

Peer-review under review

by Colin Norman, Washington

IN response to a mounting chorus of complaints from a few vociferous members of Congress, and background grumblings from a number of scientists, the two government agencies chiefly responsible for supporting basic scientific research in the United States have launched an important inquiry into the methods used for reviewing grant applications. The National Science Foundation (NSF) and the National Institutes of Health (NIH), which together spend \$2,500 million on research each year, have begun three separate studies of their grant-award systems. The results, which should be available next year, will probably provide at least a partial vindication of the agencies' procedures, but some fundamental principles are at stake, and some changes can be anticipated.

At the heart of the inquiry is the so-called peer-review system, which is used in some shape or form by virtually every government agency which supports academic research. Although it has never lacked critics, the system has been vigorously defended by most scientists as the fairest, and probably the best, method for judging the relative merits of competing grant proposals.

NSF handles some 21,000 grant proposals each year, nearly three quarters of which are sent out by mail to several scientists to review. A third of those are also reviewed by a panel of scientists at a meeting. Most of the rest are reviewed by a panel only, frequently with the applicant along to discuss his proposals, while a few are not peer-reviewed at all. NIH grant applications are nearly all reviewed by panels of scientists. In both cases, officials from the agencies ultimately decide which applications will be funded.

Traditional defences of the system have clearly failed to mute the criticisms. In fact, the reverse seems to have happened. Thus, NSF last month sent out 4,500 questionnaires to grant applicants and reviewers of grant proposals to gauge the feelings of the scientific community toward its grant awarding mechanisms, and it has also asked the National Academy of Sciences to undertake an independent investigation of the peer-review process. Meanwhile, NIH has established a top-level internal committee, under the chairmanship of Dr Ruth Kirschstein, director of the National Institute of General Medical Sciences, to conduct a broad evaluation of NIH's grant system.

The two agencies have been pressed

into their investigations by an extraordinary series of political attacks on basic research from congress throughout the past year. NSF was thrown on the defensive about a year ago when Senator William Proxmire, who has previously attacked the Pentagon budget, criticised a few NSF-supported research programmes which he considered to be a waste of taxpayers' money.

By publicising trivial or humorous grant titles, and their costs, Proxmire ensured wide press criticism of NSF, which in turn made people ask why Congress wasn't keeping a closer watch on NSF activities. The House of Representatives attached a provision, later dropped, to an NSF budget bill which would have given Congress a chance to vet every research project which NSF wanted to support, and to veto those which the politicians didn't like. It sent cold shivers through the scientific community.

But that was only the beginning. NSF has more recently found itself in hot water with right-wing congressmen because of its sponsorship of some controversial school science courses. Led by a conservative Republican from Arizona, John B. Conlan, the critics began by attacking the courses and railing against NSF's role in developing and promoting them. But their criticism turned into a broader attack on NSF's peer review system when Conlan was denied access to peer-review reports on one NSF course which he considered particularly offensive. He then turned his attention to the secrecy of the peer-review process which, he asserted, makes it impossible for Congress or the public to hold NSF accountable for its actions.

The matter eventually came to a head last summer, when the House Committee on Science and Technology held two weeks of hearings on NSF's peer-review process, in the course of which Conlan and others presented their thesis that peer-review, as used by NSF, provides too much power to NSF officials, stifles innovative proposals and gives rise to what Conlan described as "an incestuous buddy system". Following the hearings, Conlan and Senator Jesse Helms, a conservative Republican from North Carolina, introduced similar bills into the House and Senate calling for a radical overhaul of the system at NSF which, among other things, would ensure that verbatim copies of peer-review reports, complete with the name of the reviewer, should be made available to the applicant and to Congress.

NSF, in the meantime, has been busy preparing its defence and making some concessions. The National Science Board (NSB), NSF's governing council, has decided that, beginning in January, grant applicants should be able to

obtain verbatim copies of the reports of reviewers of their grant proposals. The NSB also decided, however, that, for the moment, the names of the reviewers should remain confidential, a policy which NSF's director, Dr H. Guyford Stever, has defended on the grounds that many scientists would be unwilling to review grant proposals if they are not guaranteed anonymity, and that open reviews would be less candid. It is partly to judge the accuracy of such assertions that NSF is soliciting the opinions of scientists concerning its review procedures.

The NSB, in conjunction with the House Science and Technology Committee, drew up the questionnaires and mailed them out to equal numbers of successful and unsuccessful grant applicants and reviewers. The results will be analysed early next year by a Congressional agency, the General Accounting Office, and they will provide the first comprehensive indication of the attitudes of scientists towards the peer review process.

In the meantime, the National Academy of Sciences' Committee on Science and Public Policy (COSPOP) has entered into a contract with NSF to conduct an independent investigation of the peer-review process. Its first report, describing the system and pinpointing its strengths and weaknesses, should be completed next summer, and a later report will deal with the manner in which the results of NSF-supported research are used.

As for NIH, it has been spared most of the recent congressional criticism of the peer-review process, but there have nevertheless been repeated grumbling about its granting mechanisms from a variety of sources. Consequently, top NIH officials decided to establish the internal review committee. Its mandate is a broad one. It has been asked to look into the philosophy behind NIH's peer-review process and to recommend necessary modifications, to examine alternatives to the system, to investigate the effects of recent legislation calling for more openness in governmental decision-making on peer-review and to look into the possibility of establishing a formal appeals process for disgruntled grant applicants.

The Committee is concerned only with the procedures used to evaluate grant proposals, not with NIH's growing commitment to contract research. It is hoping to hold three sets of public hearings in February to solicit the ideas of NIH's clients in the universities, and its final report is due by June 30 next year.

Whatever the various investigations of the peer-review process finally conclude, some matters dear to the hearts and professional well-being of the scientific community are at stake. □