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Foresight Studies
A New Approach in Anticipatory Policy Making in the Netherlands

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ABSTRACT

Selection and priority setting in technology policies become more and more urgent. Confronted with budget constraints, policy makers need planning methods for well-argued choices. But how can we assess technology fields of particular interest to our countries? Prospective analysis can help us. The author develops an empirical model for foresight studies as a tool in strategic decision making. It is based on a Dutch experiment in recent years and illustrates how several stakeholders in a nation can be mobilized to assess emerging technologies, develop a common field of reference in judging these technologies, and coordinate the joint actions of the actors in this field. Foresight seems to be a rather interactive planning method in which governments have to plan the process rather than the outcome. In reflection on action, the author makes clear that foresight can reduce complexity when it is a process of concerted action in which public and private actors operate as coproducers.

Introduction

Technology is of great importance for industrialized countries, particularly those countries whose socioeconomic systems are strongly knowledge-based. Technological development provides the capabilities for more effective and efficient production systems and is in this sense a vehicle for economic growth. Both theoretical and empirical research qualify technology as a major determinant of economic growth [see, for example, 1, 2]. The longer-term continuance and profitability of firms, on the one hand, and the competitiveness of countries in an international environment, on the other hand, explain the growing interest of politicians, policy makers, scientists, and businessmen in this phenomenon.

The need for selection and priority setting is urgent, as the speed of technological change increases, product life cycles become shorter, and research and development (R&D) becomes more expensive. Confronted with growing pressures on their available resources, governmental policy makers try to find ways for rational decision making in this field. Governments that will not follow a strategy of "picking the winners" or those that leave everything to the "lottery of the market" try to find promising emerging

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technologies with potential for their economic system [3]. From these they try to "nurture" future winners.

But how can we assess technology fields of particular interest to our countries? Which specific technologies should a national technology policy target? What kind of actions are needed within the private and public sectors to exploit future possibilities and nuture as many future winners as possible?

This paper deals with these types of questions in referring to a policy experiment on technological foresight in the Netherlands. First I present a short characterization of the Dutch economic system and its technology policy until now. In the second part I explore the possible contributions of foresight activities as a planning method for priority setting in science and technology policies. In the third section I provide a description of the way we defined and organized three foresight studies in the Netherlands. The final section draws some conclusions about foresight as a manner of strategic decision making and formulates lessons about the process of these activities.

The Dutch Economic System and Its Technology Policy

ECONOMIC DIVERSITY

The Netherlands plays an important role in the European economy. The nation is literally the gateway to the heart of continental Europe: more than 160 million people live within a radius of just 300 miles. Moreover, Western Europe's main industrial concentration lies within that same tight circle. Its location in a highly fertile delta area has enabled it to develop into a country with one of the most open economies in the world. The export of products and services accounts for just over 50% of the GNP. In fact, Holland stands eighth in the world in the export volume of goods and services, with 6.5% of the world's total exports.

The *service sector* accounts for 50% of the Dutch labor force and generates almost half of the national income. Notwithstanding the importance of the service industries, Holland is home to a well-developed and important *manufacturing sector* that accounts for one-fifth of our economy, both in output and employment.

Perhaps even more significant is the character of Dutch industry. It is open and dynamic, internationally focused, and rather *innovative*. As a modern industrialized country, Holland regards technology as an important area of attention. R&D is seen as a priority throughout the entire economy, in government as well as in the private sector. R&D expenditures have grown rapidly in the 1980s and run up to 2.4% of the GNP.

TECHNOLOGY POLICY

Dutch industrial innovation stems from a well-educated populace and a highly productive work force, combined with the country's high level of technology. The complementarity of some large multinationals and an abundance of small and medium-size firms results in well-priced products, tailored to changing market demands. In the Dutch economic structure, 99% of the firms have less than 100 employees. At the same time, several giant international companies are based in Holland, including three among the world's 25 largest firms: Royal Dutch Shell, Unilever, and Philips [4]. These multinationals are obviously the most important carriers of technology: in the beginning of the 1980s about 70% of R&D funded by the private sector was accounted for by five large multinationals. Today, these five companies account for 55% of business enterprise R&D. The other 45% is carried out through approximately 7000 firms.

