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NEWS AND COMMENT

National Science Foundation: Criticism from Conlan, GAO

The scene on 10 February could have been a flashback to last summer when Representative John B. Conlan (R–Ariz.) accused National Science Foundation (NSF) officials of misrepresenting the views of peer reviewers. The difference at the 10 February hearings before a House Committee on Science and Technology subcommittee was that in the interim a General Accounting Office (GAO) report had substantiated Conlan's main contention. Also, NSF director H. Guyford Stever had written subcommittee chairman James Symington (D–Mo.) that "we regret these mistakes" and had pledged more strenuous efforts to remedy them.

Conlan testified on 10 February at an authorization hearing devoted to a discussion of NSF's science education program. He charged that there was a "scandal of deceit and corruption of the NSF grant award process" in the foundation's curriculum improvement program. The essence of Conlan's charge was that NSF staff members had misrepresented peer reviewer's comments in a summary of reviews provided to the National Science Board. The NSB is responsible for giving formal approval to major NSF programs. Conlan also accused NSF officials of a "cover-up" and urged that Congress suspend funding of NSF curriculum development activities for a year.

Although Stever and other top NSF officials were on hand for the session, they were not grilled on the Conlan accusations. An investigation by committee staff of the issues raised by Conlan and by the GAO report is now in progress and Stever has promised Symington that he will conduct his own thorough examination of the situation, so an inquest has been at least delayed.

Conlan's ire was concentrated on an NSF-supported interdisciplinary high school science course called Individualized Science Instructional Systems (ISIS) currently being developed at Florida State University. Conlan emerged about a year ago as a resolute critic of NSF curriculum programs (*Science*, 2 May 1975), when he objected not only to content but to contracting and course-implementation practices associated with an elementary school behavioral science course titled Man: A Course of Study (MACOS). In the peer review hearings last summer Conlan shifted his main fire to ISIS and insisted that evaluations of outside reviewers had been misrepresented. At the time, he was denied access to the reviewers' original comments on the grounds of NSF policies protecting the confidentiality of verbatim peer review documents. (Under the system of mail peer review prevailing at NSF, reviewers have been asked individually for their opinions and seldom learned whether their suggestions influenced NSF decisions on programs, were brought to the attention of those involved in projects, or were incorporated into the projects.) Subsequently, the material Conlan had sought as background to a 5 September 1972 staff memorandum recommending support of the ISIS project became available as a result of the GAO study, requested by Symington in October.

The GAO report is not a wholesale condemnation of the ISIS transaction. The report notes, for instance, that the staff memorandum in question was only one part of the package of documentation on which the National Science Board based its decision on ISIS. But a major conclusion of the GAO investigators is that "In our opinion, however, the memorandum recommending support of the Florida State University proposal was not a totally complete and accurate representation of peer reviewers' comments."

The cover letter accompanying the report says that, to the extent that the comments of 11 reviewers were summarized in the memo, "they are accurately represent-

ed. However, about 45 comments by 9 of the 11 peer reviewers are not explicitly dealt with in the memorandum, nor was documentation on file to indicate their disposition."

The authors of the report itself concluded, "We do not agree with the Foundation's rationale in stating that all reviewers recommend funding for the proposal. We question the Foundation's approach which assumes that, once a reviewer's criticisms are considered to be disposed of by the program staff, the Foundation can unilaterally consider that the reviewer, in effect, recommends funding for the proposal."

By comparing the original peer reviews with the excerpts used in the summary the GAO report writers were able to find several examples of highly selective editing.

For example, one comment which appeared as "... I am sympathetic to many of the objectives that lie behind this proposal" produces a different impression when quoted in the context of the complete passage.

> While *I am sympathetic to many of the objectives that lie behind this proposal*, I find myself drawing back from certain essential aspects of it. My objections are partly philosophical and partly pragmatic. Because of these, I count it a serious weakness of the proposal that no discussion of some of these matters was included in the presentation. [Italics added.]

In the peer review hearings last summer, Conlan drew attention to the use by NSF of an excerpt from the comments in 1972 by one peer reviewer he identified as Philip Morrison of the Massachusetts Institute of Technology. Conlan argued that the excerpt misrepresented Morrison's views. Morrison appeared at the hearings, but the original comments in complete form were not available and the discussion was inconclusive. In his statement of 10 February, Conlan was able to reproduce both the excerpt used by NSF in 1974 in seeking renewal of the ISIS funding and the text of the original comment.

In the staff summary the Morrison quote was: "The general scheme proposed—the system foreseen—has natural and conspicuous appeal. The flexibility and freedom of use are clear advantages.... The personnel are excellent.... The idea is good...."

