GOVERNMENT FORECASTING AND ASSESSMENTS*

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Responsible decision makers and concerned citizens in all countries would like to improve the abilities of their governments to understand the dynamics of social change, and to work toward a desirable future. This article will first suggest some lessons drawn from two decades of efforts in the United States to develop institutionalised forecasting and assessment capability within the Federal government, and then offer some comments on similar attempts in other countries.

Forecasting and Assessment Belong Together

Forecasting, for policy purposes, cannot be useful unless it is joined with assessment, since they are both necessary aspects of social planning. It is especially necessary to assess the potential consequences of technological change, which is a major driver, and indeed possibly the major driver, of social change in our century — and which is also, fortunately, one of the determinants of the future which government can influence effectively without violating the principles of democratic governance.

Just as forecasting is ineffective without assessment, so assessment of the potential impacts of technology and technology-related government actions is ineffective without forecasting. Both are essential to any effort to influence and shape, rather than submit, to the future.

One of the strongest, and most obvious, trends in policymaking in this decade is the movement of governments throughout the world to make more explicit and considered use of assessment and forecasting techniques (sometimes called foresight). The increasing complexity of technology and the increasingly global scale of its effects are enhancing both dangers to people and their institutions, and the possibility of reducing or controlling those risks.

Modern telecommunications and transportation are shrinking the world, so that environmental hazards ranging from atmospheric pollutants to epidemics regularly leap national boundaries and geographical buffers. At the same time, these technologies are leading to integration of a global economy. A focus on national self-interest,

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conceived in traditional terms, is almost surely self-defeating because ultimately a failure of physical or social systems in one country has ripple effects on all countries. This level of complexity is too much for traditional politics and politicians, to deal with; and bureaucracies, which are our conventional method of harnessing expertise and specialised experience, are also floundering under the burden of uncertainty and conflicting signals.

Political Support and Political Autonomy

Two things are necessary to build and institutionalise foresight and assessment capability within government. The first is a commitment by the political leaders who would use them. This commitment must come from a realisation that it is in their political self-interest to make them happen. Secondly, the foresight/assessment capability has to be firmly institutionalised, in law and in bureaucratic organisation, to establish a self-maintaining mechanism which can survive when this commitment at the top temporarily wavers. This formal and informal (i.e., evolutionary and non-deliberate) institutionalisation is what saved the environmental protection movement in the United States under an unsympathetic political administration and a general political swing toward conservatism. By the time that occurred, the movement had been translated into dedicated government agencies with a workforce whose jobs depended on the agencies' survival, and into Congressional commitees organised around environmental concerns, whose chairmen can be depended on to defend their position of status and influence. A body of law and judicial precedent had been created which had its own momentum. In the private sector, law firms had been created to practice environmental law, and a specialised environmental press had developed with considerable capital investment. Organised environmental public interest groups, with professional staff, existed. In short, a powerful force for institutional maintenance was now operating on behalf of environmental protection.

This kind of entrenched support system can also protect embryonic foresight and assessment institutions against temporary swings in political protection. It can be argued that such a buffer makes the forecasting and assessment mechanism non-responsive to shifts in public attitudes, and thus non-democratic. This is so, but only in the sort term. Strong bridges to respected and independent academic and scientific institutions, especially, not only protect the agency against the attack of political opportunists, but also act as a strong rein on any propensity of the agency itself to become politicised, partisan, or narrowly ideological. A strong constituency within the nation's intellectual community, in other words, will be both a protection and a check on the forecasting and assessment agency.

What Kind of Institution?

The form in which forecasting and assessment capability is best institutionalised clearly depends on the country, its governmental form, and its economic structure. Parliamentary governments may require an organisational structure and locus within the government that is different from that suitable for presidential systems. Relevant economic considerations are: who owns and profits from technology? who is responsible for regulating it? and is the relationship between industry and government an adversarial one, or strong alliance?