The innovative attitude of the private sector has been fostered by the Dutch government during the last decades. An outstanding public R&D infrastructure (universities and research institutes) has been a main pillar for decades in our "national system of innovation." More explicit policy instruments to support industrial innovation were developed in the 1980s along six lines[1]:

1. Enhancement of the innovative capacity of *industry* by risk credits, R&D labor cost subsidies, and financial support for projects in specific areas like new materials, information technology, biotechnology, and medical technology.
2. Reorientation of *public research centers* through the introduction of new strategic research areas and cooperation with industry.
3. *Diffusion* of new technologies: introduction of new transfer mechanisms at R&D centers, regional innovation centers, special programs like quality and logistics, demonstration projects (for example, flexible production automation).
4. Reinforcement of the technology component in the *education system:* informatics training catch-up programs, training facilities for teachers, employers, and employees.
5. Strengthening participation in *international programs* like the EC-Framework and Eureka.
6. Effecting *social integration* of new technologies through technology assessment, public information campaigns, support of technological counseling, and training projects of labor unions.

In 1987 the Dutch technology policy was evaluated by a panel from the Organisation for Economic Co-operation and Development (OECD) [5] and a national commission of experts from industry, research, and education [6]. One of the conclusions was that for a country the size of the Netherlands, the diffusion of technologies should be strengthened [7]. A second conclusion was that within the broad scope of generic policies on the one hand (for example, R&D and labor cost subsidies) and specific policies on the other (for example, project subsidies within specific research areas) well-founded tradeoffs were urgent.

The foresight experiment is one of the new initiatives that can contribute to the diffusion-oriented approach as well as promote well-argued priority setting within more specific technology fields.

But before proceeding, I would like to say something about the role of government in science and technology. Why don't we leave science and technology to the free market?

The economic rationale for government intervention in the field of science and technology has to do with the insufficient working of market mechanisms. When technology can be seen as the production of knowledge, we have to recognize that knowledge is quite a different good than soap or cars. Since the seminal work of Arrow, we can conclude that technology has characteristics of *public goods,* especially in relation to the nonexclusiveness and nonrivalry features of the use or consumption of knowledge. This means that it is very difficult to exclude people (and competitors) from knowledge produced within a certain private context and that the use of the generated technology by actor A doesn't diminish the overall volume of the available knowledge. On the contrary: as a result of learning processes, the amount of knowledge will increase to a considerable extent.

[1]For further information see the annual White Paper entitled Technology Policy Survey from the Minister of Economic Affairs, The Hague.

But when we conclude that knowledge production is a public good, then at the same moment the appropriability problem appears: firms that invest in R&D cannot reap in full the fruits of the knowledge they produced. Their R&D activities have important externalities and spillovers. Empirical evidence for this can be found, for example, in the work of Mansfield: he concluded that the social rates of return where twice as high as the private rates of return on investment [8]. As a conclusion I would say that, from an economist's point of view, government intervention in the R&D system is legitimate; free markets always will underinvest in knowledge production and application.

Foresight as a Planning Method

> If there are monsoons at the head of the Ganges, it is irresponsible not to plan for floods in the delta.
>
> Mr. Wack, ex-corporate planner, Shell

PLANNING OUT OF ORDER?

During the 1980s, skepticism about rational planning methods increased as a result of discrepancies between official policies and the real outcome and impact of formulated plans. Despite the rapid growth of evaluation research, the future still held surprises. Misdiagnosis and unrealistic and vague objectives, combined with poor instrumentation and implementation of official "blueprints," were important elements in the explanation of the discrepancies. The resulting skepticism was not limited to Western Europe; it also arose in the centrally planned economies in Eastern Europe.[2]

In the field of technological forecasting, many reports missed their mark, not by a matter of degrees, but completely and without regard for what actually occurred years later. In his recent study, Steven P. Schnaars estimates that nearly 80% of business and product forecasting over the last three decades has been wrong [9; also see 10]. To a certain extent, discontinuities in the field of science and technology, in which discoveries can occur by accident when one is looking for something else (serendipity), can explain the mismatch between forecasts and real developments. But other reasons for failure are that forecasters often fall in love with the technology, overlook economic considerations, and ignore societal or market reactions.

