A WISE Approach

By Gary Pallassino

Through interaction with faculty, mentors, and prominent guest speakers, SU's Women in Science and Engineering initiative provides women with important role models.
FOR BARBARA HILL, the disparity between men and women in her chosen field of geology was brought home by a subtle, unintentional moment of sexism in a lab. While working alongside her on a piece of equipment, a professor held up a common tool. "He said, 'We call this a channel lock,'" says Hill, a Ph.D. candidate in geology. 'And I thought, 'Yeah, I know that.' But I didn't say anything to him until the next day, when I told him he'd said something very sexist and that it bothered me. He said, 'Oh, I didn't think about it.' Would he have explained that to a guy the same age and status as me? No. He would have said, 'Hand me the channel lock.'"

Like many women in the male-dominated worlds of science and engineering, Hill has encountered more blatant sexism. As an undergraduate in Oklahoma during the '70s, she had a professor who flatly stated that women were not suited to be geologists, and a fellow student asserted that she was merely in school to find a husband. Hill has also felt the sense of isolation that comes from attending classes taught almost exclusively by male professors to rooms full of men. Her work experience varied little from the academic world: As a geologist for Exxon, she was stationed on an isolated oil rig, the only woman among 50 men. "I have been told very frankly that I could not have a job because I was female, even though my background and my abilities were superior," she says. "This is the kind of stuff we face. I think the more women there are in the science and engineering fields—the more they are seen, and out there in leadership positions—the more we will be accepted in these fields."

Such is the goal of the Women in Science and Engineering (WISE) initiative started last year at SU by Cathryn Newtown, interim dean of the College of Arts and Sciences and chair of the Department of Earth Sciences; and Shobha Bhatia, a professor in the L.C. Smith College of Engineering and Computer Science (ECS) and the first woman to chair the Department of Civil and Environmental Engineering. The program, active on campuses around the world, includes advocating for increased hiring of women faculty in sciences, mathematics, engineering, and computer science; University-wide lectures by prominent women scientists, engineers, and scholars; and advising initiatives aimed at providing mentors for women students embarking on their first research projects. Newton, SU’s Jessie Page Heroy Professor of Earth Sciences, says WISE can help stem the steady loss of women from the sciences and engineering at all levels, from undergraduate to professional. "There has always been this sense of a leaky pipeline in non-traditional fields for women," she says. "Part of the cause is the inevitable feeling of isolation and sometimes alienation of being the only woman, or one of the few."

Bhatia, a Laura J. and L. Douglas Meredith Professor, notes that by attracting more women faculty members, exposing the campus community to leading women scientists and engineers, and providing mentors for budding researchers, WISE provides needed role models for women students. Hill says WISE programs and gatherings have diminished her own sense of isolation. "They let me see that there are many other women at SU who are in close to the same boat that I am," she says. "I went through my undergraduate years with no female faculty in the department. I went through my master's degree with only one female faculty member. And for my Ph.D., there's only one female faculty member. What I missed out on was knowing that the way I think about things, the way I approach things, is OK. Women and men just approach things differently."

FEMALE FACES AMONG THE FACULTY

When WISE began at SU last year, only 14 of 132 faculty members in the College of Arts and Sciences' Natural Sciences and Mathematics Division were women. In ECS, 4 out of 64 faculty were women. The numbers were surprisingly low, Bhatia says, compared to the numbers of women undergraduates enrolled in the colleges. In the psychology department, for example, 71 percent of undergraduates were women, taught by a faculty that was only 19 percent female. Women made up approximately 50 percent of the enrollment in the remaining science and mathematics departments, but only 8 percent of the faculty. In engineering, 26 percent of the students and 6 percent of the faculty were women. "One of the most significant predictors for women's success in the sciences and engineering is whether somewhere in their history there is a mentor or other visible senior woman in the program in which they enroll," Newton says. "It doesn't have to be an advisor or their professor. But the student looks around and asks, 'Is there someone here like me?'"

Aside from being role models, Hill says, women professors may seem more accessible to young women. "When I work with students as a teaching assistant, I notice that the women are somewhat hesitant to acknowledge things they're having trouble with in class," she says. "I try to make sure they know it's OK to come and talk to me. Often the real trouble is they're having problems at home, with rela-
tionships, or some other difficulty. I'm not sure how many of those women would go to a male instructor with those problems."

