Knapp Reinterprets Excellence at NSF

After rocky start, new director pursues old NSF verities, but pushes reorganization to alter way foundation operates

When Edward A. Knapp took over a year ago as the first Reagan Administration appointee to head the National Science Foundation (NSF) he made a blunt first impression by firing the top echelon of NSF officials. The clean sweep raised alarm in the scientific community about the possibilities of politicization of the foundation.

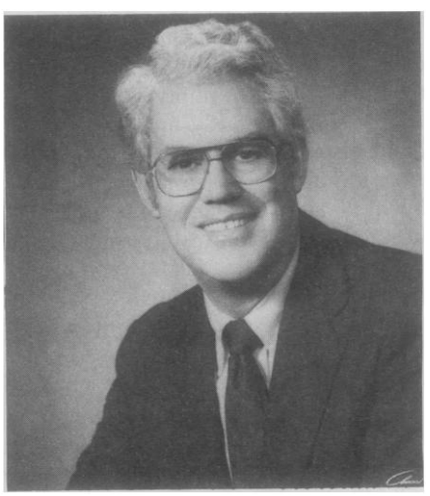
Now, a year later, these fears seem to have been quieted. NSF's relations with Congress have been tranquil and the foundation's diverse and sometimes fractious constituencies have been unusually quiet. By all accounts, Knapp has established a good working relationship with the National Science Board, NSF's policy-making body, which provides the foundation an important link to nongovernment scientists. And, perhaps most significant, NSF has prospered as the Reagan Administration has given preferential treatment to basic research which dominates the foundation's budget.*

The smooth sailing may not last. The NSF deputy directorship and four assistant directorships, all presidential appointments requiring Senate confirmation, are still vacant. Knapp faces major challenges in rebuilding the precollege science education program dismantled in the first year of the Administration and in implementing a broad initiative in engineering research and education. Both issues have generated controversy for NSF in the past and could again. (The engineering initiative will be the subject of a future article.)

If Knapp's first year has been outwardly peaceful, he has not been satisfied to stand pat. He recently announced a reorganization plan that reflects his determination to make significant changes in the way that the foundation operates. And he has already shown a clear intent to be a more active manager of the foundation than his recent predecessors.

Knapp differs in background from earlier NSF directors. He spent a quarter century as a scientist and administrator at Los Alamos National Laboratory and is the first career scientist from a federal laboratory to head NSF. He lacked the ties with the university community which his predecessors shared. And when he became director he was unfamiliar with Washington and vice versa.

Knapp acknowledges that after his removal of the foundation's senior managers he was "surprised by the political effect of the changes." He notes that he came from a place where "management is management" and it is customary for a new chief to pick his own team.



Edward A. Knapp

Watching how people spend money.

Knapp concedes that it has taken longer than he had hoped "getting people back in place" in the top jobs. His only comment on progress in the quest for replacements is that "We're doing recruiting work along with the OSTP [Office of Science and Technology Policy]." His response to a question about the difficulties of formal clearance process for federal posts was, "It's much easier if you can just say I want you to come." And he notes that most of the people approached for the jobs would have to take substantial cuts in pay.

Others outside NSF observe that the Reagan Administration has put strong emphasis on the political acceptability of candidates for policy level posts, and that the Office of Personnel Management, which is the clearinghouse for such appointments, has not shown itself to be highly sophisticated in dealing with jobs in science agencies. They also make the point that Knapp took over the directorship 18 months into Reagan's term and that, with a presidential election coming up next year, it will be increasingly difficult to attract good candidates.

Knapp first came to NSF last summer to be assistant director for mathematical and physical sciences, but when he was named director on 2 November 1982, he was regarded as the nominee of George A. Keyworth, II, the President's science adviser and head of OSTP. Also a Los Alamos alumnus, Keyworth had in fact worked under Knapp there. After Knapp took over at NSF, a common perception was that Knapp was operating in the shadow of Keyworth and one of his lieutenants at OSTP, N. Douglas Pewitt, a former Department of Energy official with a reputation as a tough-minded Washington operator with strong views on how NSF should be run. Knapp says that Keyworth and Pewitt were the people he knew best when he came to Washington, but he rejects the suggestion that NSF was being run from OSTP. Observers inside NSF friendly to Knapp say that he listened to what Pewitt had to say but early showed that he would make his own decisions. Pewitt left OSTP and Washington this summer and Keyworth is fully occupied with his own duties.

If Knapp seems comfortably in charge at NSF these days, it certainly doesn't prevent him from seeing eye to eye with Keyworth on the basic tenets of Reagan Administration science policy. His public remarks as director have been precisely in tune with the Administration theme that a strong basic research effort is necessary to produce the technology that guarantees the country's national security and economic competitiveness.

In pursuing this policy, Knapp and Keyworth agree on changes in the way the research grants are administered that could have a significant impact on NSF clients. Knapp says that excellence in research is his primary criterion, but that research and training "should be coupled more tightly together." He says,

*In the first Reagan Administration budget—for fiscal year 1982—NSF received a total of $999 million, nearly $100 million less than the year before. Funding subsequently headed up and for the current year—fiscal year 1984—NSF will get an estimated $1.3 billion. Funds for basic research rose from $916 million in 1982 to an estimated $1.2 billion for this year.

