NSF Under Challenge from Congress, Engineers

Hearings on rival National Technology Foundation begin, engineering societies seek changes in the status quo

Ever since it was created, the National Science Foundation has had critics who have complained that its bias toward basic research means that federal support of applied research and engineering is stinted. Now, concern that U.S. excellence in science is not being adequately translated into technological innovation is forcing a reassessment of the way NSF is organized and operates.

This discontent is reflected most pointedly in a proposal in Congress for a National Technology Foundation. An NTF would be formed by regrouping the technological functions of federal agencies, notably NSF and the Commerce Department, into a separate agency.

Engineering societies have been showering criticism on NSF and pressing for an equal rights formula for their profession. NSF itself has embarked on a study that concentrates on its handling of applied research and engineering and that could lead to a major revision of NSF's operating criteria and a reorganization of its structure.

The current focus of attention is the NTF bill (H.R. 6910) on which hearings began on 9 September. Chief sponsor is Representative George E. Brown, Jr. (D-Calif.), chairman of the House subcommittee on science, research, and technology, which handles authorization legislation for NSF. Brown says that the bill was introduced for discussion purposes and no effort will be made this year to advance it legislatively. He does say, however, that next year he expects to introduce a version revised in light of the testimony at the hearings.

Major engineering societies see NTF as one alternative in their quest for greater federal recognition of the claims of engineering research and training. The International Institute of Electrical and Electronics Engineers and American Association of Engineering Societies, the largest professional groupings of engineers, have adopted resolutions on the matter. The options put forward by the engineers call for creation of an NTF, a major overhaul of NSF with the effect indicated by a name change that includes engineering, or establishment of a free-standing engineering foundation.

At the first session of the NTF hearings, witnesses divided predictably on the question of whether reform of NSF will serve the purpose or whether a separate organization will be needed. The case for broadening NSF's program was argued by Lewis M. Branscomb, chairman of the National Science Board, the policy-making body for the foundation, and by Donald N. Langenberg, acting director of NSF.

Branscomb noted that NSB has been studying questions centering on applied research and engineering since the beginning of the year. At its June meeting, the board asked the NSF director to come up with proposals for both policy and organizational changes to make the foundation more effective.

Former NSF director Richard C. Atkinson, who was about to leave the foundation to head the University of California, San Diego, promptly sent the board a draft plan to discuss. Some major possibilities that he put forward were the creation of an engineering directorate in the foundation, a requirement that all directorates run balanced programs of basic and applied research, and the creation of a social science directorate. Word of the proposals spread rapidly outside the foundation and many people apparently jumped to the conclusion that the die is cast for a reorganization along the lines suggested. Engineers generally saw the proposals as inadequate. University scientists feared that increased support of applied research would be at the expense of basic research.

Since early July NSF staff has been seeking to refine the proposals. Recommendations will be made to NSB at its meeting on 18 and 19 September, and the board is scheduled to take action on the recommendations at its meeting in mid-October. Dispatch is necessary if changes are to be reflected in the budget now being fashioned for next year.

A public airing of NSF thinking so far on the issues came at a meeting of chairmen of NSF advisory committees in Washington on 13 September, when reorganization was discussed. Langenberg, who presided at the meeting, advanced the "hypothesis" that the time has come when engineering deserves a larger role and more prominent position in NSF. If one accepts that view, he said, the logical action is establishment of an engineering directorate. And the appropriate question then is what the proper balance between basic and applied research should be.

Langenberg gently finessed questions as to whether the current reassessment was a defensive reaction to criticism. He noted that Congress is very much interested in how programs of the foundation contributed to critical national needs. Acknowledging that the NSB had discussed what NSF's response should be to the proposal for an NTF, he said it would be an "overstatement" to call it the driving force in the discussion.

The discussion at the meeting produced expressions of concern from university scientists that the shift in emphasis to applied research would be popular in Congress and result in a decline of support for basic research.

Perhaps the most forcefully worded comment at the meetings came from F. Karl Willenbrock, dean of the school of engineering and applied science at Southern Methodist. Willenbrock said that the NTF initiative raises a "fundamental issue." The engineering community has little confidence in NSF; engineers feel they have had a second-class citizen relationship. "What they're saying is that NSF has not made a contribution to engineering comparable to that which it has made in other areas."

NSF is at a crucial point, said Willenbrock. If the foundation leaves things as they are, they will force the engineers to look elsewhere. One more cosmetic change is what they expect. The question is whether NSF is going to be as responsible for the health of the engineering community as it is for basic science. The engineering community is not convinced that the foundation wants to do that, said Willenbrock. "The question is how to overcome the basic distrust."

By coincidence, while the discussion of NTF is in progress, the Brown subcommittee is also engaged in considering whether the NSF charter legislation needs major revision. Some of the same questions broached in the NTF hearings are sure to arise.

The debate over the future shape of NSF is assuming the scale of a major science policy issue. With its reassessment in progress, NSF has the opportunity to take the initiative. Certainly Congress and the engineers will be watching.

—JOHN WALSH

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