

PEER REVIEW

Congress Finds Little Bias in System

Federal research agencies have long been thought to shelter "old boys' networks" and to favor insiders who know the system. Two years ago, Congress asked its investigative arm, the General Accounting Office (GAO), to look into such allegations, including the widespread belief that elite universities of the Northeast dominate scientific peer-review panels. The investigation upset some scientists, who feared the inquiry might trash peer review (*Science*, 31 July 1992, p. 609). But that isn't what happened. The GAO study is out, and peer review gets a fairly clean bill of health.

The recently released 133-page report concludes that "peer-review processes appear to be working reasonably well." After surveying hundreds of reviewers, GAO found "virtually no one" who wanted to scrap peer review as practiced by government agencies. However, GAO did find "empirical evidence of potential problems"—including gender and racial bias—and it urged the agencies to attack the underlying causes.

The study was done at the request of Senator John Glenn (D-OH), chair of the Senate Governmental Affairs Committee, in response to reports of cronyism at agencies such as the National Science Foundation (NSF). GAO found that opinions about peer review were based on a "near vacuum of em-

pirical data," so it set out to fill the void. GAO focused on three agencies—NSF, the National Institutes of Health (NIH), and the National Endowment for the Humanities—and auditors pored over administrative files, surveyed 1370 reviewers, and analyzed a sample of 477 winners and losers in the grant-awarding process.

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—GAO Report

generally considered to be robust, problems did turn up in several areas. In the selection of reviewers, GAO found no bias toward any one region of the country or particular type of university. But it did find that "young scholars," defined as assistant professors or other junior faculty, were underrepresented on review panels. At NSF, GAO found, "a reviewer's personal familiarity with an applicant was associated with better scores" in the review process.

At all three agencies, GAO discovered that scores given to proposals "were related to gender," with women receiving lower scores than men. At NSF, minority applicants also seemed to score lower on average, though not markedly so. GAO said the data weren't adequate to explain why this pattern exists, but it conceded that the low-scoring groups may have submitted poorer quality proposals. Finally, GAO found that reviewers at all three agencies apply "unwritten or informal criteria" in judging proposals. For example, at NIH, reviewers give better scores to applications that include preliminary results, even though NIH instructions do not say it is crucial to include such data.

To remedy these flaws, GAO recommends that all three agencies include more young scholars on review panels, make more explicit the criteria for judging submissions, and ensure that reviewers stick to the written criteria. In addition, GAO wants the agencies to run "blind" tests in which the race and sex of applicants are hidden.

NSF and NIH have agreed to monitor their review processes more closely for potential bias, but they deny that review panels systematically judge women or minority applicants more harshly. Neither agency is ready to commit to running a blind test review of the kind GAO seeks. Nevertheless, for the proponents of peer review, the recent report provides a welcome endorsement.

—Eliot Marshall

HEALTH POLICY

Looking Ahead to Cigarette Regulation

On 2 August, the Drug Abuse Advisory Committee to the U.S. Food and Drug Administration (FDA) proclaimed nicotine addictive and took a big step toward bringing cigarettes under the agency's purview. Under the Federal Food, Drug, and Cosmetics Act, a product is a drug if its manufacturer intends it to have an effect on the structure or function of the body; "addiction is an indicator" of just such effects, said FDA Commissioner David Kessler. If the FDA can now prove that cigarette manufacturers intend nicotine to have this effect, the road will be clear for it to regulate cigarettes. But even though the agency has not yet overcome that hurdle, the question of the best regulatory strategy for cigarettes is already triggering hot debate.

At the meeting where the Drug Abuse Advisory Committee made its decision, one regulatory strategy garnered most of the attention—and criticism: lowering nicotine levels in cigarettes over a 10- to 15-year period to the point where cigarettes are no longer addictive. Neal Benowitz of the University of California in San Francisco and Jack Henningfield of the National Institute

on Drug Abuse in Baltimore, who advocated this strategy at the meeting, maintain it will help prevent teenagers, who account for about 80% of new smokers, from becoming addicted, while weaning adult addicts off cigarettes. An admittedly rough-and-ready calculation by Benowitz and Henningfield in the 14 July issue of the *New England Journal of Medicine* suggests that each cigarette should eventually deliver less than 0.17 milligrams of nicotine, less than any cigarette now on the market. (Today's lowest yield cigarettes deliver about 0.65 milligrams of nicotine, Benowitz says.)

What Benowitz and Henningfield are proposing, said John Robinson, a psychologist at R. J. Reynolds Tobacco Co. in Winston-Salem, North Carolina, is "a huge social experiment," because it is impossible to know ahead of time whether lowering the nicotine content of cigarettes will lower the number of smokers. A lack of enthusiasm might be expected from an employee of a tobacco giant, but even smoking opponents took issue with the idea.

"I'm very skeptical. I think the empirical

base is too limited" to conclude that lowering the nicotine content of cigarettes will help people to stop smoking, says nicotine addiction expert Lynn Kozlowski of Pennsylvania State University at University Park, an FDA consultant to the committee. FDA advisory committee member Max Schneider of Orange, California, who also sits on the executive committee of the National Council on Alcoholism and Drug Dependence in New York, agreed with Kozlowski, noting that there are no data indicating what level of nicotine triggers addiction in teenagers.

What's more, Kozlowski and others suggested that reducing nicotine in cigarettes could paradoxically increase health risks. Their concern is that, if nicotine levels are reduced, smokers may respond by engaging in more intensive "compensatory" smoking, in that way increasing their exposure to carbon monoxide, tar, and other toxic tobacco combustion products. And there is every reason to fear that eventuality. With the low-yield cigarettes that are already on the market, "some people alter their smoking behavior to get more nicotine," by changing the way they smoke or smoking more, says Kozlowski. Low-nicotine cigarettes could be

"a public health nightmare," he warns.