I suggest that foresight and assessment are most effective where there is both realistic recognition of conflicts of interest and a practical, non-ideological process of accommodating them. However, even in communist countries, bureaucrats often speak of the problem of translating scientific/technological issues into terms that political leaders can understand and use, a problem with which forecasters and assessors in any country are familiar. Differences in governmental structures, economic institutions, and ideologies affect how foresight and assessment can be institutionalised, but not whether they are needed.

The Political Risks of Forecasting and Assessment

Forecasting and assessment entail dangers. They are powerful tools and therefore dangerous tools. The power lies in the fact that our concept of what is possible in the future strongly affects what we do now. Those who articulate, for the public and for decision makers, the range of future possibilities and the practical limitations on that range, clearly affect the way present issues are perceived and the way action options are formulated.

In theory, the way in which representative governments both make use of and limit the power of experts or specialists is to embed them in a bureaucracy where both authority and accountability are impersonally but tightly controlled and harnessed to politically appointed leaders who stand responsible for bureaucratic decisions. It is for that reason that forecasting and assessment, if attempted at all, are usually located within the executive/administrative organs of government. The drawback to this arrangement is that the intellectual integrity and autonomy which the forecasting office can exercise is strongly subject to restraint to fit policy positions already adopted by the chief executive, or to fit the institutional imperatives of the ministry or department in which it is located.

The legislative body, on the other hand, must reflect the will of the whole populace, and must continually weigh 'scientific knowledge' against other fiercely competitive values and interests; it must pit long range priorities against immediate and urgent demands; it must

balance the implications of unavoidable present day certainties against those of tomorrow's uncertainties. Thus a forecasting and assessment mechanism directly used by legislature is also subjected to political pressures and threats.

In the United States, of course, the bureaucracy and its technical experts are in the executive branch while Congress is the legislative branch, two theoretically equal organs of government with constitutionally different and carefully balanced powers. This led directly to the institution described below.

The Office of Technology Assessment of the US Congress

The US Office of Technology Assessment (OTA), was established in 1973 to give the Congress a source of information and analysis independent of executive branch agencies. It was to provide congressional committees with 'early warning' (i.e., forecasting) of the potential social impacts and consequences of new technologies (i.e., assessment). This was, I suggest, a more significant political experiment than is generally realised. It is an innovation in democratic representative government because it places within the legislative structure a corps of experts. Acting within the legislative framework, it is theoretically possible for experts ('the technical elite') subtly to determine the thrust of public policy by being the first to articulate issues and formulate the terms of public discourse for the representatives of the people. OTA was thus a more radical departure from tradition for the United States than it would have been for some other countries with a unitary form of government or a tradition of centralised planning.

The democratic/representational character of legislative decision making has in no way been eroded by analytical inputs from OTA. That this has not happened is seen by some observers as more a mark of OTA's failure rather than of its success. They would like to see its influence greater — that is, more directly effective in shaping policy decisions. On the contrary, I maintain that the measure of success for a forecasting and assessment capability is not that it determines decisions or negates conflict, but that it raises and illuminates both sides of a debate. It does so by identifying misconceptions, misunderstandings, and fraudulent information and thus bringing into clear light the real issues and options faced by the society. This OTA has often been able to do.

The agency has largely achieved the twin and competing objectives of being 'non-political' (or at least non-partisan) in a highly politicised environment, and being at the same time useful to political decision making. There are several reasons. OTA studies tend to be broad in scope and rarely address sharply focused, yes or no questions at the

level of detail on which congressional representatives actually vote. Instead, they provide background and contextual information and explore the relative advantages and disadvantages of alternative macro-strategies, or options, for managing issues. They do not make explicit recommendations. Because most OTA studies take a year or more to perform, it would be difficult for legislators — even if they so desired — to maneuver or pressure OTA into producing a report at just the moment when sides have been tightly drawn and congressional conflict is highly inflamed.