Several reactions to the disappointing planning results have appeared [11]. One stressed the impossibilities of governmental planning around "wicked problems" in a multiactor setting. A second reaction condemned the rational rule approach for its holistic, overall concepts and asked for more incremental policy making. A third reaction focused on more normative, ideological mistrust of public policy as such. Quite another reaction, as exemplified below by Robert Waterman, came from policy analysts stressing the process character of planning activities:

> Following the true strategic path of a company is a little like watching a butterfly make its way through a sunny meadow. It may be going somewhere but its path looks random, inefficient, irrational. [12]

The purpose of the last approach is not the formulation of top-down "blueprints" but the stimulation of a process by which a richer and well-informed dialogue among relevant stakeholders emerges as a basis for interactive policy making on different levels. In other words, *planning as learning by interacting*. This process of sharing of knowledge, discussion, and coordination of activities can be as important as the particular priority setting [13]. Foresight activities deal to a great extent with such learning strategies and coproduction in interactive policy making.

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[2]See, for example, papers presented by Eastern European countries at the United Nations (Economic Commission for Europe) Seminar on the Role of Long-Term Forecasting, Prague, 8–12 October 1990.

NEW GOVERNMENT ROLES: FORESIGHT, NO FORECAST

It is in this world of skepticism about the usefulness of planning that public policy agencies have to identify emerging technologies that can offer the country substantial potential for the future and also set priorities for reasons of resource constraints.

But how can we prepare ourselves to meet the needs and opportunities of the future? And, in particular, how can we make choices among the offerings from competing technologies?

In my view, the role of government is not to seek to pilot the technological system in detail, because many aspects are beyond government control and others would be paralyzed by excessively bureaucratic controls. Government's role is rather to mobilize and organize relevant stakeholders and facilitate an interactive process of exchange of information as a contribution to the decision-making process.

Foresight—as a method of prospective analysis—can help us, not by forecasting and predicting the world of tomorrow in rather deterministic *a priori* models, but by providing an early-warning mechanism to monitor emerging trends and opportunities. This creates an understanding of possible developments and the forces likely to shape them. Foresight is a way to manage complexity in a world of increasing uncertainty. And since *gouverner c'est prévoir,* every decision in public policy making needs a certain amount of anticipatory knowledge. Future research can offer this knowledge, not in the way of looking at a crystal ball, but in clarifying as much as possible choices of today that will have an impact on the future.

AIMS AND OBJECTIVES

In recent studies, Irvine and Martin present the findings of an international review of experiences with foresight in eight different OECD countries.[3] In summary, six types of objectives can be distinguished:

- *Direction setting:* establish an agenda of a limited number of technologies to explore further for prospects.
- *Determining priorities:* identify and select promising options for future research or economic activities.
- *Anticipatory intelligence:* contribute background information on emerging trends in technology, impeding threats, difficulties, etc.
- *Consensus generation:* promotion of greater agreement among internal and external actors on identified opportunities and needs.
- *Advocacy:* deployment of foresight to promote or legitimate a certain movement to more promising fields.
- *Communication and education:* exchange of information and experiences among R&D employees and between R&D institutions, universities, education centers, business, and government.

Irvine and Martin also note that foresight can provide direct input to decisions in the field of technology policy when three kinds of output are defined. First, such a study should identify broad areas of emerging technologies or more specific subfields or crossroads within these areas to be targeted as priorities by the government. Second, it should

[3]See Martin and Irvine [14] and Irvine and Martin [15]. Their work was commissioned from the Science Policy Research Unit, University of Sussex, by the Directorate-General for Science Policy of the Netherlands Ministry of Education and Science.

determine which technology areas have the greatest socioeconomic potential. Third, a considerable amount of consensus among the participants has to be reached; this will provide support for priority setting in both public and private science and technology strategies.

In the next section, I discuss the Dutch policy experiment on technology foresight, showing how we tried to find a way to identify promising technology areas for our economic system and how we went about assessing some of them in depth.