With three new hires in ECS and two in the College of Arts and Sciences over the last year, the numbers are improving, Bhatia says. Faculty members associated with WISE meet with all women candidates, regardless of department, taking them to lunch to discuss issues outside the interview process. "Typically, we talk about our own collaborations," she says. "Most of the candidates seem to appreciate an informal discussion with other faculty. There are tenure issues, issues about children, issues about mentoring. Sometimes those are hard to raise in a formal interview setting."

Newton says the WISE initiative played an important role in shaping the nine current faculty searches in the College of Arts and Sciences. One new recruit is Earth sciences professor Suzanne Baldwin, who came to SU this year from the University of Arizona at Tucson. The Department of Earth Sciences hired her husband and research partner, Paul Fitzgerald, as well. "We're a team, and SU recognized the benefit of that," Baldwin says. "That was a big factor, and it is an issue for many faculty members. If you're married to another professor, you have to give and take and try to find a way for both people to go down the career paths they want. This gave us a great opportunity to really excel at what we do."

Though drawn to science in high school, Baldwin was unsure of which field she wanted to study as an undergraduate at Hobart and William Smith Colleges in Geneva, New York. In fact, she very nearly became a dance major. "I started off as a biology major, then took chemistry, physics, and math," she says. "At the same time, I took ballet and modern dance. Very different courses." A geology course that included fieldwork finally piqued her interest. "That became the science I could be passionate about," she says. "I like to be outdoors, I like going on adventures. Here was a science I could enjoy out in the field, but with a basis in the hard sciences. Geosciences integrate chemistry, math, physics, and biology to look at how the Earth has evolved over time."

Though she was aware of the relatively small number of women studying the sciences, Baldwin experienced few problems as a student. At the State University of New York (SUNY) Albany, she was unaware that she was the first woman to finish a Ph.D. in Earth sciences until she submitted her dissertation. "I didn't realize the importance of role models until I actually became a professor and began advising women who were finishing graduate degrees under my supervision," she says. "Having said that, I have to admit that a factor in our decision to come here was that there's apparently no glass ceiling at SU. The provost is a woman. The chairperson who recruited us is a woman, and is now the interim dean. It seems to me there are no real restrictions on how far you can go."

Andria Costello, who this year joined the civil and environmental engineering faculty, started off in biology, which is predominately female at the undergraduate level, she says. After earning a bache-

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lor's degree in biology from Georgia Tech, she became interested in environmental engineering. She began attending the California Institute of Technology in Pasadena, California, to earn a master's degree. "I don't feel I've been discriminated against because I'm a woman," she says. "However, when I went to Cal Tech, it was a very male-dominated environment, and I became involved there with WISE. It was a very cohesive, very strong support group for the women on campus. That was my initial introduction to a group specifically for women to support women."

Still, the WISE initiative here was not a big factor in her decision to come to SU. "I had other job offers, but I chose Syracuse because of the atmosphere," she says. "When I interviewed I certainly met Cathy Newton, and Shobha's my chair so I interacted with her a lot. I knew about this program. Syracuse promotes a very friendly atmosphere for men and women. The college [ECS] is a small community and seems to be close-knit. I felt that the administration and my fellow colleagues would be supportive, and that it was the best atmosphere in which to start my career as a faculty member."

She's become involved with WISE here, and serves with fellow new faculty members Christine Kelly and Julie Hasenwinkel as advisor to the SU chapter of the Society of Women Engineers (SWE). "I know a lot of women whose lives have been affected by the gender issue," she says. "That's why I choose to be involved in WISE and SWE. It's important, especially at the graduate level, to encourage female students and try to keep the retention up."

Newton says the new hires have helped make WISE one of the most gratifying projects of her SU career. When she became the first woman to teach in the Department of Earth Sciences in 1983, she says, she never dreamed she would remain the only one for so long. "There is a sense of isolation," she says. "It's true when you're an untenured faculty member, and the sense of isolation actually magnifies as women scholars become more senior. When you're so busy getting tenure, you barely notice what anybody is doing. But as you move through your career, the differences in salaries, amount of lab space, frequency of national academy elections—these little differences magnify over time." The experience has made the WISE success that much sweeter. "Imagine working in isolation for 17 years and then suddenly seeing the Suzanne Baldwin appointment," she says. "You go from being the only woman to suddenly having so many women here, you don't even know who they all are."

