

# Spotlight Falls on U.S. Science Policy

*Capitol Hill hopes for stronger government, industry research ties; House program review may foreshadow major policy debate*

The hearings have barely begun, but already the House Science and Technology Committee's broad review of federal science programs is setting the stage for a larger policy debate on the future of the nation's science programs. The science committee's 18-month study comes at a time when many federally funded basic and applied research programs are being battered by tight budgets and when the United States' dominance in the scientific arena is increasingly being challenged by overseas players. At the same time there are mounting congressional expectations for scientific solutions to preserve the United States' crumbling industrial base, yet growing numbers of House and Senate members are questioning the cost of science.

"What we are really saying is that the science environment is undergoing significant change," says one House science committee aide. "We need to take a look at what should or should not be funded by the Congress." In fact, with dollar increases for science not expected to match the growth rates experienced in the last decade, Congress is searching for ways to squeeze more out of every research dollar. Funding for federal science programs have risen from \$35.9 billion in 1981 to \$48.7 billion for the current fiscal year.

The science committee review is a bipartisan effort spearheaded by Chairman Don Fuqua (D-Fla.) and ranking minority member Manuel Lujan, Jr. (R-N.M.). They plan to report their findings and recommendations to the Congress in the fall of 1986 following the circulation of 2000 copies of a draft report to the scientific community next spring, and subsequent hearings. No similar broad-based study is planned in the Senate, but the House science committee's action is expected to bolster scrutiny of science programs by Senate committees. "The timing is right," says a senior staffer on the Senate Energy and Natural Resources Committee about the House science committee's review, "It is a good time to be looking at the issue."

A major focus of policy and budget deliberations in the Senate Commerce, Science and Transportation and energy committees is on improving industrial access and participation in federal R&D

programs. This is also a major aspect of the House science committee's study, one that was examined in hearings on 23 to 25 April in Washington. The House's interest, notes one staffer on the Commerce, Science and Transportation Committee, may add to pressure in the Senate to mix federal funding more effectively with industry and university resources. And this, he says, could mean increased emphasis on generic research



**Representative Don Fuqua (D-Fla.)**

*Leading House review of science programs.*

that will most benefit industry; on more cooperative research with industry, universities, and federal institutions; and on enhanced industry access to national laboratory facilities.

This approach is favored by the Industrial Research Institute (IRI), which recently testified before the science committee. "An examination of the current programs," says William A. Stickel of IRI, "... particularly the way in which developments are transferred to potential users can lead to significant improvements with little or no increase in expenditures." Stickel, who serves in a full-time capacity as U.S. Steel Corporation's director of corporate research, says IRI is conducting its own study on how results from federally supported research can best be channeled to the private sector.

But direct federal funding is not the

only stimulus for basic research, industry officials note. Preserving existing tax credits, particularly the credit for incremental R&D that expires this year, says Alexander Mac Lachlan, director of research and development for E.I. du Pont De Nemours & Co., is crucial if industry investments are to remain strong. In addition, says W. Clarke Wescoe, chairman of Sterling Drug, Inc., a further relaxation of federal antitrust law is needed to spur joint research ventures.

Even in the face of massive budget deficits, witnesses appearing before the House science committee asserted that federal expenditures for basic and applied research should not be cut. "One of the real problems of United States science policy is how to provide a stable base of support for basic research in both industry and science," says Zvi Griliches, a professor of political economy at Harvard University. At the moment only 4 percent of total federal expenditures on R&D are devoted to general science, he says. Recent analyses, Griliches adds, indicate that "a dollar spent on basic research is equivalent to \$2 to \$5 on applied research and development."

Industry cannot be counted on to expand its work in basic research, particularly at the university level, industrialists say. "It is unrealistic to view industry as a major, increasing source of basic research funds for universities," says Mac Lachlan, whose company is devoting 6 percent of its \$1.2-billion R&D budget to basic research. "Rather, it is the federal government that must continue to play a key role here."

Indeed, tax credits, antitrust exemptions, and patent reform will do little to assist high-energy particle physics. In a separate hearing on 25 April, a panel of leading physicists from the United States, Japan, and Europe told committee members that costly new machines are needed to make major new advances in the understanding of matter. The long-term future of high energy physics, says Giorgio Brianti, technical director of the European Laboratory for Particle Physics (CERN), is dependent on conducting experiments at higher power levels. This cannot be done, he adds, "without increasing the cost and size of the machine."

The U.S. high energy physics community is seeking federal backing for construction of a multibillion-dollar 20 TeV (trillion electron volt) by 20-TeV proton-proton machine dubbed the Superconducting Super Collider (SSC). Without it, the physics learning curve will flatten out, says Leon M. Lederman, director of Fermi National Accelerator Laboratory. "There is no other way of getting the information that the SSC is designed to get," asserts Lederman.

