits are not simply the gifts of the scientists. In the processes by which they accrue, some credit has got to be given to the entrepreneurs, public or private, who back the possibility of a discovery and take it through the developmental stages, to the managerial skills that oversee the adoption of an innovation into production and to those who eventually bear its social costs. All those to whom credit must be given are entitled to a say; scientists certainly, but by no means exclusively.

If scientists are to have a say, two necessary conditions must be met. It is necessary, first, to assume that governments want to be advised by scientists—not just that they ought to, but that they actually do want it. Secondly, scientists must be willing to proffer advice. It seems that in the present Australian situation one of these conditions may hold but not the other. Which condition holds could be argued about as could the relationship between them.[3] Whichever it is, however, the remainder of this paper will proceed on the assumption and hope that at some time soon both conditions will be met. Given this assumption how do we let the scientists have a say? What is the science of being important?

[3] Dr. Boas would probably say that only the second condition holds at present. He states that there is a bias against the scientist in government and administrative circles. On the other hand he implies that the scientists are ever-ready to respond to the call of their country if only their country would call. I think it possible to mount the opposite argument that the call has been made but the scientists have not responded.

Dr. Boas has suggested a number of first approximations. Politicians should call on scientists for advice just as now they call upon economists, social scientists and lawyers (although those who follow these professions will be surprised to discover that they have this rôle in Australia). On many important issues advisory responsibilities should be placed upon the Academy of Science. This is an independent institution composed of the most distinguished scientists, and its progenitors in other countries have been used extensively in this way. Parliamentary and Scientific Committees, as have been established in the United Kingdom, India and elsewhere, are a way by which politicians and scientists can meet to raise the standard of awareness that the parliamentarians have of contemporary science and technology.

These are useful ways of enabling scientists to have some sort of say but they are not without their difficulties for both the political decision-makers and for the scientific community. Underlying each of these suggestions is the major problem of "Who is to speak for the scientists?", "From which individual scientists or groups of scientists should the government seek advice?", "Does the term 'scientists' include both research workers and practitioners?", "Which scientist's view is to prevail on policy about, for example, nuclear weapons testing?", "How should the government go about establishing its natural science priorities?", "Which of our scientific knights has the answer—Sir Philip Baxter, Sir Frederick White or Sir Otto Frankel?".[4]

If some of these difficulties could be resolved then perhaps a Scientific Advisory Committee might be established. Advisory committees, though, are not always the simple mechanism they seem to be. It is not certain that their purpose is to generate policy advice in every instance. They might be a way of postponing action or of seeking authoritative support for a policy decision already taken. They could be used to seduce opponents or to bring harmony to conflicting interests.[5] Purposes are often distorted simply because the price of good advice is often too high. Any adviser worth the title

[4] There are marked differences in the views of these three distinguished leaders of Australian science. These views are outlined in: F. W. G. White: "The Strategy of Australian Science", *Australian Journal of Science,* Vol. 26, No. 7 (February, 1964).

J. P. Baxter: *Establishing Priorities in Industrial and Technological Research* (Mimeograph, August 12, 1965).

O. H. Frankel: *Determining Priorities in Agricultural and Biological Research* (Notes of an address to The UNESCO Seminar on Science Policy and Research Organization, Sydney, August 12, 1965).

[5] Mort Grant: "The Technology of Advisory Committees", *Public Policy,* 1960, Vol. X.

wants to have an influence on policy, whereas those who control policy are rarely anxious to pay this price, except in relation to unimportant matters. Scientists often see a Science Council as a way of promoting science, but seem to forget that it might also be a way of controlling it. Scientists who want to influence policy might soon weary of the Advisory Committee device and seek other means of influence. Those who remain would gain their rewards in other ways.

Whether or not an Advisory Committee were appointed, the government would almost certainly want to use a specially appointed cadre of science advisers as well. In what sense would such a group speak for the scientific community? Would they be able to retain their loyalties to science or would they be perverted by the values of the bureaucracy of which they would form part? They might simply, and very quickly, be embraced by the "traditional four hundred".

These sorts of difficulties lend strong support to Dr. Boas' suggestion that governments could well look to independent institutions for advice. The Australian Academy of Science has no special interest to pursue apart from the maintenance of its own prestige and excellence. It is bound to add prestige and authority to any advice given (at least in the eyes of the recipient), but it is not at all clear that the scientific community is prepared to confer this policy leadership function on an honorific body. Even if academies have some method of resolving divergent opinions which might exist within the community, their present constitution does appear to impose an important limitation on the scope of their advisory rôle. Although academicians are the most eminent and distinguished of research scientists, they rarely include in their qualifications extensive experience in the application of science and technology to industrial, agricultural and engineering enterprises. It is precisely in these areas that governments, pursuing positive programmes for the application of science to social ends, need advice. Where academies have been the trusted advisers of governments it has generally been in connection with the advancement of science rather than in connection with its utilitarian rôle. If they are to discharge this broader advisory responsibility, academies might need to follow the recent example of the Royal Society of London which has embarked on a positive programme to recruit applied scientists as Fellows.[6]

[6] As intimated by Sir Howard Florey (now Lord Florey) in his Anniversary Address to the Royal Society in November, 1964, and referred to in "Replanning Britain's Science and Technology", *Nature*, Vol. 205, p. 215, January, 1965.