Benowitz and Henningfield agree that such concerns need to be addressed. "First you need research to get more quantitative data on the threshold doses for addiction," says Henningfield. Once the nicotine-reduction program has begun, it will be essential to monitor its impact on the smoking behavior of addicted smokers to ensure that the disadvantages—in the form of compensatory smoking—do not outweigh the advantages, said Benowitz. "It's an approach that has

never been tested. There is no guarantee it will work. But it has potential," he said.

At the meeting, however, some addiction experts suggested there might be simpler—and safer—ways to achieve the goal of reducing the number of cigarette addicts. "There are other ways to reduce total daily nicotine consumption," said Robert Balster of Virginia Commonwealth University's medical school in Richmond, and a former chair of the FDA Drug Abuse Advisory Committee. Among them: restricting smoking in public

places; changing the packaging from "20-unit doses to single-unit doses," that is, selling cigarettes individually in the hope that consumers will consider them more like cigars and smoke less frequently; and increasing the cost of cigarettes.

With these very different regulatory strategies being floated, it's clear that if the FDA decides to regulate tobacco, it could take a long time to decide on a strategy—maybe even as long as it takes a smoker to quit.

—Rachel Nowak

ANTHROPOLOGY

Lab Custody Fight in Institute 'Divorce'

Breaking up, they say, is hard to do. After being fired in May by the Institute of Human Origins (IHO) in Berkeley, California, and shut out of their lab for more than 2 months, a group of geochronologists is back at work in their old space—as part of a new organization: the Berkeley Geochronology Center

Board of Directors, said he would continue funding the institute only if anthropologist Donald C. Johanson—IHO's founder and discoverer of the famous 3-million-year-old "Lucy" skeleton—resigned as president (*Science*, 27 May, p. 1247). In recent court documents, Getty said he was "fed up with the mismanagement of finances and personnel" by Johanson. The IHO Board rejected Getty's proposal and, faced with the loss of his funds, responded by laying off the eight-member geochronology lab staff. The next day IHO officials denied the geochronologists entrance to the lab because, says the IHO attorney, the institute's insurance would not cover former employees.

By the time the geochronologists had formed the BGC, their own nonprofit institute that could assume liability, the IHO upped the ante for getting back into their lab. The institute wanted \$555,535 for lab equipment and remodeling of offices paid for with IHO general funds, according to Susan Shea, IHO's executive director. The BGC contends that much of this money came from donations intended expressly for the lab and thus need not be returned to the institute.

On 3 June, IHO put a lock on the lab door. The geochronologists responded by suing the IHO on 8 June and seeking a temporary restraining order allowing them access. The IHO successfully opposed this order, saying in court papers that allowing their former partners back into the lab would be "akin to the United Nations withdrawing from Bosnia and telling the factions to resume coexisting as they did two years ago."

At this point the California attorney general, who is responsible for enforcing laws governing charitable trusts such as the IHO's

research fund, entered the fray. The BGC had asked the court to name it as trustee of the lab until the lawsuit is resolved. In mid-July, Deputy Attorney General James R. Schwartz filed a complaint in support of the BGC. IHO financial statements, Schwartz wrote, showed that 65% of gross assets raised from public and private sources were held in a "geochronology fund" (including 22 pending research grants, from government and private sources, for geochronological research). And if the IHO is no longer doing this research, the attorney general claimed, it "has no legal or equitable right to retain control of those trust assets."

The IHO says its records are being misinterpreted. It also claims that all of the funds spent on the lab were not raised specifically for that purpose; some were general gifts from donors. "We think a jury would have a different idea of whether the BGC could take all the money," says Carter.

But once he saw the attorney general's brief, Carter advised the IHO board to let the geochronologists back inside. The board agreed. On 20 July it also voted to move the IHO out of its building within a year and to pass the lease on to the BGC. The timing was fortuitous: On 25 July a Superior Court judge named the BGC as lab trustee until the financial lawsuit is resolved—as long as it paid rent and utilities to the IHO.

Both groups are now trying to get back to work. The geochronologists think they've lost some samples, such as a batch of ancient minerals from the University of Utrecht in the Netherlands, which wanted to use dates from the rocks to more precisely calibrate reversals of Earth's magnetic field. They are looking at their other samples now. As for the IHO researchers, Johanson and his colleagues are planning to leave for Ethiopia in September to resume their archaeological digs.

But as the researchers return to their work, the lawsuit continues, and as in all hostile divorces, both sides will wind up spending far more energy resolving it than is good for their other pursuits—in this case, reconstructing the past.

—Ann Gibbons



Back to work. Lab chief Paul Renne (standing, third from right) and his fellow geochronologists are back in their quarters after a lockout by their former employer, the Institute of Human Origins.

(BGC). But some radioactive lab samples may have decayed to a point where they have been lost to scientific analysis, and the scientists are embroiled in a lawsuit against the IHO so contentious that the California attorney general recently compared it to a "hostile and bitter divorce."

As in other ugly breakups, each side is blaming the other, and they're arguing angrily over property, in this case a state-of-the-art geochronology lab. The central stumbling block is whether the geochronologists should reimburse the IHO, a prominent anthropological research center, for the cost of setting up the lab. As of this week, neither side would budge on that point. Says IHO attorney James A. Carter: "We have had a substantial breakdown in trust and credibility."

The two groups split on 3 May when San Francisco billionaire Gordon Getty, the IHO's leading donor and a member of its