It is worth noting also that OTA staff are not, in general, themselves premier experts in a scientific or technological field, and indeed are often not scientists or engineers. They tend rather to be generalists (often with degrees in the humanities or social scientists) who are adept and experienced in working both with scientists and policymakers and providing the necessary translation between them. Every OTA project also has an active advisory panel made up of both experts and representatives of 'affected parties' (e.g., unions, industry, public interest groups), who review and comment on, but do not control or authorise, the assessment report. In addition, OTA reports are reviewed by many other experts in draft stage. In this way OTA provides a systematic outreach for Congress to supplement its own hearings and constituent contacts.

I judge, however, that OTA has been more successful at assessment than at forecasting or foresight. Whether it is "an early warning system", as mandated in its founding legislation, is doubtful. The governing board, which is made up of six Representatives and six Senators (with equal representation from the two political parties), must approve studies, and generally insists that there be an active and urgent request from a congressional committee. Such requests often arise from discussions between committee staff and OTA staff, and to that extent OTA people can stimulate the perception of a congressional need for analysis, but OTA seldom exercises the power provided in its legislation to initiate studies of issues not yet recognised or anticipated by Congress.

Other Assessment and Forecasting Mechanisms in the US

At about the same time that OTA was established, the Congress also established by legislation a Council on Environmental Quality (CEQ) within the Executive Office of the President. Under a president with a strong environmental constituency and personal commitment, CEQ played an active and useful role in environmental assessment, and to a lesser extent in environmental forecasting. Even more important, however, was the requirement in the law for documented assessment, forecasting, and public reporting (environmental impact statements) by agencies, of proposed Federal actions that would affect the human

environment, construed as both the physical and the associated social environment.

Under a subsequent president with quite different policies and priorities, both CEQ and the environmental impact statement process have fallen into disuse and obscurity, without any change in the law; they have been left to quietly wither away. The continuing public and legislative support for, and demand for, environmental control is focused on and exercised through other agencies and mechanisms such as the Environmental Protection Agency and 'Superfund' (the legislative authorisation for clean up of toxic waste dumps). Although still within the executive branch, these are outside the Executive Office of the President, and more directly subject to congressional oversight and public scrutiny.

To a surprising and heartening degree, foresight and assessment activity has become, and has remained (in a not very favourable political environment) an accepted aspect of government activities concerned primarily with science, technology, natural resources, and environmental quality. This is not to say that it plays a dominant role in decision making at present, but the capability nevertheless is used and is still being developed. For example, the use of computer modeling for forecasting and decision support is steadily increasing. This development appears to have continued in spite of constrained budgets and bureaucratic inertia, because of the active interest, and insistence, of committed bureaucrats within the agencies and of congressional oversight committees, interest groups, and public-spirited critics in academia and professional organisations.

In 1977, responding to the international interest in *Limits to Growth,* President Carter established an interagency task force to study global environmental and resource problems to the end of the century. The *Global 2000* study was "to serve as the foundation of our longer-term planning". The task force proceeded on the assumption that the study would be a first step in integrating foresight and assessment capability near the top of the governmental stucture. However, the report was delivered only a month before President Carter left office, and was largely ignored by the next president, whose policy appears to be that forecasting and assessment are best left to market forces and volunteer (professional/academic) practitioners.

Several panels and coalitions of distinguished public-minded citizens and political leaders, including members of Congress, backed by organised environmental interest groups, kept alive the concern for improving governmental foresight capability. As a result, Senator Albert Gore, Jr., has recently introduced a bill to establish an Office of Critical Trends Assessment within the Office of the President. Given the fate of the Council on Environment Quality, described

above, and other attempts to force on the Executive Office capabilities which a current president does not want or welcome, this may be the wrong way to go. It nevertheless serves notice that the pressure for more systematic attention by government to the long range future is still alive and growing.

Parliamentary Government and Forecasting and Assessment

Parliamentary governments in a number of European countries have considered, and rejected, proposals to establish something like the US Office of Technology Assessment. As noted, in the US one of the forces behind OTA's establishment was congressional distrust of information provided by executive agencies on scientific programs and technological projects. At that time, as sometimes happens in the US, the executive and legislative branches were controlled by different parties.

