# NSF Appropriation: Mutiny on the Mohole

Earlier this year, upon the death of Representative Albert Thomas (D–Texas), budgetary authority over the National Science Foundation passed to Representative Joe L. Evins of Tennessee, the ranking Democrat on the Independent Offices Appropriations subcommittee. In the political environment of the Foundation, this was something of a historic moment. Strong-willed and high in the House leadership, Thomas had reigned as subcommittee chairman from the very first days of NSF, and the pace of NSF's growth rarely departed from Thomas's assessment of what the pace should be. Over the course of 15 years, to the immense but diplomatically concealed frustration of the leaders of the scientific community, Thomas permitted NSF to grow, but never at the rate they considered indispensable to the maximum development of American science.

Last week, the returns were in from his successor's first time in the role of chairman.* The verdict adds up to no increase in money and far less entertainment than when the late Texan reviewed the budgetary appeals of NSF. For the fiscal year that starts next July, the administration sought $525 million for NSF; the decision of the House appropriations committee was that NSF should make do with the same amount that it received for the current fiscal year, $480 million. The committee did offer some financial relief within the bounds of the $480-million appropriation, but in a way that left NSF dumbfounded. At this late inning in the Mohole affair, when construction is at last under way on the long-controversial oceangoing platform, it was decreed that the deep-drilling project is to be eliminated, and that other NSF activities should benefit from the nearly $20 million that was to be obligated for Mohole next year. The Mohole decision can be appealed when NSF's budget comes before the Senate appropriations subcommittee later this month, and if the Senate acts favorably, Mohole may be resuscitated in a conference between the two Houses. But Thomas, whose constituent firm, Brown & Root, got the Mohole design contract, was the political mainstay of the project, and if Mohole has any friends in the Capitol they are hard to see for the multitudes that are sore about the whole business.

Except for the absence of Thomas's sarcastic wit (on several occasions in past years he had praised the NSF budget as "a work of art"—before dismembering it), the appropriations hearing this year followed the usual pattern. Director Leland J. Haworth found occasion to attempt to convey to the committee NSF's symbolic significance within the scientific community. "I believe that the Foundation should be regarded and should think of itself as the repository for Federal recognition of science as a national resource —a renewable resource that is vital to the national interest," he said. "In particular the Foundation should be a principal advocate of basic research—a fountainhead of new ideas and the area most difficult to defend as a field of intellectual activity that is worthwhile for its own intrinsic value." Haworth added that NSF would like to have a 12- to 15-percent annual increase to keep pace with rising costs and the growth in the number of qualified researchers. But Chairman Evins and his subcommittee, while full of praise for the quality and productivity of American science, seemed to have some other things on their minds. Representative Charles R. Jonas of North Carolina, the senior Republican on the subcommittee, said, "We are talking about the investment of substantial sums of money. We are glad to have you testify . . . that you think the money has been well spent. I certainly do not have any disposition to quarrel with you about that. I would like, however, to have your comment on whether you think there is a ceiling or whether in the foreseeable future you expect these budgets to continue to increase, or whether you can visualize a leveling off point beyond which you do not expect to go."

The answer, of course, is that the friends of the Foundation do not visualize any ceiling, and would no doubt like to see NSF parceling out $1 billion a year not very long from now. (The last Kennedy budget unsuccessfully sought $589 million for the Foundation, a figure that 3 years later is yet to be reached.) Haworth, however, dealt cautiously with the question, noting that NSF funds had to be planned in the context of overall federal spending, and that it was hoped that a 5-year projection might be worked out in conjunction with the budget now being prepared for fiscal 1968. The director was talking as a devotee of basic science, one who has no doubt whatsoever that money spent on basic research and related educational activity cannot be surpassed for the return that it brings the nation. The congressmen, who have devotees of all sorts of things regularly making a pitch before them, were polite, but less than persuaded.

As has been the case in past years, the issue of geographic distribution of NSF funds stirred up some of the committee members. "What we are trying to say on this side of the table," declared Evins, "is that we want you to give more attention to broadening the base, helping the smaller institutions, and not just making the fat fatter. This is in all areas." Haworth explained that the Foundation was attempting to do just that, with its Science Development Program as well as with a new $10-million program specifically designed for undergraduate institutions that have been unable to attract support for research. Known as the College Science Improvement Program, the new plan, Haworth explained, is designed to provide assistance for 4-year colleges that produced a total of more than 100 science baccalaureates between 1961 and 1964, or no more than five Ph.D.'s per year. The maximum grant would be $75,000 per year for 3 years. The committee appeared to be happy with this new design, but it did not come across with any increase in funds to underwrite it —which means, in effect, that the NSF pie, which is at present being doled out in thin slices, must now accommodate an additional claimant.