A Policy Experiment in Foresight

Unlike OECD countries such as Japan, France, and Sweden, the Netherlands has no established tradition of government-initiated technology foresight. In 1988 the Ministry of Economic Affairs launched a "Technology Foresight Experiment." Here I provide an outline of the process we followed to start this project and the way we dealt with it in organizational terms. In our description we follow the schematic presentation in Figure 1, not as a normative model but as an empirical one [also see 14, p. 30].

AGENDA SETTING

The decision to deal with new topics in public policy is the outcome of a process of agenda setting. Different interest groups try to influence policy makers and politicians in a way that their problems, needs, or new ideas will be articulated and translated into public policy. From this "babble of voices" of societal inputs, some problems will reach the agenda and become part of public policy.

At least three kinds of external input influenced the decision in our Ministry to deal with technology foresight studies: (a) a personal letter from an important politician to the minister, (b) experiences in other countries with foresight, and (c) the growing attention in economic and planning literature on this subject.

Agenda setting, however, is not only a process of translating the external demands into public policy by governmental agencies. This would lead us to a rather passive and reactive bureaucracy. Public agencies by themselves also have their anticipatory knowledge, visions, and interests [16]. Without our Ministry of Economic Affairs there was an awareness that we would need well-founded arguments for the selection of more specific technology-stimulation schemes. It was felt to be self-evident that the key technologies of the 1980s (informatics, materials technology, and biotechnology) should be stimulated, and not just because they had a degree of priority in all industrialized countries. But we were convinced that future choices between competing technologies would need well-argued decisions. In anticipation of the next decade, the question of which technologies would offer our economy the greatest possibilities became more and more relevant. Carrying out foresight studies could function as a monitor, an antenna in strategic management, and a tool for the generation of consensus in selection and priority setting.

Environmental influence and bureaucratic awareness in itself were not enough to put the foresight initiative on the policy agenda. As a first step in interactive policy making we interviewed several stakeholders (from research institutes, corporate planning boards, public policy agencies, and also ex-politicians). The main objectives were to orient ourselves on the usefulness of such an experiment, to be informed about methods and how we could deal with them, and—to a certain extent—to find legitimation for the project.

THE PRE-FORESIGHT STAGE

The initiative within the administration to start a foresight experiment came from a staff directorate dealing with departmental coordination. An important point in this respect

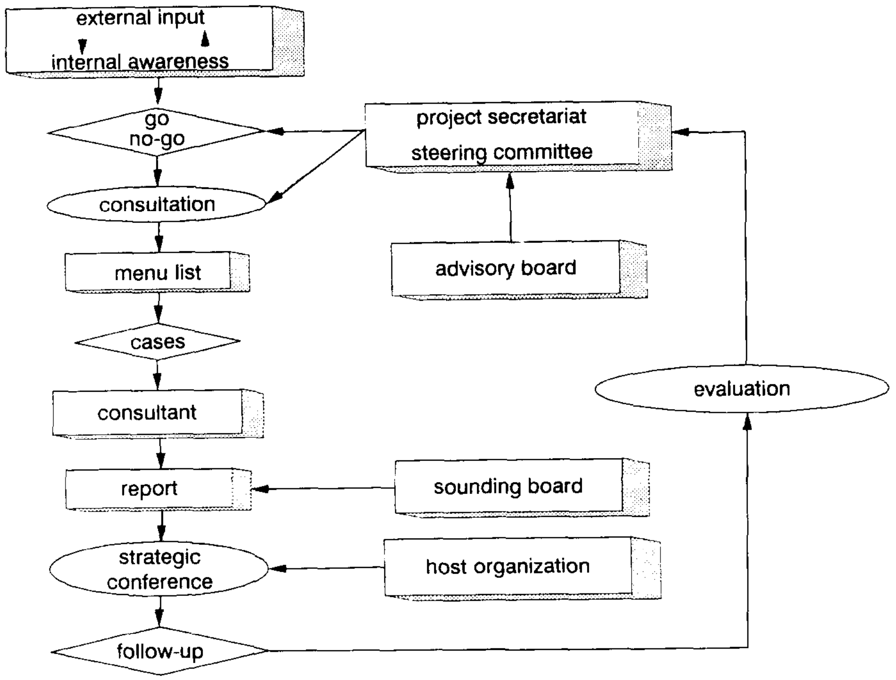

Fig. 1. Stages in a foresight study.

was how to realize intradepartmental agreement on this new initiative with line units, which are responsible for the more specific policies for certain target groups or technology areas. How could we avoid "not invented here reactions" from line units as much as possible?