In the original form the comment was as follows:

> *The general scheme proposed—the system foreseen—has natural and conspicuous appeal. The flexibility and freedom of use are clear advantages.* So much is clear. But when I read the detailed descriptions—which seem to me very preliminary indeed for so grand a scheme—I grew much less enthusiastic.... It seems to me this whole grand scheme goes too far ahead. *The personnel and advisors are excellent*, but they have done very little work to date. I would grant enough to assemble a team able to produce a sample of minicourse topics and a few prototypes. Fifty topic headings, over a wide range of disciplines and levels, and two prototype courses would seem to me a minimum basis for the grant beyond Phase I. Nor would I approve the remaining phases without a strong sample of six months work at least on the Phase I issues. They determine all: *the idea is good*, but its execution determines its utility. [Italics added.]

With respect to the expurgation of the original comments, Conlan was in a position to say, "I told you so." He went on to discuss what he regards as a cover-up on ISIS, stressing that a special NSF Curriculum Review Team formed last spring to look into charges arising from the MACOS furor completely missed the anomalies in the handling of the staff memorandum on ISIS.

At this point Conlan adopted the tone of a prosecuting attorney and, in these excerpts from his statement, made what must be regarded as his most serious charges to date:

> As the General Accounting Office report on ISIS shows, and my quotations of ISIS reviews here today, misreading the file was not the problem. The peer reviews were clearly manipulated, deceitfully edited, and misrepresented to the National Science Board.
>
> As of last Friday afternoon, February 6, Dr. Joel Snow, director of the Foundation's Office of Planning and Resources Management and the executive secretary of the NSF Science Curriculum Review Team headed by Dr. Robert Hughes, had requested "reassignment." Those close to NSF understand the meaning of that action.
>
> NSF has apparently found a scapegoat to take whatever blame is to come from falsifications and abuses uncovered by the GAO, my own continuing investigation of NSF activities, and any continued examination by this Committee.
>
> It is inconceivable that Dr. Snow is solely responsible for all the careful scheming, the evasive report writing, and the stonewalling that has gone on at NSF over the past 12 months.
>
> Surely Dr. Robert Hughes must share the blame. He told this Subcommittee last July 23 that the only problem he found in the handling of ISIS could be attributed to what he called "administrative slippages."
>
> But I have concrete documentary evidence that a member of Dr. Hughes' own NSF Science Curriculum Review Team discovered and accurately reported the deceitful misuse and manipulation of ISIS peer reviews to get National Science Board approval of the project's multi-million dollar funding.
>
> This NSF staff official's honest report was laundered by team leaders and the true facts covered up in a skillful job of evasive writing—obviously with Dr. Hughes' knowledge and approval.
>
> I have reason to believe that higher NSF officials are aware of this cover-up, but have not yet acknowledged the full gravity of this matter to Members of this Committee or the scientific community.

At the hearing, Conlan declined to identify his sources of information or to elaborate on his charges but said he would be glad to assist Symington and the committee staff with their investigation.

NSF officials say that Snow's reassignment came at his own request. Snow acted as executive secretary of the curriculum review study which is now under scrutiny from the Hill. In his post as director of the office of planning and resources management he was, in effect, playing a liaison role with Congress in its investigation of management practices, and this placed him in an awkward position. Snow and Stever came to the conclusion that it would be better if Snow moved from the planning job. An NSF front office spokesman insists that no examples of mismanagement have been found involving Snow or other NSF officials. According to the same sources, Snow is not leaving the foundation but has not yet been given a new permanent assignment.

Although much of Conlan's testimony dealt with ISIS, he also elaborated on broader themes he introduced last year in criticizing the NSF science education program. He said that funding of the science education program should be suspended "until we have been completely reassured next year that the total integrity of NSF's management and grant award process has been reestablished," but he is clearly hoping that NSF's role in education R & D will be reassessed and modified.

In his testimony Conlan quoted extensively from correspondence with commercial textbook publishers who criticized NSF-supported curriculum revision courses on a number of grounds. Included were charges that many are too expensive for school districts to afford in present economic circumstances and are based on innovations which are too extreme to be successfully incorporated in the structure of most educational systems.

In an exchange of views with subcommittee members, Conlan declared himself to be generally in sympathy with those who would sharply limit the federal role in curriculum matters. Conlan said he feels that NSF support in developing a course endows that course with a prestige which gives it a competitive edge when school districts consider various alternatives. He objected even more strenuously to NSF spending on "implementation" activities which provide information on new courses and train teachers to employ them. He is irked by what he calls "career curriculum innovators" who appear to have an inside track with NSF. And he is most disturbed that the program was "getting into value areas." In concluding his testimony Conlan said, in response to a question about his view of NSF's role in education research, "there may be an argument for developing innovative concepts," but

the agency should steer clear of "the development of pilot courses" and implementation activities.

There was little show of sympathy for this narrow view of NSF's role among the three subcommittee members who attended the hearing—Symington; Representative Charles A. Mosher (R–Ohio), the ranking minority member of the full committee; and Representative Don Fuqua (D–Fla.). Symington had said earlier in a statement accompanying release of the GAO report that "the Subcommittee has long been a supporter of National Science Foundation programs to improve education in science for the Nation's children and young adults. The Subcommittee will continue its support." Fuqua took exception to Conlan's choice of language in using words such as "deceit" and "corruption" to describe actions which the GAO report characterizes much less vividly.