"We need scientists of first quality for universities and industry. The United States has been unique in the way we do basic research—we train the next generation of scientists at the same time."

Knapp says he thinks that the linkage has "probably been neglected somewhat" at NSF in recent years. "One of the things we'd like to do, are doing, is to get the link overtly out there." In other words, a grant application's provisions for research training will be more of a factor in the rating it receives.

To track the response to this shift in emphasis, Knapp says, "We're going to look at how people spend money. It's one of the reasons I'm interested in the budget. That's one thing a director can get a handle on."

In order to make finer discriminations, Knapp says his staff is working to improve the foundation's computerized management information system. "We want to get the right information into the data base so that we can make comparisons between years."

Knapp acknowledges that change does not happen at the drop of a memo. He says that "One of the things I didn't fully realize" until coming to NSF is that "since the foundation reacts to proposals, we can't just turn off the money in one place and move it elsewhere. We have to do a lot of things by setting examples."

One practical example NSF is setting at Knapp's behest is to boost the stipends of graduate students on NSF fellowships. Knapp feels that one of the reasons "we're not getting so many good kids" as science graduate students is the inadequacy of student stipends. A candidate for an NSF fellowship is "looking at $5000 a year." Students can't afford to live on that amount, particularly if they are married and have children, says Knapp. That is why Knapp worked to get the stipend for NSF fellowships raised to $8,200 this year and is shooting for $10,000 next year. Knapp observes that only about 1000 graduate students have NSF fellowships and perhaps 10,000 depend on support through research grants.

If the policy of encouraging research training through research grants means fewer and bigger grants, as Knapp acknowledges that it seems to, then he is prepared to bite the bullet. The same path is being taken to increase investment in instrumentation. Late in the Carter Administration, a decision was made to earmark a large chunk of funds specifically for instrumentation to fight the problem of obsolescence of instruments in university labs. "We decided to do it through research proposals," said Knapp. The target is to increase the amount allotted to instrument purchases by 60 percent this year over last year.

The exercise of closer control through the budget is one of the aims of the reorganization plan announced in the 28 September staff memo. Knapp decided to concentrate budget authority in a new controller's office. To this end, he ordered abolition of the existing Office of Planning and Resources Management (OPRM), which handled budgeting along with other functions such as planning, policy analysis, and program review.

Under the reorganization, the OPRM policy analysis unit will be merged with the division of policy research and analysis in the Directorate for Scientific, Technological, and International Affairs (STIA).

Knapp says that excellence in research is his primary criterion, but that research and training "should be coupled more tightly together."

Knapp has also given the policy analysts new marching orders. NSF's policy analysis people have continued to do a lot of work for OSTP and the Office of Management and Budget (OMB). Knapp feels that NSF and the National Science Board need stronger policy analysis support and has asked the analysis group to spend more time filling those needs.

Knapp also wants quicker reflexes in the policy analysis department. One NSF official cites "complaints that the level of NSF policy analysis was too academic, equivocal, long-winded, very careful, very long term, voluminous." The group has a new head, Peter House, imported from the Department of Energy, and the word is that NSF policy analysis projects are already more sharply focused and show a shorter "turnaround time."

The Directorate for Scientific, Technological, and International Affairs accommodates NSF programs that do not fit into the disciplinary rubric of the research directorates. Examples are the foundation's international activities and its programs to promote industrial innovation and productivity. The directorate also contains programs created by Congress to provide scientific opportunities for groups subject to discrimination such as women, minorities, and the handicapped.

The directorate is the focus of Knapp's bid to change the way NSF has customarily dealt with activities that fall outside the mainstream research directorates. The practice has been to create "set-aside" programs with specially earmarked funds. In a January memo on management of NSF programs Knapp noted that "Such programs inevitably, if subconsciously, create the attitude in the research directorates that these special issues are not within their purview. Unfortunately, these special programs typically have not had the resources to have an appreciable impact." Knapp wants the responsibility for attaining the objectives of the special programs spread throughout the foundation.

The process of mainstreaming was begun this year for international programs with the allocation of $5.9 million in international science funds from STIA to be awarded jointly by STIA and the research directorates with the understanding that the research directorates will also be expected to consider international projects in awarding regular funds.

The same decentralized concern is to be given support for non–Ph.D. granting institutions. Knapp is convinced that small colleges have been an important incubator for science graduate students and should not be overlooked by NSF. The foundation is targeting a 30 percent increase in grants for research and instrumentation this year for such schools.

In the case of women, minorities, and the handicapped, the intention is the same, but it was decided that more groundwork is necessary before the special programs are mainstreamed.

Sheila Pfafflin of AT&T, the chairman of the women's subcommittee of the NSF advisory committee on equal opportunity in science and technology, said the group was impressed by Knapp's sincerity in the matter and "in principle we would certainly concur that equity should be the responsibility of the directorates." But she said that in the case of women, for example, it would be difficult "to deal with the biases and barriers in the outside world that prevent women scientists from applying" for grants on an equal basis with men. And the committee thought that the "external visibility of the programs encouraged them to apply."