In reflecting on our experiment, I would conclude that at least five elements in our initial preparatory stage contributed to consensus generation. First, we established a high-level steering committee composed of the directors from the relevant directorates and the chairman of the Advisory Council for Science Policy in the Netherlands. Second, we set up a project secretariat servicing the administrative process with employees from the staff and line units. Third, we consulted all relevant lower echelons in the hierarchy on their opinions about the values of more prospective analysis and asked them to propose specific emerging technologies and possible experts to be interviewed in a next round. Fourth, we discussed our intention with an existing forum of professors and high-level managers from larger industrial firms (FORUM), in order to gain support of high-level authority and external legitimation. Last, but not least, after finishing these first four steps, the steering committee asked for an explicit "go, no-go decision" from the minister and the managing board of the Ministry.

As a general objective, it was stated that a foresight study should provide information about emerging technologies with broad application possibilities in Dutch industry in the next five to ten years. More specifically, the initiative should contribute to

- the *selection and priority setting* in technology policy,
- the formation of *networks* between firms in different industries as well as between firms and research and education centers, and

- the *provision of information* about new technologies, in particular to small and medium-size enterprises.

The result of the procedure was not only consensus about the proposals, but also involvement and commitment among the different stakeholders. There was also a price to be paid in time: at least six to nine months from the initiative to the official decision to launch the technology foresight project as an experiment. The decision to go ahead on an experimental basis was very relevant. One reason was that the Ministry had no established tradition with foresight studies, therefore an experimental basis would give us the opportunity of "learning by doing" in finding the best approach. A second reason to start with an experiment was that we didn't believe in the overall, integral, or big designs that pretend to offer a full inventory of all relevant technologies, compare and judge them, and set the priorities in an objective way. Such a holistic approach would "paralyze us by analysis." In our view, a more incremental way of planning would offer practical experience and rather operational recommendations for action in some areas within a year.

THE MAIN FORESIGHT STAGE

After the decision to launch an experiment, we had to generate a list of emerging technologies with broad application potentials for the Dutch economy. From a methodological point of view, several techniques can be used, like extrapolation, scenario analysis, bibliometrics, patent-citation indexes, peer reviews, Delphi techniques, etc. We decided to draw up a menu list of emerging technologies by expert interviews. It was not our intention to draw up a restrictive list like the Japanese "Forecast to the Year 2015" [17]. We focused on a limited number of technologies. In this we followed a planning method of "mixed scanning" [18]: a full comprehensive list with all emerging technologies would be impossible to create, so generate a list with a limited number on which stakeholders agree and analyze their collective priorities more in depth.

We asked the FORUM network to provide the names of experts who would have a more general overview over these emerging technologies and to introduce the foresight project to these experts. On the basis of consultation with about 20 people (most of them high-level R&D managers or scientists), we drew up a list of 15 emerging technologies that were seen as very important for application purposes in the 1990s. But how could we reduce the menu list to two or three priorities for in-depth analysis?

Together with the FORUM network we formulated five main selection criteria for judging the technologies:

- *Application potential:* how broad are the possibilities for application within the next five to ten years?
- *Relevance for diffusion* to small and medium-size companies as producers or users.
- The availability of a *critical mass* in industry, research, and education infrastructures.
- The *network potential* of the technologies.
- The multidisciplinary, *crossroad character* of the technologies, which results in higher expectations than the monodisciplines [19].

This process of priority setting created a lot of consensus: the steering committee and FORUM delegates unanimously agreed on mechatronics, adhesives technology, and chipcards and electronic labeling as the top three technologies to analyze in case studies.

