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NEWS AND COMMENT

NSF: Pressures Mount to Provide Grants for Industrial Researchers

Senator Edward M. Kennedy (D–Mass.) has launched an effort to open the coffers of the National Science Foundation (NSF) to industrial researchers on an equal footing with scientists from academe.

The move is sending tremors of apprehension through university research administrators, who already feel themselves pinched by tight budgets and fear a further dilution of funds if the Foundation tries to support any appreciable number of scientists beyond its traditionally favored clientele in the universities. Their apprehension is heightened by the knowledge that Kennedy, as chairman of the Senate subcommittee on health and scientific research, exerts enormous influence over NSF's programs and budget.

At this writing, the prospects for immediate action on Kennedy's proposal remain uncertain. Kennedy's subcommittee recently approved a budget authorization bill that would direct NSF "to insure that researchers in the industrial sector are permitted to compete for [basic research funds] on an equal basis with researchers in the academic sector." That bill has not yet been approved by the parent Committee on Human Resources, where some members are said to be wary of the proposal to open NSF to industry, or by the full Senate. Nor is it clear how firmly committed Kennedy is to the equal-access proposal. Meanwhile, the House of Representatives has explicitly rejected an equal-access provision.

Thus, even if the Senate adopts Kennedy's proposal, the issue would have to be resolved by a House-Senate conference committee, where the outcome would be rated a toss-up. But whatever the fate of the proposal this year, the pressures for greater NSF support of basic research in industry seem destined to increase. "I doubt that we've seen the last of this one," commented one experienced staffer of the House Science and Technology Committee.

There is nothing in the statutes governing NSF that prohibits support of basic research in industry. But from the beginning, the founders and directors of NSF have viewed the agency's primary mission as the support of research and education at the nation's universities. In recent years, as the Foundation, under prodding from Congress, has ventured into greater support of applied research, it has encouraged industry to participate in such activities as the RANN (Research Applied to National Needs) program. But NSF leaders have steadfastly blocked industry from the basic research funds that comprise the core of the agency's activities.

Under present policy, NSF deliberately discriminates against unsolicited research proposals submitted by industrial scientists. Whereas it funds academic proposals primarily on the basis of "intrinsic scientific merit," it will fund industrial proposals only in "exceptional cases." The three exceptions are cases where the project is "of special concern from a national point of view and shows promise of solving an important scientific problem"; or "unique resources are available in industry for the work"; or "the project proposed is outstandingly meritorious." Only about 1 percent of NSF's basic research funds are awarded to industry.

Kennedy's interest in changing that policy is said to be motivated partly by the fact that a number of small- and medium-sized firms in his own state are clamoring for more capital to support research. Indeed, Kennedy's interest in the issue was stimulated in large part by a young physicist, Paul Horwitz, who took

a leave from his job with Avco Everett Research Laboratory, Inc., in Kennedy's home state of Massachusetts, to serve as an American Physical Society congressional fellow with Kennedy's subcommittee in 1975–1976.

One rationale for greater NSF support for industrial research is that it might help to improve the technical performance of American industry, which some experts claim is lagging. Another rationale is that NSF support would enable many of the bright young scientists who are in industry because of a shrinking job market in the universities to pursue careers in basic research. According to this line of reasoning, NSF should support the best basic researchers in the land, and, if increasing numbers of these researchers are now going to industry, then NSF support should follow them to industry too. Such support would be especially prized by individual scientists because most companies seem to be reducing their own support of basic research.

NSF Task Force Report

Kennedy first raised the issue last year of what role NSF should play toward industrial research. At that point, he made no recommendations but simply requested that NSF study the problem. The Foundation, in turn, appointed an internal task force, composed of senior officials from all NSF directorates and headed by M. Kent Wilson, deputy assistant director for planning and evaluation in the directorate for mathematical and physical sciences, and engineering.

Much to the consternation of many NSF elders, the task force included among its recommendations a proposal—later picked up by Kennedy—that NSF should "allow researchers in industry to compete on an equal basis with other researchers for basic research funds." It said that support for basic research in large industrial firms was "not needed or desired," but that an equal-access policy "would help to determine whether there is unused potential for doing high quality basic research" in smaller firms.