Despite these arguments, funding the next generation of accelerators may prove to be an uphill battle in both the House and Senate, where even traditional allies of science are worried about the colossal

\$6-billion (inflated 1984 dollars) projected cost of the SSC. The need for new accelerators for nuclear and high-energy physics is being examined by deficit-conscious members of the Senate appropriation subcommittee on energy and water development. Ranking minority member Bennett Johnston (D-La.) has requested the General Accounting Office (GAO) to review the costs, current planning efforts, and requirements for new devices.

In the first of three GAO reports, the agency observes that Congress will have to nearly double its \$118-million annual appropriation for operating nuclear physics facilities if the \$220-million Continuous Electron Beam Accelerator Fa-

cility, proposed for Newport News, Virginia, goes forward. Absent an \$80-million hike in annual funding, GAO notes the continuous beam facility could only be funded by closing down two other nuclear physics facilities located at Los Alamos National Laboratory and Lawrence Berkeley Laboratory.

Whether the scientific community will be forced to make trade-offs on retiring older physics facilities and on other types of basic research remains to be seen. House and Senate aides say the Congress conceivably could be confronted with such hard choices when the House science committee completes its policy review.—MARK CRAWFORD

## Sociology Stir at Harvard

*Controversial tenure decision complicates attempts to bring in more "quantifiers"*

Harvard University has lately been the subject of some much-undesired publicity in the wake of its decision not to offer a tenured professorship to its young luminary of sociology, Paul Starr.

Starr, 35, is a Pulitzer prize-winning author who represents the more historical and interpretive as opposed to the quantitative end of the discipline. Last year his department voted, 7 to 3, to offer him tenure. But Harvard president Derek Bok, acting on the advice of an outside committee, decided against it.

Starr, who has spent most of his career on various professional fellowships, in 1983 produced a major book, *The Social Transformation of American Medicine*. It has been widely acclaimed by doctors in academic medicine; a review in *Science* (18 February 1983, p. 837) called it "the most ambitious and important analysis of American medicine to appear in over a decade." It has also drawn favorable reactions from sociologists, although the book, a sweeping work of economic and social analysis, is regarded by many as "social history" rather than sociology.

Nonetheless, the book put Starr firmly on the map, and the decision to withhold tenure roused a good deal of indignation among the Harvard professoriate. The episode has highlighted chronic divisions within the discipline of sociology. It has also embarrassed Harvard in its efforts to position itself more in the "mainstream" of sociology, and has pointed up the shortcomings of what many regard as

the university's antiquated tenure practices.

The Harvard sociology department is perceived by some, including the Harvard administration, as being on the decline. (Several sociologists told *Science* that Harvard is not in the "top ten," although this is subject to debate.\*) Some say the erosion began in the mid-1970's after the retirement of Talcott Parsons, a towering figure who successfully integrated a rigorous scientific approach with original theoretical contributions. Although the department has been home to many famous individuals, including David Riesman and Paul Starr's mentor Daniel Bell, it does not now possess the stature within the discipline that is held by more quantitatively oriented institutions such as the universities of Chicago and Wisconsin.

It took a crisis of sorts to spur Harvard into some serious thinking about the direction of sociology. In 1981, Theda Skocpol, another rising young Harvard-trained scholar, was denied tenure following a tied vote by the department. Skocpol filed a charge of sex discrimination (Harvard's first) and, during the resulting turmoil, it was determined that the department's personnel policies

needed to be straightened out. An outside advisory committee appointed by Henry Rosovsky, the recently retired dean of arts and sciences, was set up to make recommendations. The committee's deliberations were confidential, but it is no secret that they urged the president to bring in some top-ranking quantifiers to bring "balance" to the department.

The committee was dissolved last fall when Aage Sorensen was brought in from the University of Wisconsin as chairman to orchestrate the reorientation of the sociology department. Most of the committee members were retained in an ad hoc capacity to continue advising the president on tenure decisions. Starr says he is the only faculty member since 1970 to have been recommended by the department for tenure. But when his name came up, the committee said no—in part, no doubt, because the case involving Skocpol, also a macrosociologist, had finally been resolved and she was offered tenure in December of last year. (Skocpol now has a tenured position at Chicago and an additional offer pending from Berkeley.)

A number of sociologists and historians at Harvard have taken strong exception to the Starr decision. Perhaps the strongest has come from Bell, who is quoted by the *New York Times* as calling Starr "the most brilliant sociologist of his generation." Orlando Patterson, known for his work on slavery, calls the decision "a blunder." Nathan Glazer,

\*An assessment of graduate programs published in 1983 by the National Academy of Sciences ranked Harvard just behind the universities of Chicago, Wisconsin, California (Berkeley), and Michigan in faculty quality, and gave it high marks for effectiveness in training researchers. But it was among the lower scorers with regard to improvement over the preceding 5 years.