Knapp recognizes that implementation of his management aims will require changes in attitudes up and down the line at NSF. "Everybody reorganizes," says Knapp. "The question is, does it make any difference?" Knapp's partisans note

that he had ample line management experience as head of the big science Accelerator Technology Division at Los Alamos and this gives Knapp an advantage over other NSF directors in accomplishing the aims of his reorganization.

The missing deputy director and assistant directors deprive the foundation of administrative horsepower. Knapp, however, says he has been impressed by the competence and hard work of the career officials who have taken up the slack and by the quality of the staff as a whole. Such comments and Knapp's commitment to excellence have gone over well at elitist NSF and he appears to be well regarded by the rank and file. The booming basic research budget has been good for morale.

Knapp, an advocate of lean management, has relied heavily on NSF regular, Richard S. Nicholson, in the absence of the presidential appointees. Nicholson emerged into the upper strata of NSF management as an assistant to Richard Atkinson, NSF director in the late 1970's. A veteran of the chemistry division which is a traditional source of NSF leadership material, Nicholson is knowledgeable about the foundation and regarded as an effective executive officer. In the recent reorganization, Nicholson, who held the title of executive assistant, was given the new-to-NSF title of staff director. There has been some muttering on Capitol Hill about Nicholson being de facto deputy director, but this seems prompted largely by irritation at the Administration's tardiness in filling the statutory management slots.

Knapp's relations with Congress so far seem to have been correct if a little remote. One staff member of a committee that deals with NSF in the Democratically controlled House describes congressional attitudes toward Knapp as "neutral." Knapp has not established the kind of informal rapport with NSF's Hill patrons managed by such previous directors as William D. McElroy and H. Guyford Stever, who each had an easier command of Capitol Hill camaraderie. The staffer describes Knapp and Keyworth as "not good politicians." And says of the former that "You can argue that Knapp doesn't need to be. But if he gets into trouble, if something blows up like the MACOS controversy [a furor over a school behavioral science course sponsored by NSF] or the peer review issue in the 1970's, he has little in the way of good will to draw on."

On the other hand, Knapp appears to be operating in complete harmony with the Executive, including the OMB. And another favorable budget appears to be in prospect.

The early test of Knapp's policies will come with the implementation of the engineering initiative and reactivation of the science education program and, perhaps, when Knapp's new policies on grant administration begin to affect the grantees. At the end of the first year of Knapp's tenure at NSF, then, it is possible to identify a definite style in his directorship, but still too early to assess the substance.—JOHN WALSH

NIH Bill Passes House

Legislators strike a middle ground by adding some new programs, but not as many as Waxman wanted

In its closing hours before recess, the House of Representatives finally passed major legislation concerning the National Institutes of Health (NIH). The bill, a product of intense negotiations, is an amalgamation of earlier versions that had been the subject of controversy for several months. The core of the House bill retains the permanent operating authority of NIH but includes several new provisions as well. As expected, the House created a National Institute of Arthritis and a National Institute on Nursing. NIH officials wanted neither. On the other hand, a measure that would have banned fetal research was defeated—apparently to the surprise of the prolife lobby. All in all, members of the biomedical community will probably find the compromised House bill fairly palatable, but the game is not over yet. When Congress returns in January, the Senate must still vote on its own version of an NIH bill and then the legislation will go to conference where a few more compromises are likely to be struck.

The House bill, which passed on 17 November, was the result of bargaining between Henry Waxman of California, Democratic chairman of the health and environment subcommittee and Republicans James Broyhill of North Carolina and Edward Madigan of Illinois. Earlier in the year, Waxman introduced a bill that evoked a hue and cry from representatives of the biomedical associations, primarily because the bill assigned NIH numerous new programs in the form of line item authorizations.

Waxman's bill was also controversial because it deleted certain language in the Public Health Service Act, a change that critics claimed would undermine the basic legislative authority of NIH. Margaret Heckler, secretary of the Department of Health and Human Services in October wrote to Waxman that his bill "would tacitly reject the premise of NIH's operation over the last 40 years." Opponents of the change also alleged that the deletion would eliminate the "fallback" authority for NIH's two largest programs, the National Cancer Institute and the National Heart, Lung, and Blood Institute. These two institutes are the only ones of NIH which are periodically renewed. Fallback authority permits the institutes to continue to receive appropriations even if their authorizations expire. Aides to Waxman disagreed, contending that the transfer was merely a technical cleanup of the law and that it retained the fallback authority.

Opposition to Waxman's bill by organizations such as the Association of American Medical Colleges became so heated that Broyhill and Madigan developed substitute legislation that included the same funding levels for NIH, but contained none of the special line items. Both measures would have established the arthritis institute (*Science*, 19 August, p. 726).

It was from these two proposals that a compromise bill was born. Legislators and their staffs negotiated for the past few weeks but declined to disclose any details until shortly before the legislation was brought to the House floor last week. The only major debate on the floor centered on fetal research and, after that issue was settled, the bill passed by voice vote.

In the end, Waxman agreed to drop all new line item authorizations that his original bill contained and settled for language that merely wrote the programs