It appears that the subcommittee's first concern is to improve NSF program management. Even Conlan conceded that some constructive steps had been taken. These steps, according to a policy statement by Stever, include (i) establishment of award review boards in all grant awarding directorates of the NSF, including the education directorate (these boards are made up of foundation officials not directly involved in the programs they are reviewing); (ii) making available verbatim reviewers' comments at NSB programs committee meetings when proposals are up for recommendation to the full board (this should preclude a repetition of the ISIS controversy); (iii) as announced earlier (*Science*, 11 July 1975), making available verbatim peer reviews to a project's principal investigators on request, with reviewer's identities removed.

Stever also noted that "two of our most capable staff members" have been assigned to head the education directorate. These are Harvey Averch, acting assistant director for education, who appeared at the hearing to present the budget request of the science directorate in uneventful testimony, and Jack T. Sanderson, Averch's deputy until he returned to the planning office as acting director to replace the newly departed Snow.

Averch and his colleagues have been conducting an evaluation of 19 current projects in his directorate using outside experts in the exercise. The results of the study are to be communicated to the National Science Board, and action by the board may well indicate to what extent the board intends to rethink NSF policy on its education role.

There is little firm indication of whether Congress will be disposed to chastise NSF sternly for the ISIS incident. Except for the travail of the education directorate, NSF appears to be doing well in the budget authorization hearings. Conlan himself praises other parts of NSF's operations but concluded his criticism of "mismanagement" in the education program by asking, "How extensive is it? That's the question."

So far, Conlan's colleagues tend to congratulate him for his "provocative" contributions but indicate that they think he is overstating the problem. There is no question, however, that Conlan has shaken up NSF and that the tremors continue.—JOHN WALSH

Color Additives: Is Successor to Red Dye No. 2 Any Safer?

One of the ironies of the recent decision to ban the controversial color additive Red No. 2 is that the dye deemed most likely to replace Red No. 2—a compound produced by Allied Chemical Corp. and known as Red No. 40—has not been subjected to the kinds of tests some experts consider necessary to establish its safety.

Alexander M. Schmidt, commissioner of food and drugs, came close to admitting this in a 28 December appearance on CBS-TV's interview program, "Face the Nation." When a reporter badgered Schmidt to explain why he had not yet banned Red No. 2 when there was "an acceptable substitute" available, namely Red No. 40, Schmidt replied: "I would quarrel with your assumption that we have Red Forty. We don't . . . we know much more about Red Two than we do about Red Forty."

He then went on to assert, however, that the studies which are available on Red No. 40 "show that it is safe." That was the basis on which the Food and Drug Administration (FDA) gave Red No. 40 a "permanent" approval in 1971 for use as a coloring agent in foods and drugs and similar approval in 1974 for use in cosmetics.

But the Canadian government's health experts looked at essentially the same data (with some updating) and reached a very different conclusion. The Health Protection Branch of the Canadian National Health and Welfare Department ruled in 1974 that Red No. 40 could not be introduced in that country because, in the words of a recent press release, "evidence submitted by the manufacturer with respect to the safety of the product was inadequate."

Thus the United States and Canada have reached opposite conclusions on the suitability of the two most broadly applicable red color additives. The FDA here has banned Red No. 2 and given Red No. 40 a clean bill of health. The Canadians have continued to allow use of Red No. 2 while refusing, thus far, to admit Red No. 40. Elsewhere, according to Allied Chemical, Red No. 40 has been approved in Australia, Brazil, Colombia, Denmark, Guatemala, Mexico, Peru, and the Philippines, but the World Health Organization has called for more studies before granting its blessing.

A. B. Morrison, assistant deputy minister in charge of the Canadian Health Protection Branch, told *Science* that Red No. 40 was not approved in Canada because there were "not enough chronic long-term studies relating to its safety." He declined to elaborate on the grounds that the government's negotiations with the manufacturer were of a confidential nature.

However, Allied Chemical told *Science* that the Canadians were concerned about a long-term feeding test in rats that was designed primarily to determine whether Red No. 40 causes cancer. The test had been cut short when pulmonary disease ravaged the test animals, leading some experts to question its adequacy as a safety demonstration.

The test was conducted in the 1967–1969 period by Hazleton Laboratories, Inc., of Falls Church, Virginia, which conducted all of the toxicity testing of Red No. 40 under contract with Allied Chemical. A total of 300 albino rats of the Charles River strain, half of them male and half of them female, were divided into a control group and three other groups that were fed Red No. 40 as part of their diet, the amounts ranging from 0.37 percent of the diet to 1.39 percent to 5.19 percent.

The test was originally supposed to last 24 months—the length of time then recommended by the FDA for long-term studies