**INSPIRED BY SUCCESS**

Bhatia says the WISE lecture series has been an overwhelming success, having brought three prominent speakers to campus within the last year. Open to the public, each forum has drawn a diverse audience from throughout campus and the community. Newton adds: "We focus on educating the community about who this person is, and what her accomplishments are. We try to reach out across the disciplines and into classrooms to make sure we involve as large a group of people as possible in the activities."

Ph.D. candidate Hill praised the forums for bringing together such diverse groups. "They are a good time for us to sound off, and talk about things that work and don't work," she says. Newton says the lectures act as a catalyst for a range of discussions. "The most gratifying thing is to hear the lecture and then see the question-and-answer session go on for so long, among students and faculty alike, that finally after an hour you have to bring it to a close," she says. "People want to still be there, asking questions. And then to watch students and faculty stand around together after the lecture talking engineering or science for a long time—that's what you really hope for, to bring people together."

Each speaker also conducts a second talk at local schools. Ruzena Bajcsy, director of the National Science Foundation, met with 30 female students from inner-city schools the day after her talk at SU. "These young girls had the chance to hear from a prominent speaker on computer engineering," Bhatia says. "Along with those students came their teachers, who seemed very excited to be there."
While the short-term impact of such forums on the high school students is difficult to judge, she says, in the long run, the result will be positive. "When you hear and see, even for a short time, people who are successful, then you may begin to think, 'If they can do it, I have a chance to do it too.'"

Bajcsy also met with women faculty members over lunch. "She is a wonderful role model for all of us," Bhatia says, "a prominent researcher who holds an important position at the National Science Foundation, which can change the direction of research. And she's raised a family as well. It's nice to see a woman scientist who's so comfortable in these roles, prominent yet still down to earth."

Newton says Stanford ecologist Pam Madsen made a similar impression on campus. A renowned researcher, National Academy of Sciences member, and mother of two small children, Madsen prompted one student to ask, "How do you do it?" Newton also notes the prominence of the latest speaker, Lynn Margolis, Distinguished University Professor at the University of Massachusetts, Amherst. In her September talk, "From Gaia to Gender: Ideas Informed by Science," she discussed such issues as whether there is enough room on the planet for both human and nonhuman species to coexist. "She's one of the nation's most revered scientists," Newton says. "And she's credited with a first-order discovery of how our cells evolved from microbial cells. Because this is a major event in evolutionary history, she's a towering figure, someone known all over the world."

The lectures and accompanying social events bring together women faculty members in various disciplines and campuses, including the SUNY College of Environmental Science and Forestry, Newton says. Many men also attend, along with undergraduate and graduate students in scientific and engineering disciplines. "Imagine you're an undergraduate woman chemistry major," Newton says. "What's the likelihood that in the conventional structure you would meet with women scholars in Earth sciences, or faculty members from other schools? That just doesn't happen."

**GROWING WISE**

Bhatia says the third segment of WISE—advising initiatives for faculty mentors that help guide students embarking on their first research projects—is being developed under the Meredith Professorship she received in March. The WISE Mentoring Program, which began this fall, pairs students with industry professionals based on areas of interest. Mentors and students meet and attend several events together, including WISE lectures and forums. "The idea keeps evolving, as do the needs of our students," Bhatia says. "We started small, offering it first to freshman women in the College of Engineering and Computer Science, and we'll see what happens."

Another part of the initiative will establish a WISE residential learning community, where students with similar interests live and take part in activities. "Nationally, it's been shown that women who are part of residential learning communities in the sciences and engineering succeed at a higher level," Newton says. "Not only do such communities remove the barriers of isolation, but they further provide the kind of support and encouragement that promotes learning for all students."

As the program expands and improves, Newton sees WISE having an even greater effect. "I'm hoping there is a powerful and immeasurable difference in the impact of women faculty interacting with the students on campus," she says. "It's not a question of reaching certain proportions. It's a question of changing what women students have perceived as an us/them culture to a culture of we. And I hope that the lecture series continues to have an impact on the lives of science, math, and engineering students. There was no interdisciplinary forum on campus before that brought together powerful figures in the sciences and engineering. Only rarely do I remember events that were so collaboratively launched."

Electrical engineering major Michele Weller '01, president of the SU chapter of the Society of Women Engineers, says WISE efforts have already helped change attitudes toward women engineering students. "Freshman year, people would ask why I was in engineering," she says. "Now it's 'Oh, that's really awesome.' I think the campus knows about us, and that helps. You have every reason to succeed under those circumstances."

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