That proposal met with strong resistance from both the National Science Board, the policy-making body for NSF, which is dominated by academics, and the higher levels of the Foundation. As a result, the report that NSF ultimately submitted to Kennedy's committee repudiated the equal-access proposal. It stressed that the "most important role" for NSF was to support "basic science disciplines in academic institutions," and suggested that the "most effective means of strengthening industrial R & D" is to tinker with various incentives (such as tax policy) which lie outside the purview of NSF. The report affirmed the present policy of discriminating against industrial research. It acknowledged, however, that there is a "range of opinion" on this issue within NSF and the board, and it pledged to "periodically review the policy to determine if it continues to be appropriate."

One top NSF official told *Science* the board was "not anxious to stampede into this because it didn't really understand the possible consequences. Some argued that there would be very little effect on the Foundation, that we'd get just a trickle of proposals. Others argued that industry would absolutely flood the Foundation with proposals, and they weren't willing to risk this when our funding is stretched pretty thin as it is."

Norman Hackerman, president of Rice University and chairman of the National Science Board, told Kennedy's subcommittee he doubted that industry would be much interested in NSF grants because few companies would be willing to let their employees work for years on basic research projects. But Kennedy said he knew of "a lot of medium-sized firms up our way who are definitely interested."

The equal-access proposal has been endorsed by officials of, or individual scientists working for, such companies as Avco Everett; Abt Associates, Inc., of Cambridge, Mass.; Bolt Beranek & Newman, Inc., of Cambridge, Mass.; GTE Laboratories, Inc., of Waltham, Mass.; General Technical Services, Inc., of Upper Darby, Pa.; and Reichhold Chemicals, Inc., of Tacoma, Wash. The proposal has been opposed by officials or scientists at such companies as Gulf Research and Development Co., of Pittsburgh, Pa.; the Norton Company, of Waltham, Mass.; and Varian Associates, of Palo Alto, Calif.

The House has thus far agreed with the stand taken by NSF. The House Committee on Science and Technology issued a report concurring in "the long-established NSF policy that NSF should support basic research at industrial organizations only in exceptional cases." It added:

"The Committee does not mean to discourage the performance of basic research by industry—quite the opposite. The Committee believes, however, that because industry can devote any portion of its own resources to basic research it wishes and because it receives a majority of all Federal research and development funds already [a projected 60 percent in fiscal year 1978 as compared to 12 percent for academe] the Foundation should continue in its role as supporter of the government-university relationship in research. A vital added factor is that basic research is usually better done in the academic environment."

The committee also noted that industry will receive an estimated $100 million in NSF funds in fiscal year 1978, largely for logistics, construction, and equipment for "big science" efforts, such as deep-sea drilling and Antarctic research, but also for applied research, principally through the RANN program.

Congressman Rudd's Dissent

One committee member—Eldon Rudd (R–Ariz.)—vigorously dissented and complained that NSF's "parochial attitude" was excluding talented industrial scientists. (Rudd has inherited the seat formerly held by Representative John Conlan, a frequent critic of NSF, and has inherited Conlan's chief NSF watchdog, staffer George Archibald, as well.) During floor debate on the NSF authorization bill on 24 March, Rudd introduced an amendment that would have inserted Kennedy's equal-access proposal in the House version of the bill. He charged that "current NSF policy amounts to discrimination against tens of thousands of young Ph.D. scientists whose only sin is that they elected to go to work for private industrial laboratories—instead of for a university research lab." But the amendment was defeated by 32 to 16.

Whatever the fate of Kennedy's equal-access proposal this year, the Foundation, under goading from Congress, is apt to increase its support for cooperative research involving universities and industry as well as its support for interchange of personnel between industrial and academic laboratories.

Meanwhile, the issue of whether to grant equal access to industrial scientists will continue to raise troubling questions for NSF. Some congressional staffers see an inconsistency in NSF's attitude toward the kind of research it will support. Whenever NSF is asked to spread its largesse around more evenly on a geographic basis, it replies that no, it can't do that, it must support the highest quality research even if that research is concentrated in a relatively small number of institutions or areas. But now that NSF has been asked to support the highest quality research wherever it might be found—whether in industry or academe—the Foundation replies that, no, it cannot do that, either; it must concentrate on the universities. Such alleged inconsistencies are apt to be explored more fully if the debate gains momentum.

—PHILIP M. BOFFEY