The colloquy on the Mohole project

*"Independent Offices Appropriations for 1967, Part 2, Hearings and Report," available without charge from Committee on Appropriations, U.S. House of Representatives, Washington, D.C.

Joe L. Evins

presents an interesting case study on the making of science policy. There is perhaps no "big science" proposal which has generated more agony or agonizing in recent years than the design to drill through the ocean floor from a free-floating platform. Over the last 3 years, Mohole survived reviews by the National Science Board, the Bureau of the Budget, assorted committees of the Congress, and a number of *ad hoc* bodies that were assembled to look into the matter. At this point, it was considered to be home free, but with Thomas no longer there to serve as its congressional guardian, it may turn out that Mohole has accumulated enough liabilities to become politically unviable.

The Mohole discussion opened with Evins inquiring, "In view of the Vietnam war emergency . . . is this project of a high priority? Can it be deferred?"

After Haworth had assured the committee that careful review had preceded the decision to go ahead with the project, Evins inquired about the criteria that were employed in making the decision. Replied Haworth: "It would be a fair statement to say it was reviewed in the context of the budgetary situation in the total science complex. I cannot say we put this in comparison to weapons in Vietnam or something of that sort, but we were realizing, at that time though not as fully as we realized later, that the total science budget had to compete in some sense with these other things. However, it was given a pretty high priority within the science realm. In other words, in effect I guess I am saying it displaced some other things in science."

Shortly after this, the conversation went off the record. But then Representative George E. Shipley (D–Ill.), apparently in reference to a remark that Evins made during the off-the-record discussion, said, "With the Vietnam situation as it is, I am in agreement with the chairman; that is, perhaps it can be postponed or completely done away with. That might be the thing to do."

In its report, the committee dealt with Mohole in one brief paragraph: "In view of the current world situation and the need to continually review priorities, the Committee has not allowed funds for project Mohole. This project has progressed slowly with considerable difficulty—the total estimated cost is in excess of $75,000,000. The cost of the project has already greatly exceeded the original estimate and promises to increase still further. The Committee suggests that the funds of the Foundation can be more advantageously used in other activities and no funds are included to continue this project."

At this point, the strongest political argument for Mohole is that the approximately $20 million expended so far will be largely wasted if the project is halted. On the other hand, the "cut-your-losses" concept has a lot of appeal when congressmen are cutting down on expenditures in other members' districts. Mohole no longer has an effective champion on Capitol Hill. Nor, for that matter, does it have any well-defined constituency within the scientific community. Years of conflict over the deep-drilling design served to split up or disaffect the scientists who supported the project in its early stages. Most oceanographers and geophysicists agree that it would be desirable to have the Mohole rig digging deep into the ocean floor, but no one wants to tie his career or professional reputation to the project —which, by the administrative folklore of "big science," is supposed to be a necessity for successfully running big projects. In any case, Gordon Lill, who has been widely praised for his performance as Mohole director on the NSF staff, is returning to Lockheed next month, after 2½ years on the job. NSF has yet to find an institution or a consortium to take over the project, and, as a consequence, Mohole has the unique status of being directly administered by NSF, which is only supposed to pay for, not run, research projects. But on the basis of past performance, Mohole must be likened to the serial hero who is sealed in a cyanide-gas-filled lead casket and dropped into the depths of the sea. The next episode opens with "After our hero's miraculous escape. . . ."—D. S. GREENBERG

# Food: Postwar Experience Shows It Was Later Than We Thought

One of the sobering lessons being learned by the United States is that the problem of an incipiently disastrous food deficit in the less developed countries can't be solved simply by our shipping surplus food and fertilizer and proffering agricultural know-how.

After World War II our policy makers shared a widespread optimism about prospects of meeting world food demands even in the face of extraordinary population growth.

Typical of this sanguine outlook was the view of the first director-general of the United Nations Food and Agriculture Organization (FAO), Sir John Boyd-Orr. In 1952 Boyd-Orr wrote this.

"Can the earth provide food on a health standard for this increased number? The author gives well-authenticated facts to show that there is no physical difficulty in doubling or redoubling the world food supply. If the farmers fail us, the chemist has already shown the way to synthetic food. The only practical limitations to food production are the amount of capital and labor human society is willing to devote to it."

A decade later the prognosis had altered radically. Boyd-Orr's successor as director-general of FAO, Binay R. Sen, recently said that, in the next 35 years, "either we take the fullest measures both to raise productivity and to stabilize population growth or we will face disaster of an unprecedented magnitude."

The misjudgment of the postwar