JOB FORECASTS

Congress: Was the "Shortfall" Phoney?

During the 1980s, Erich Bloch, director of the National Science Foundation (NSF), raised an alarm about an imminent national crisis. Within a decade or two, he said, the country would begin to discover it was not producing enough scientists and engineers to carry on the business of a great economic power. Sometimes Bloch spoke of a "shortfall," sometimes of an unsatisfied "demand" or a "shortage." But the message was always the same: that the United States needed more scientists and engineers—immediately. This troubling news was based on a statistical study carried out by Bloch's policy office at NSF.

Now comes a critical investigation by Representative Howard Wolpe (D–MI) suggesting that this alarmist message was one-sided and possibly a deliberate exaggeration. As a consequence, Wolpe and other critics say, NSF has put its credibility at risk.

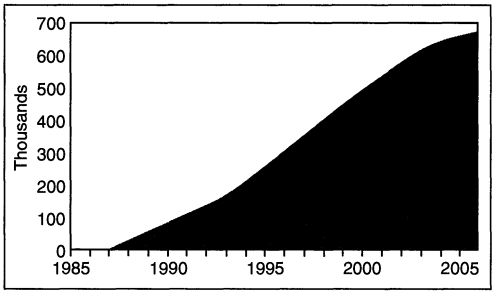
This allegation has been made before, but Wolpe's House science investigations and oversight subcommittee has dug up new evidence supporting the view that, for political reasons, NSF may have run roughshod over good technical judgment in the 1980s. Subcommittee staffers say that Bloch and his top policy officer, Peter House, must have known they were on shaky ground making predictions about a "shortage" or "shortfall"—because they were told by the agency's own social science staff that the facts didn't back up those claims.

Evidence released by Wolpe as *Science* went to press indicates that as early as 1988, experts within the NSF's Science Resources Studies (SRS) division—which is responsible for watching R&D trends—began challenging the predictions of a shortfall. These internal doubts rose to a crescendo in the spring of 1989 when several members of the SRS staff wrote detailed memos pointing out flaws in the NSF forecast. Specifically, these memos fault policy makers for their "dubious research methods," "unsupported statements of fact," and a pattern of "data aggregation" that obscured details that didn't fit the theory.

One author of these critical comments, former SRS analyst Joel Barries, now says his words of caution were ignored. House even attacked critics like Barries for subjecting his forecast to a "sloppy critical review" and causing him to waste "a couple of person-months" on "unnecessary research and analysis," according to a July 1989 memo released by Wolpe's subcommittee.

After House's salvo, this war between the professionals and the policy makers went further, according to Barries. In a signed statement submitted to Congress on 6 April, he says the policy shop "began to force changes in *Science & Engineering Indicators*," the official report on R&D trends produced by SRS. Barries writes: "It was my view then, and remains now, that Dr. House ignored and tried to suppress all critiques of his work." The attempt to stifle independent views was successful, according to Barries, until 1990.

House did not respond to telephone messages, but NSF spokesman Ray Bye said House would reserve comment until after he had examined Barries' statement.



Alarm line. NSF's projected shortfall of engineers.

This disagreement became public in the fall of 1990 when Alan Fechter described the problems with NSF's forecast in an article for *The Bridge*, published by the National Academy of Engineering. Fechter, executive director of the Office of Scientific and Engineering Personnel at the National Research Council, pointed out that the NSF had not taken account of possible changes in demand for technical workers, among many other neglected variables. Fechter thinks the NSF should have done more to call attention to the very special assumptions that underlay its forecast, for they differed from those used by most economists.

Even harsher in his criticism of NSF is Richard Ellis, director of manpower studies for the American Association of Engineering Societies. Ellis regards the NSF forecasts of the 1980s as "the crassest kind of politically driven sophistry"—designed strictly to promote the NSF's campaign for increased R&D funding. Professional economic analysts do not make long-term predictions of the kind the NSF produced, Ellis claims. "I view that NSF work with contempt," he adds. "It wouldn't pass muster as a serious high school theme exercise."

Asked about such criticism earlier this year, Bloch replied that the manpower studies of the 1980s "didn't pretend to forecast what our demand [for engineers] was going to be." He argues that they merely looked at demographic trends and potential supply. Today, Bloch is as certain as ever that the United States will need more engineers. He says: "I claim that there is a relationship" between the high per capita population of engineers in Japan (twice the U.S. number) and "their success in the world marketplace." With his penchant for carrying arguments to their logical extreme, Bloch adds that if the country wants to give up being an economic power altogether,"you don't need any engineers or scientists...you don't need anybody."

–Eliot Marshall

SCIENCE POLICY

Senate Backs Fetal Research–and More

The Senate last week handed supporters of fetal tissue transplantation research a stunning victory. By a vote of 87 to 10—far greater than the margin needed to beat back a promised presidential veto—the Senate approved legislation that would overturn the Bush Administration's ban on federal funding for research on transplantation of fetal tissue from induced abortion.

The language overturning the ban is part of a bill that authorizes a variety of new programs at the National Institutes of Health. The House of Representatives passed a version of the authorization bill—with the same language on fetal tissue—last year, but not by a veto-proof margin. A House-Senate conference will now iron out the differences in the two versions, and by early May the bill should go to George Bush, who has said that, despite the Senate vote, he will veto it.

In addition to overturning the fetal tissue ban, the bill has several other provisions that should please researchers:

- **Sex surveys.** In the past 2 years, Secretary of Health and Human Services Louis Sullivan has torpedoed two sex surveys that had been approved by NIH. The bill would explicitly allow such surveys if they were approved by a peer review panel—as both previously canceled surveys were—and were designed to reduce the incidence of sexually transmitted disease or improve health. (The bill would still permit Sullivan to disapprove a particular survey on ethical grounds, but to do so he must convene an ethics advisory panel and that panel must confirm his ethical judgment.) The bill does not, however, reverse the Administration's veto of the two previously proposed surveys—the Survey of Health and AIDS Risk Prevention and the American Teenage Study of adolescent sexual behavior. Senator Jesse Helms (R–NC) saw to that by introducing an amendment that would explicitly prohibit funding those two studies.

At one point the floor debate on Helms' amendment got ugly. Helms tried to get Senator Edward Kennedy (D–MA), one of the bill's sponsors, to read some questions from