These various difficulties can, of course, be overcome and the particular suggestions that Dr. Boas has made will certainly allow some scientists to exert influence in the policy-forming processes. But these are just the first primitive empirical steps towards the real science of being important. At its most sophisticated level this science requires that affairs be so arranged as to put policy above party politics.

This principle, or first law in the science, has long been recognised and applied to a range of policy matters. Dr. Boas now argues that it be applied to science policy: "the application of science for the benefit of our society is a matter of national importance. Hence, the formulation of a national science policy should be above party politics. The development of Australia should not depend on which party is in power and everyone qualified should contribute to the formulation of the national policy". From Dr. Boas' own discussion, science policy is very much broader than the simple objective of promoting science. It would extend to the whole range of matters for which science might be an important means.

Probably the most eminent contributors to this science of being important, and its most skilled practitioners, are the bureaucrats. If one puts a policy issue above party politics, about the only place to put it is in the bureaucracy; whether this is "above" or "below" would depend on one's point of view. The justification for wanting to take some issue out of party politics is usually in terms of rationality and efficiency. Solutions to policy issues of the most profound national importance can be developed in a rational way not possible in the irrational world of party politics. It becomes possible to rationally order an allocation of scarce resources—particularly brain power—more efficiently than would the clash of party interests in the emotional political processes. The chances of establishing co-ordinating machinery to avoid waste and duplication are immeasurably increased. Because we have been predisposed to accept these arguments as very persuasive, bureaucracies have come to contain sources of considerable power and influence.

Don K. Price has noted that scientists are naturally disposed to administrative or managerial solutions to conflicting issues.[7] This natural drive would lead the scientists to the power sources available within the bureaucracy, some even thinking that the scientists would beat the bureaucrats at their own game and monopolise them.[8]

7 Don K. Price: *Government and Science* (Oxford University Press edition, 1962) p. 84.

8 Robert C. Wood, *Op. Cit.*

Thus, keeping science policy out of party politics will almost certainly allow the scientists to become very important indeed. But at whose cost?

Apart from it being a way to maximise the importance of scientists, is there something special about science policy that puts it above party politics? A something special that marks it off from defence policy, or educational policy or economic policy? Dr. Boas suggests that it is special because it is important. There is no doubting the contributions that science can make to economic growth, to national security, to agricultural and industrial development and so on. But, as noted earlier, it is not science alone that is important. In quoting Admiral Rickover, Dr. Boas endorses the view that "science, being pure thought, harms no-one". Equally, one might argue, it benefits no-one. The generator of both costs and benefits is, in Rickover's phrase, "technology in action". To talk about the importance of science in anything other than a cultural sense is to talk about the importance of technology in action. Dr. Boas has gone to a great deal of trouble to stress this fact, but he seems to stop short at the realisation that technology in action involves the whole mass of society including the party political process.

There is a sense in which any matter of importance is above party politics in almost any country. All parties would want to ensure the maximum possible growth rate; they would all want to see that Australia was adequately defended; full employment and a reasonable income distribution would be universally shared aims; we all desire to optimise our developmental possibilities and to see that our scientific resources and skills are adequately promoted and utilised. These broad policy issues, upon which there is probably community as well as party agreement, are set at very high levels of generality. This high degree of generality allows for a number of competing conceptions of what the policy actually means in any particular situation. It is quite legitimate to have competing conceptions of what effective defence is or what the possible rate of economic growth should be or even what the proper rate of national expenditure on research and development should be.

Neither do highly general propositions that might be above party politics provide any useful guides for action. Even if, by some process of politics or rationality, general policies can be reduced to an agreed operational goal, this goal still has to be achieved. Means must be adopted and as there are likely to be many available means, there will be many opinions as to the most desirable. Who,

for example, is to bear the inflationary costs of full employment or economic growth; who should get the benefits and who meet the costs of a just social services policy; what mix of institutions is needed to make up a balanced tertiary education structure; what should be the rôle of government research laboratories in relation to the universities? Choices have to be made even when general policies can be reduced to acceptable operational goals.

Although they have no monopoly of it, nor is it their only function, political parties have a most important rôle in generating competing conceptions of what these highly generalised statements of important national purposes really mean. They also generate solutions. Of course, groups other than parties play this game of politics and offer conceptions of purpose and suggest means for their realisation. Very often the conceptions that win out are initiated from outside the party arena. The fact remains, however, that political parties are part of the institutional framework through which we work out what our grand purposes mean in operational terms. Just because a matter is of great national importance is no reason for it to be above party politics. To the contrary, the more important a matter is, the more important it is that the whole range of our social and political institutions, including parties, be used in the process of generating competing conceptions. As technology in action affects almost every aspect of our lives, it is even more important that as many conceptions as possible enter into the decision processes.