The next step was to formulate the terms of reference for consulting firms carrying out the case studies: research questions, planning, and budget. In general, we formulated questions like

- What is the state of the art of this technology worldwide?
- What are the potential impacts of this technology for different sectors of our industry vis-à-vis international competitors?
- Is it necessary to develop or support linked R&D activities to build upon promising technology fields?
- What will be the consequences for employees, and is our education and vocational training system aware of the developments and prepared to absorb them?

We asked the consultants to do their work in about six months. Their budgets varied between $140,000 and $220,000 (American dollars). The consultants were selected by a limited call for tender: for every study we invited four firms to make a research proposal. And because we defined our project as a policy experiment, we decided to select one international consultant, one large national firm, and one small but growing national bureau. Of the latter we were rather skeptical in the beginning, but afterward we concluded that it was the least expensive, was strongly committed and much involved in the work, and, moreover, it presented very good results!

Each foresight study was supervised by a committee with 6–10 representatives of the relevant actors: technology-producing and technology-using firms, research institutes, and technical universities and schools. The function of this "sounding board" was to keep an eye on the research path and discuss the (interim) results. But their contribution was not a "one-way" flow. The experts not only provided information for the project, they also received it, enhancing their individual expertise, and made it available to their institutions—a nice example of "coproduction" or "comakership."

The results of each case study became publicly available in a report; in the first three months after publication about 1000 reports were distributed.

Each report also became the input for a strategic conference [20]. After a personal invitation from one of the Directors-General of the Ministry, 80–90 participants from industry, service sectors, universities, educational centers, advisory councils, intermediate organizations, innovation advisory centers, and public policy agencies discussed the findings. The main objectives in organizing these conferences were to

- inform possible opinion leaders and first adopters who could act as liaisons to others and disseminate the findings of the foresight study,
- get a second opinion from field experts on the research results,
- contribute to the creation of networks between relevant actors, and
- generate a process of collective brainstorming on follow-up actions for *all* relevant actors.

From the beginning of our foresight experiment, we were convinced that we couldn't do this kind of strategic policy making without the participation of stakeholders in the public and private sectors. For this reason we organized the strategic conferences together with host organizations, organizations that could later function as "change agents" in the respective technology area. For mechatronics we worked with a leading branch organization in machine building and electronics; for chipcards, with a large bank; and for adhesives, with a large research organization.

About 250 people participated in the three conferences. A questionnaire revealed the following results:

- 75% reported that they were given new information and insight into the relevance of the technology.
- 75% of the respondents said they made new contacts during the conference.
- 75% of the participants intensified old contacts.
- 95% concluded that the Ministry should go on with the foresight studies in the coming years.

Thus far I have discussed our impression of the main foresight stage, which was finished halfway through summer 1990. Below is a brief comment on the post-foresight stage. Brief does not mean that it's not important. On the contrary: when we do not succeed in a well-defined follow-up, the commitment for the three foresight studies *and* the foresight project as such will very soon disappear. The main reason for a short description is that the post-foresight stage is only some months old now (December 1990).

THE POST-FORESIGHT STAGE

Three important activities were carried out in the first two months of the post-foresight stage. First, we generated a menu list of possible policy implications. Input came from the reports, the strategic conference, and consultation with several policy makers within the Ministry. We got ideas for at least 30 follow-up actions. From these, the steering group selected several initiatives for government action with respect to the dissemination of information, mobilization of specific target groups, demonstration projects, creation of platforms of interested actors, development of curricula for education, enhancement of a research institute or center of excellence, etc.

Second, we tried to disseminate the results of the studies to branches within industry and the service sector, the press, and intermediate organizations. As of this writing, the public relations work has not been completed, yet about 20 periodicals have published articles about the foresight studies.

Third, we evaluated the experiment by interviewing several participants. They unanimously concluded that the technology foresight experiment should be given a more structural place in Dutch technology policy and recommended two or three foresight studies annually. At the end of 1990, the managing board and the minister affirmed the conclusions and decided to continue foresight studies in the next years. So, we started again with the preparations for drawing up a new menu list.

Conclusions and Lessons

The increased relevance of technology as a basis for knowledge-intensive socioeconomic systems makes it more and more important, especially for smaller countries, to carry out systematic global monitoring of technological developments.