In countries with parliamentary governments it has been the case a number of times that parties out of power favour the establishment of an OTA, which they hope will provide them with objectively evaluated information about government science and technology initiatives, while parties in power resist this demand as leading to a sharing of information that could implicitly limit their policymaking options. Political leaders, by definition, have, or are credited with having, a vision of the desirable future and a strategy for achieving it. A highly visible and credible forecast or assessment that implies the inappropriateness of the leaders' primary policies and programs may be judged to be not a tolerable risk.

Some governments are, therefore, now considering the development of foresight and assessment capability in an independent institution outside government, which could be guaranteed a high degree of autonomy and stability; perhaps a public foundation or national academy. In the United Kingdom there have been attempts to build such a capability in universities; however, to the extent that such an institution or program is dependent on governmental contracts or other renewable funding arrangements, it is very likely to vanish quietly when a less supportive or less actively committed political leader assumes office.

Forecasting and Assessment Experience in Europe

Among the countries that have actively considered the establishment of formal assessment and forecasting mechanisms, especially for the legislature, are West Germany, Sweden, France, the Netherlands, and the United Kingdom. Two attempts to establish an OTA-like institution were defeated in West Germany in the 1970s, and two similar attempts failed in the Netherlands. In Sweden a legislative

commission in 1977 recommended against an OTA as not politically feasible. In France an OTA bill was defeated in 1976 but a similar bill passed in 1983. There are new or renewed initiatives at present in a number of countries including Germany, Austria and Sweden. There also are, or have been, similar moves in many non-European countries, including, for example, Japan and Uraguay.

Four alternative mechanisms have been proposed or tried, some with varying degrees of success, in some cases very impressive:

- incorporation of the function within an existing governmental body,
- creation of a special office or committee in a non-legislative governmental organ,
- locating the function in an independent or quasi-independent organisation outside government,
- the use of ad-hoc or temporary commissions or task forces.

Britain's Programmes Analysis Unit (PAU) in the 1970s was originally created by two government agencies (the Department of Industry and the Atomic Energy Authority) to review systematically all government laboratory research programs, but gradually began to take on broader strategic and long-term assessment functions. It was proposed that PAU be formally transformed into an OTA, and although its terms of reference were never amended, it appeared for a time to be evolving in that direction. However, PAU was abolished when the present Conservative government came into power.

In West Germany, the Ministry of Research and Technology and the Ministry of Inner Affairs have from time to time sponsored excellent assessments and forecasts. Japan's Ministry of Industrial Science and Technology conducted a series of imaginative and useful assessments of technology ranging from information technologies (and 'the wired city' concept) to construction of high rise buildings in the future.

Temporary special commissions have, in several countries, performed assessment and foresight studies that are models to be emulated. Two examples were the Netherlands' Commission for the Development of Policy Analysis and its Council for State Policy. Another was West Germany's Committee for Economic and Social Change, which ended when its mandate expired in 1977.

Several nations have used task forces with conspicuous success. Canada in particular has made good use of Royal Commissions. The study *Northern Frontier, Northern Homeland* examined all aspects of the proposed construction of a massive oil pipeline, combining the elements of foresight and assessment. It was produced by a Royal Commission originally proposed by Canada's Science Council, an

independent body like a public foundation, which is funded by the national government. Another good example of a foresight study is *The Conserver Society,* prepared by a Secretariat for Futures Studies, then an organisation within the Canadian Ministry of Science and Technology.

These are merely a few examples; many countries have successfully developed and exercised foresight and assessment capabilities, as indeed have states or provincial governments in the United States, Canada and West Germany. But because these capabilities have often been embodied in groups that are *ad hoc,* insecure and vulnerable not only to resistence of political leaders, but also to a natural and inevitable waning of their active interest, that capability usually falls into disuse or is lost entirely when an *ad hoc* mechanism goes out of existence. It must then be repeatedly pulled together from scratch.

It is notable, however, that attempts to develop and use these capabilities are continuing, and in several countries the attempt to institutionalise and nurture these functions within the national government appears to be nearing success.