EEC: Uniting to Meet High-Tech's Challenge

The Commission of the EEC has made a shift in its research priorities toward efforts to improve European competitiveness

Brussels

THE past few years have seen growing concern in Europe—as in the United States—about how to raise the contribution of scientific research to industrial competitiveness. This trend has thrust to the center of debates over research collaboration an organization that, up to now, has occupied a relatively low profile: the Brussels-based Commission of the European Economic Community.

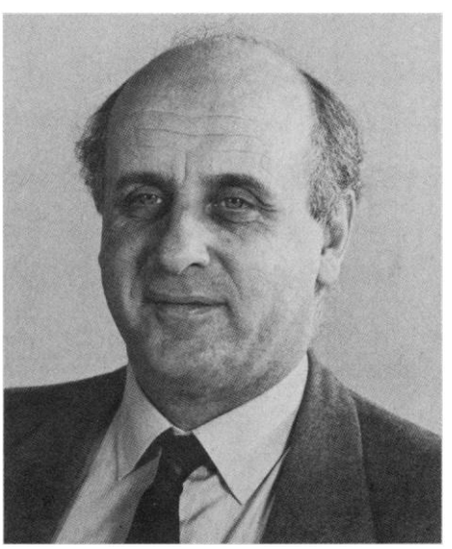
Only 8 years ago, almost three-quarters of the funds jointly spent on research by the 9 (now 12) members of the EEC were spent on energy projects, ranging from fusion energy to solar power. Today, energy research takes up less than one-quarter of the joint research budget. In contrast, priority is now given to fields such as information technology and telecommunications; these, together with research projects aimed at modernizing the industrial sector, will account for 57% of the $7.4 billion the Commission is planning to spend on research over the next 5 years.

"Science and technology are essential for economic development, as well as for ensuring that this development takes place without jeopardizing the quality of life, and there is increasing awareness that a European dimension is needed to all these issues," says Paolo Fasella, head of the Commission's directorate general for science, research, and development.

But if this new awareness has boosted the prominence of the EEC's joint research activities, it has also enhanced the political controversies surrounding them. The 5-year budget falls far short of the $12.0 billion originally requested by the Commission; and consensus on the lower figure was reached only after a lengthy wrangle among the major contributors to the EEC budget—France, West Germany, and, most unwilling of all, the United Kingdom.

Research played a relatively small role in the early days of the EEC. It receives no explicit mention in the Treaty of Rome (nuclear research was covered by the separate EURATOM Treaty), and up to the end of the 1970s, the EEC's joint research efforts were made up of a miscellaneous bag of programs, mostly oriented directly toward social issues, such as health and environmental protection.

The turning point came at the beginning of the 1980s under the firm guidance of Viscount Etienne Davignon, commissioner for industry and research between 1982 and 1986. Davignon argued that Europe needed to make a major new investment in industrially oriented research to avoid falling rapidly behind the United States and Japan, and



Etienne Davignon. *Architect of the EEC's change in R&D priorities.*

that the effectiveness of this new effort would be significantly enhanced if much of it were coordinated through the EEC Commission.

One of the first products of this new philosophy was the European Strategic Program in Information Technology (ESPRIT). Launched in 1984 and guided by a committee of representatives from 12 of Europe's largest electronics and semi-conductor companies, this effort brings together research teams of industry and university-based scientists to tackle topics considered essential for the survival of Europe's information technology industries.

Another innovation introduced by Davignon—who has since left the Commission to head Belgium's largest private bank—was the idea of lumping all the research activities together into a single package, the multi-year Framework Program. This sets out broad research priorities and strategies for tackling them, and its endorsement by member states is meant (in principle) to avoid later haggling over individual projects.

The current Framework Program, as agreed at the end of June, includes programs in eight separate areas: quality of life (including environment and radiation protection), information technology and telecommunications, industrial modernization, use of biological resources, energy, science and technology for development, seabed and marine resources, and improvement of scientific cooperation.

The reorientation of the Commission's research programs around the demands of industrial competitiveness, the increased role of the private sector in choosing the Commission's research priorities, and the reduced role of governments in detailed discussion of projects, were each approved in the Single European Act, a legal agreement accepted by the heads of state at a summit meeting in 1985, and since ratified by the parliaments of the EEC's 12 member states.

Putting these principles into action, however, has not proved straightforward. There have been two major stumbling blocks: disagreement about the amount of money that should be contributed to the joint research fund, and concerns that the weight of the EEC bureaucracy may prevent the effective use of the funds made available.

The Commission's original request, for example, would have implied doubling the EEC's research budget over the next 5 years. Its officials point out that even the result of this increase would only have been about 10% of the amount the EEC spends each year on maintaining agricultural prices.