The *economic rationale* for government initiatives can be found in the insufficient working of the market mechanism in generating information about new technologies and their application possibilities. Efficiency in a market system, however, presupposes well-informed actors who make their own decisions. A government can help in providing this information so that more efficient resource allocation in free markets will be the result.

In the Netherlands, we had no experience in government technological outlooks. The awareness that *gouverner c'est prévoir* and that priority setting in the 1990s would be necessary stimulated the formulation of a *foresight experiment*. At the moment it seems to be an *effective and efficient instrument* in its contribution to

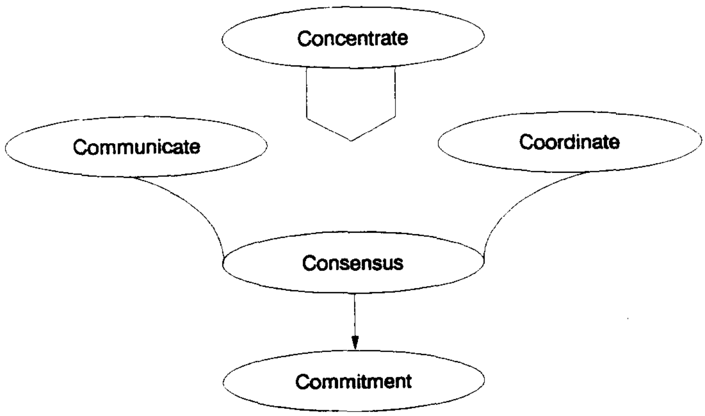

Fig. 2. Concerted action in foresight.

- *Concentration:* a way to bring actors to strategic thinking in focusing on future needs and emerging technologies with promising, broad application possibilities.
- *Communication:* the generation of information from and for the different stakeholders in an interactive communication and learning process.
- *Coordination:* the building of relevant sounding boards, expert committees, platforms, and other kinds of networks in order to overcome compartmentalization, bring together expertise, and promote cross-fertilization.
- *Consensus generation:* the reaching of agreement among actors on the priorities for more in-depth analysis.
- *Coproduction and commitment:* the generation of ideas for (public) policies to exploit the promising technology fields in coproduction with all actors and realize a common field of reference from which general commitment will result.

In reflection on our experiment, the outcome can be put together in a model on *concerted action* as presented in Figure 2.

As a highlight of our Dutch experience I would like to mention five important lessons.[4] First, considerable emphasis should be given to *learning approaches* rather than deterministic forecasts and blueprints. This means that foresights in which actors *coproduce* the outcome are important. The relevance of the *process* of a technology watch as an interactive communication and learning path exceeds the intellectual value of the end report. This doesn't mean that such an interactive process can't be planned for. On the contrary: an unplanned process will run the risk of going adrift without direction. We need a form of *concerted action:* not the content, but the interaction, the actors, and the different stages and timings ought to be planned for and facilitated by the government.

The second lesson is very short: *don't do it alone*. Information is not a commodity good that can be transferred in a simple way from A to B. The production and transfer of knowledge is a two-way process in which the cognitive and normative values of the participating actors change permanently. All stakeholders in the foresight process have

[4]For lessons drawn from the international comparison of foresight studies, see Martin and Irvine [14, ch. 11].

their own interests, knowledge, and vision. Together they produce possible pictures of the future that can become self-fulfilling prophecies when they act according to the knowledge generated during the foresight process.

A third lesson is that legitimation and authorization are needed before starting a foresight experiment. Perhaps the participation of high-level field experts and departmental decision makers was a critical factor in our process. But, notwithstanding the involvement of the higher echelons, you also need the employees in the line to prevent "not invented here reactions." The involvement of strategic thinkers, expert knowledge on specific technologies, and also positive attitudes from decision makers and implementation agencies will improve the later applications of the results.

The fourth lesson is that foresights resulting only in common knowledge and becoming "average" should be prevented. Try to find "*wild ducks*" from which you can expect "strange" ideas, uncommon proposals, and extraordinary judgments that later may become the niches in the market.

The last lesson is that public planning should not position government in a Archimedean steering point from which it controls society. Governments can operate more successfully when they act as coproducers with other stakeholders in a more incremental planning process.

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