creased number of high-tech workers needed for the labor pool? "Parity makes a nice goal, but it lets you ignore a lot of other issues that are pretty important," says Susan Fitzgerald, program director for the James S. McDonnell Foundation and a director of the Association for Women in Science. "Why are there so many more women in the life sciences than the physical sciences?" she asks. "Is it because of inherent differences in career interests, or because there are more opportunities? And if the IT job market is so hot, why has the percentage of women getting degrees in computer science fallen by a third since 1985?"

Commission members also emphasize the importance of having industry step up to the plate. The report recommends that employers "be held accountable for the career development of their employees" from underrepresented groups and that they report annually on their progress. Mendoza believes that industry is ready to take that step, citing the work of such companies as IBM and Xerox.

But not even the most progressive companies are willing to share workforce data with the world. The Industrial Research Institute (IRI), whose members represent most of the research-intensive companies in the United States, conducts a biennial survey of the number of women and minorities in senior scientific slots. "We started it in 1993 after one HR [human resources] director asked his peers if anyone had a female vice president and nobody raised his hand," recalls IRI's Robert Burkart. "We've done it every 2 years since then and, yes, there has been some progress, more for women than for minorities," says Burkart. "But I can't share those numbers with you," he adds quickly. Companies participate, he says, only because they know "the results will be kept within the fold."

CAWMSET plows much of the same ground as a 1988 report, also mandated by Congress, which was one of the first to highlight the impact on science of the growing number of women and underrepresented minorities in the U.S. workforce (*Changing America: The New Face of Science and Engineering*). The executive director of that commission says she welcomes the latest report, because it reinforces the point that the problems are so hard to solve. "We as a society haven't made as much progress on this topic as we might have," says Sue Kemnitzer, who runs engineering education programs at NSF. At the same time, Kemnitzer says the key reasons for broadening the talent pool haven't changed. "It's not right to waste talent. Diversity also improves the science and maximizes our chances of solving some of our biggest problems."

—JEFFREY MERVIS

DIVERSITY

▶ NSF IN FLUX

NSF Searches for Right Way to Help Women

With targeted programs a political no-no, the National Science Foundation is betting that letting everyone participate will mean greater progress for women

How should the government advance the cause of women scientists when programs that target a particular group are out of favor? The National Science Foundation (NSF), armed with a mandate to ensure the health of academic science, is grappling with that prickly problem, but its latest moves have divided agency ranks and raised concern among activists.

The agency has long believed that the best way to assist women scientists is to give them research or training support at key points in their careers. Over the past 2 decades, it has run a series of such programs that are open only to women. But with a rising political and legal tide against programs restricted to one group, NSF scrapped that approach last year. It is planning to replace it with a new effort, called ADVANCE, that is still on the drawing board. Although the guidelines won't be completed before fall, the initiative is expected to provide grants to academic institutions, rather than individuals, and support comprehensive projects designed to lower gender barriers.

Deputy NSF director Joseph Bordogna acknowledges that past efforts, in the form of grants to individuals, have benefited hundreds of women scientists. But he says they haven't changed the landscape sufficiently. The new program, he claims, has the potential to have a greater impact by funding long-term, campuswide activities aimed at increasing participation by women in science. It is also more likely to pass political muster. "We want something that works," he says. "But we also want to expand our efforts to include the entire U.S. population. That's only right, after all."

At the same time, nobody even pretends to know whether ADVANCE will work any better than its predecessors. "ADVANCE will be the fourth or fifth change in direction for NSF in the past decade," says Catherine Didion, executive director of the Association for Women in Science (AWIS) in Washington, D.C. "But have any of them been allowed to run long enough to show whether they are effective?"

There are also inside skeptics. Mary Clutter, head of NSF's biology directorate, has been involved in agency programs to support women since the 1980s and sees individual research grants as an essential tool. "ADVANCE is not a direction I endorse," she says. "But times change, and maybe it's the right way to go." Claudia Mitchell-Kernan, vice chancellor for academic affairs at the University of California, Los Angeles, who recently completed a 6-year term on the National Science Board, NSF's oversight body, has similar doubts. "I think that a targeted approach is more likely to produce a desired result than a general approach," she says. "But targeted efforts are suspect now, for political reasons, and NSF's lawyers have been steering us away from such programs."

The debate reflects "a fundamental split in the scientific community," according to Sue

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Target audience. NSF is revising programs to boost the number of women and minorities in science to include the entire workforce.

Rosser, a former NSF senior manager for women's programs who is now at the Georgia Institute of Technology in Atlanta. "Some people feel that we should give [women] research money and then stay out of their way, while others cite a range of activities that need to be supported." One complication is that the status of women varies greatly from one discipline to the next. In much of the life sciences, for example, the problem is often not sheer numbers but rather the rate at which women advance to senior posts. But in engineering and parts of the physical sciences, the percentage of women remains far below a generally accepted "critical mass."

For the past decade NSF has been struggling to find the right balance to tackle these issues. Three years ago, it swung toward the research end of the debate, creating a program called POWRE (Professional Opportunities for Women in Research and Education). POWRE not only wiped out four smaller programs—grants for visiting professorships, planning, career advancement, and faculty awards—that addressed such frequent problems as a dearth of women mentors or reentry into the workforce after having and raising children. It also shifted decision-making from the division of human resources to each of the seven research directorates. Rosser and others say that the move was a way to ensure that the grants—some 471 were made over four competitions—were high quality. It was also an attempt to render the program less visible and, thus, less likely to draw attacks from opponents of affirmative action. The common thread was an effort to help the scientist at a crucial point in her career—as a new investigator, a midcareer scientist seeking new skills, or a senior faculty member forging ties with other researchers.