The Commission's bid was supported by many of the smaller European states, such as Greece, Portugal, Spain, and Ireland, who—together with Italy—argued that a major effort was necessary not only to meet the challenge of U.S. and Japanese technology, but also to ensure a more equitable spread of Europe's research capabilities.

There was also enthusiastic support from the European Parliament, the directly elected body that is legally required to approve the EEC budget, and as such, plays a role comparable to the authorizing committees in the U.S. congressional system. Michael Poniatowski, a former French Cabinet minister who chairs the Parliament's committee

on energy, research, and technology, says his committee has been "pushing ahead a Commission which has not been very dynamic."

On the other side of the argument have been the research (and finance) ministers of the three largest EEC nations, France, West Germany, and the United Kingdom. Each, while committed to the creation of what Commission president Jacques Delors describes as a "European Technological Community," argues that this is not necessarily achieved merely by pouring money into joint research projects. German finance minister Gerhard Stoltenberg, for example, described the Commission's first proposals as a "pre-planned financial crisis."

Their reservations have been based partly on ideological opposition to increased public support in areas of technology that should in principle, they claim, be left to the private sector. EEC officials such as Fasella respond by arguing that, in practice, the private sector does not have a good record of support for long-term research, that the relatively small size of even Europe's largest companies places them in a weak position compared to many of their U.S. competitors, and that even the U.S. government subsidizes technological development through military contracts.

A second complaint is over the alleged inefficiency of EEC research. This was highlighted last year in a report on the four laboratories making up the Commission's Joint Research Center (JRC) by the research director of Shell, Harry Becker, claiming that the labs were badly managed and not responding to the needs of industry.

EEC officials acknowledge that there is a problem with the JRC, and say they are determined to improve the situation. Major cuts, however, which some of the larger countries would like to see, are strongly opposed by the host countries involved.

Britain, the last of the three major critics to accept a compromise research budget, has been particularly fierce in demanding much stricter selectivity and evaluation of research programs. Prime Minister Margaret Thatcher has argued that the same stringent economies should be applied to European projects as she has already imposed on her domestic research community.

But even British officials acknowledge that the stakes are higher than questions of cost-effectiveness. The Single European Act talks explicitly about the need to preserve "the technological and industrial conditions for European security." This means that, provided politically acceptable forms of collaboration can be found, the "Europeanization" of research through the EEC is likely to remain an important goal. ■

DAVID DICKSON

CERN: Adapting to Middle Age

Europe's premier particle physics laboratory, now 35 years old, is facing funding constraints, uncertainty

Geneva

FEW European research efforts have achieved either the scientific status or the public recognition of CERN, the giant particle accelerator near Geneva that has put Europe at the forefront of high energy physics for the past few years. The facility, which since 1954 has been formally known as the European Laboratory for Particle Physics, is arguably Europe's most successful venture in scientific cooperation.

Yet, for all its achievements, CERN is facing an uncertain future as some member countries—most prominently Britain—are questioning whether it is as cost-effective as it could be. In addition, European physicists are intently watching the debate in the United States over the Superconducting Super Collider (SSC). Whatever decision is made on the SSC will profoundly affect CERN's long-term plans.

Herwig Schopper. *"The boundary conditions have changed, CERN needs to adapt."*

"CERN is now 35 years old," says Herwig Schopper, the laboratory's director general. "The boundary conditions have changed, and CERN needs to adapt."

In the early 1950s, when the laboratory was set up at the joint prompting of U.S. and European physicists, CERN's justification was relatively straightforward. As a recently published book on its history demonstrates, three appealing arguments—in addition to the scientific case—helped convince governments to provide support: that CERN would guarantee Europe's involvement in the "nuclear" research considered essential in the postwar world; that its restriction to fundamental science would avoid the complications of cooperating on applied research; and that an international laboratory would be a major step toward the political integration of Western Europe.

Today, none of these justifications is particularly powerful. High energy physics is no longer considered by European countries (except perhaps Italy) to automatically deserve special treatment, either nationally or internationally, compared with other areas of basic science. And the questions being raised by member governments have more to do with cost-effectiveness and management efficiency than with claims that CERN should be preserved as a necessary symbol of either European unity or its scientific talent.

Such were the main arguments behind the conclusions of a government-requested report produced 2 years ago by a British committee headed by molecular biologist Sir John Kendrew. The report lavished praise on CERN's scientific achievements. But it went on to argue that significant economies could be achieved in the operation of the laboratory that would allow Britain to reduce its subscription by 25% by 1991. Indeed, the committee said that Britain should remain a member after that date "only if this can be achieved at a significantly lower cost."

Kendrew's conclusions drew much angry comment. The European Committee for Future Accelerators described the suggestion of a 25% cut in CERN's budget as "totally unrealistic," while the London *Times* thundered that withdrawal would mean "the effective end of Britain's long and leading contribution to the scientific study of the nature of matter."

But because the basic concerns that led the British government to commission the Kendrew report are privately shared by