It could be argued that matters concerning science policy are not matters about which it is possible to have competing conceptions, nor within which there is disagreement about the means to be adopted. There would be no need for political parties to consider these questions because the answers could be read off from the latest text-book in metal physics or plant biochemistry. Even if science policy questions were as intrinsically apolitical as this, they would still have political implications. Simply adopting the solution would involve the expenditure of an amount of money or the use of a quantity of skilled manpower which would immediately be denied to alternative users. Again, the very fact of choice introduces politics. But you do not really have to go quite so far as to allow science policy to be political. The sorts of questions that Dr. Boas has himself listed are very much political questions. How much money should governments devote to the support of science? Should this be directed to the universities, or industry or government laboratories? Is it proper or right to subsidise private industry

research and development programmes? Which industries? Which universities should be supported—the big ones that are already on the way to strong research schools or the smaller universities seeking to strengthen their bases?

Although we might not be spending as much on science and technology as many of us would like, we are spending sums so substantial as to make Price's comment on the American situation relevant to Australia: "Wherever any programme requires so much money and involves the fate of so many institutions competing with one another —industrial as well as academic—that programme is certain to become loaded with political issues; these issues are unlikely to be settled by men whose purpose is to reach a rational agreement based on compromise; they will be settled by a contest for political power in which each side will make use of its arguments not convince the other side but to win political power for itself and its friends."[9]

As our system for supporting scientific research and technology develops, it will be drawn more and more into the arena of political conflict simply because it is possible to have competing conceptions as to the "right" policy and simply because giving money for science takes it away from something else. The scientists might not like this method of resolving conflict; if there is going to be politics perhaps they might prefer the closed politics of Snow's Tizard-Lindeman case, or bureaucratic politics and infighting. Citizens—and probably the bulk of the scientific community unrepresented in the world of closed politics—might prefer that these policy issues be resolved through responsible legislative and executive processes in which the political parties have a rôle, even if the parties serve only the minimal rôle of retaining one point of access to policy-making.

A third possible reason for keeping science policy above party politics is that this is a policy area in which one needs special qualifications before one can even comprehend the issues let alone generate policy solutions to them. It is not clear whether, in referring to the need for qualified people to participate in science policy-making, Dr. Boas proposes to extend or narrow the field of participation in the discussion. Whatever his intention, however, he does point to a major problem that is alleged to confront not only political parties but the whole apparatus of government in modern societies. This problem follows the fact that governments now are more and more involved in functions that demand the increasing employment of experts, whether these be experts from the natural or the social

[9] Don K. Price, *Op. Cit.*, p. 83.

sciences. It is argued that lay politicians-ministers even can have little influence in these fields because of their lack of expert knowledge. Science policy might be one of the fields in which experts alone can produce policy solutions.

It certainly seems to be the case that solutions to contemporary problems often emerge from experts within the bureaucracy before the politician is even aware of the problem, and no time at all is left for discussion or for the party rôle of generating competing solutions. But this is probably happening for reasons which have nothing to do with the content of expertise which a policy issue might have. The reasons are more likely to be found in the sociology of bureaucracy. Policy issues are still essentially political wherever the decision is made. The choices to be made are seldom scientific choices, although there is no doubt that scientists and experts of other kinds can have a great deal to say. In the end, and more often than not a long time before you get to the stage of final decision, science policy questions come down to choices based on judgment and on wisdom. The question is who exercises that judgment? Who has the wisdom required in political choice?

Scientists seem to want to locate judgment away from the conventional political processes. Almost invariably they propose additional bits of administrative machinery to cope with the problems of science policy, and imply that the wisdom necessary to the solution of these questions is not to be found, or will not be allowed expression, in party conflict. This would certainly enable scientists to have a say; it is one of the surest ways of making them important. But it will also submerge a wide range of socially and politically important questions in the bureaucracy and will disguise politics as expertise.

Along with Dr. Boas I believe we are denying ourselves the benefits that follow when scientists participate in political decision-making. It is wrong just to keep our experts on tap. They should certainly get to the top but only if we retain the means of checking their essentially political decisions by subjecting them to competition from other views as to what those decisions should be. When we try to transplant institutions or organisational arrangements that have appeared to work well in other countries we should give a great deal of attention to the place of these institutions in their natural political habitat. If we should want to let our scientists get to the top in imitation of the American situation, say, we should remember that the American scientific establishment, by comparison with our

own, is a most diverse one with many competing sources of support even within the governmental structure. It operates within a political system that allows these diverse scientific groups to have different points of access to the decision centres and, most importantly, allows equally free access to other interested citizens and groups. Although at the top, American scientists are held in check by a sophisticated political system which has been able to respond to the scientific revolution. It is being refined even further to allow checks and balances to operate through the relationships between what Don Price has recently described as the new Estates of modern society, the political, the scientific, the professional and the administrative.[10]

Our own system, perhaps, is not quite so flexible, nor our "estates" so highly developed, but it is likely that the scientists will reach maturity first. If they do then the rôle of political parties will become even more important. It may be naïve to put one's faith in the political parties to check the advance of the sophisticated practitioners of the science of being important. Our politicians might not be much, but they are all we have.

10 Don K. Price, *The Scientific Estate* (The Belknap Press, 1965).