The POWRE program was hastily conceived, however, and its long-range goals were never clearly defined. "We had to move fast," recalls Bonnie Sheahan, an NSF social sciences program manager and former chair of the POWRE coordinating committee. "[Senior management] told us the money [about $6 million] would go elsewhere if we didn't come up with a new program." Rosser agrees: "NSF has had women's programs since the 1970s, but they've come and gone without much strategic planning."

To address that weakness, NSF funded Rosser to hold a POWRE workshop in March 1998. POWRE grantees surveyed by Rosser said that both individual grants and institutional awards are important. Only 32% thought that an institutional approach would be a good idea if NSF canceled POWRE for "affirmative action concerns," while 35% answered "no." The rest weren't sure. Their chief complaint about POWRE was that the awards lasted only 2 years and funding was limited to $75,000.

Rosser's final report urged NSF to spend more on POWRE, awarding more individual grants and assigning a full-time staffer to manage the program. Participants also recommended "strategies to encourage institutional transformation," with the goal of changing the culture until "women scientists and engineers can succeed as well as men." NSF program managers tried to incorporate some of the recommendations into the next round of competition. But within months, NSF decided to cancel POWRE—the last round of awards was made last fall—and create ADVANCE, swinging the pendulum from individuals to institutions. "I don't know why we have to choose between individual awards and institutional grants," says AWIS's Didion. "Why not have both?"

Current POWRE grantees say they regret that the program has ended, although they have mixed feelings about its impact on the overall status of women. Geochemist Carey Gazis, an assistant professor at Central Washington University in Ellensburg, received a $75,000 POWRE grant in September 1998 to study the oxygen isotope composition of soil water, soil carbon dioxide, and rain—key to understanding global atmospheric CO_2. "The timing was great; it helped me get my lab started," she says. Pei-te Lien, a political scientist at the University of Utah, Salt Lake City, who will use her grant to study the political attitudes of Asian Americans in a half-dozen U.S. cities during this year's presidential election, welcomes the award. "This is my first NSF award, and I can certainly use the assistance."

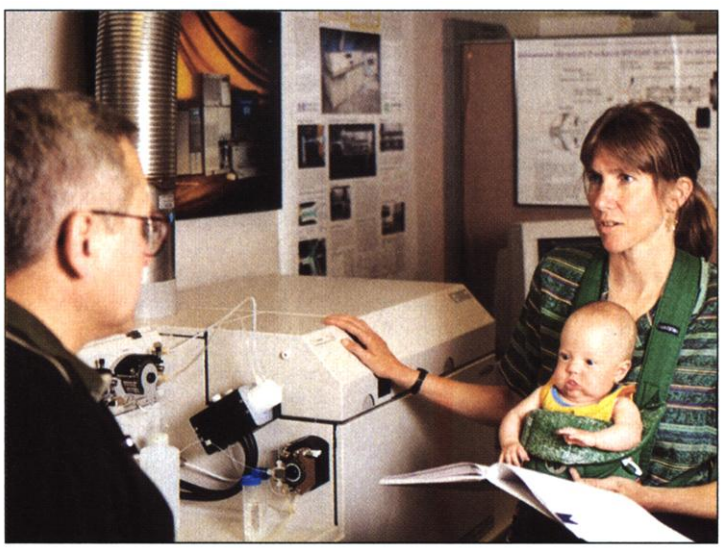
Even so, both investigators admit to some discomfort at being singled out as women when their science is gender neutral and their careers depend on meeting professional standards. "The fact that I was a woman was irrelevant to my research proposal," says Gazis. "In fact, I'm sure that men could also benefit from such a grants program." She adds that POWRE, although welcome, was not essential to her career. "I know I fell a little behind" on the tenure track, she says, thanks to the two quarters she took off this year to have a baby, born 3 months premature on Christmas Eve. "But I'm pretty confident that I can catch up."

Lien, who went back to school in midlife to earn a Ph.D., also says that her gender shouldn't have helped her snare a grant. But she admits that POWRE gives her the chance "to take advantage of being a woman ... as well as an ethnic minority who's a middle-aged, single mother [of two teenagers]."

This spring, President Clinton touted ADVANCE in a Rose Garden ceremony on equal pay for women, calling it a way to "remove barriers to career advancement ... and encourage more women to pursue science and engineering." NSF has requested $20 million in its 2001 budget for ADVANCE, up from the $12 million it will spend this year on POWRE. The details are yet to be worked out, NSF's Bordogna says, but the program is expected to offer grants to universities and consortia to support efforts to help women through activities such as overhauling campus policies and practices, outreach efforts in the local schools, and partnerships with industry. Bordogna says ADVANCE, by opening the door to all applicants, might also serve as a model for NSF's programs to increase minority representation, some of which have collapsed in the face of legal assaults on their exclusivity (*Science*, 16 April 1999, p. 411).

Alice Hogan, a program manager in the international division who is heading up a committee that is designing ADVANCE, confesses that the panel is proceeding more on faith than on hard data. "I'm looking at ADVANCE as an experiment," she says. "How else can you look at it? But putting $20 million into it is certainly a good start." Bordogna says that ADVANCE could grow substantially if successful: "We're in this for the long haul."

—JEFFREY MERVIS



Shopping trip. POWRE grantee Carey Gazis takes infant daughter, Uhuru, to Agilent Technologies to check out a new instrument for her lab.

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