Gender, Race, and Class

Women and minorities are often lumped together in discussions of diversity, as both are underrepresented in science. But an emerging body of research suggests that these groups have different career patterns, and that socioeconomic class may be as important as race or sex to success in science. "In many situations, the main thing women and minorities have in common is that they are not white men," says Barbara Lazarus, associate provost at Carnegie Mellon University in Pittsburgh.

Students' family backgrounds—their parents' affluence, education, and encouragement—are often critical in determining whether they will earn a degree in science, an achievement which on average takes more time and effort than earning a degree in the humanities, researchers say. An affluent white woman with educated parents, for example, has better prospects for staying in science than does a poor black woman from the inner city, even though both may face discrimination, particularly in the physical sciences or as faculty members. Elaine Seymour, a sociologist at the University of Colorado, Boulder, and co-author of a new 3-year study on why undergrads drop out of science, minces no words: "The word 'class' is taboo in this country. But it's clear—this is a social class issue."

Although enrollment of women and minorities in freshman science classes has gone up dramatically in the past decade, a disproportionate number drop out of science. It's here that class factors play a big role. Many students are finding it hard to afford college, researchers say, because budget cuts have made scholarships and financial aid scarce. Minorities feel the pinch disproportionately because many come from poor or working-class backgrounds and cannot afford to pay tuition for the extra time needed for a science degree. "Financial aid is the number one reason for attrition for minority students," says George Campbell Jr., president of the National Action Council for Minorities in Engineering. Students can work, but this leaves less time for study. "Faculty don't have a clue about how many hours students are working," says Seymour.

In addition to trying to pay for their education, lower income students are more likely to have family responsibilities that require them to work. And poor students often attend poor schools that don't prepare them well for college science and math, researchers say. Working-class women, particularly those of color, face an additional challenge—their families may be less supportive of their plans to become scientists, especially during the long hours of graduate school, says University of Georgia sociologist Linda Grant. In fact, in a study of 600 academic scientists, Grant found that many senior women were spouses, ex-spouses, daughters, or sisters of eminent scientists—underscoring the notion that family encouragement and connections to the world of science give students a major advantage.

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says Greenwood. Indeed, even the $350 million spent since 1988 on science education and diversity programs by the largest philanthropic organization, the Howard Hughes Medical Institute (HHMI), is minimal compared to the more than $2 billion spent by the government over the past 20 years. "It's unrealistic to think the private sector can be a replacement for cuts in the federal budget," says HHMI President Purnell W. Choppin.

Few such cuts have actually been made yet, given the long-drawn-out funding cycle and the wrangling over the federal budget. Yet shifting priorities are already taking their toll. For example, NSF pulled the plug on one of its programs, Research Careers for Minority Scholars (RCMS), which provided $6 million a year for research by minority undergrads. One of the programs left out in the cold is at the City University of New York (CUNY), which in September will lose $200,000 a year, money that program director Neville Parker says he used to "nurture students and keep them in the pipeline."

The NSF canceled RCMS and used the money to refocus its efforts on K-12 education and to support another undergrad program called the Alliance for Minority Participation (AMP), which spends $25 million a year on alliances of colleges that offer research opportunities for minority undergrads, says Luther Williams, assistant director for education and human resources at the NSF. But Williams doesn't want institutions to get too dependent on that funding either: "My intent was that AMP would catalyze these programs ... that the institutions would take them over, and the NSF would not fund them in perpetuity."

Meanwhile, at Kenyon College in Ohio, economist Susan Palmer is struggling to find funding for COSEN, an 8-year-old consortium of eight colleges in Ohio and the Carolinas (including Duke University) that has a strong track record of helping minorities and women earn degrees in science. But it is losing its funding from the Pew Science Program in Undergraduate Education, which has given it $1.3 million. Like NSF, Pew is shifting resources to K-12 education and prodding such consortiums to become self-sufficient after almost a decade of funding. But the cuts come at a time when new money is hard to find. "There's no way [our] institution can contribute that kind of money," sighs Palmer. "I've been looking for money, but I've been discouraged by the general climate against affirmative action."

These two are just warning signs that the once-abundant programs for women and minorities may be shrinking. "I think for sure there will be a reduction of targeted programs," predicts NSF Deputy Director Petersen. As the NSF reviews its efforts, it is trying to see how to get the same results without targeting women and minorities. But, Petersen adds, "the worry is if you lower the profile of these programs—if you never talk about women and minorities—will they have the same kind of potency?"

Poor prospects. These potential cuts in agency funding for diversity programs coincide with major economic trends that make it harder to land a traditional research job (*Science*, 6 October 1995, p. 123). A new study by Fox and Georgia State University economist Paula Stephan identified three major factors that may hamper students' career prospects: government deficits, which may prompt cuts in federal research funding; the end of the Cold War, which

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Cold reality. Neville Parker and students at CUNY lost NSF funding.