

A network challenges the barriers  
and biases that continue to  
discourage women engineers.

*By Pierre Home-Douglas*



**WEPAN**

*Illustration by Susy Pilgrim-Waters*

WEI•MAN

Supports the People  
Who Support **WOMEN**  
also



minorities

Catalyst  
for  
**CHANGE**

Success

NETWORK

# Last June,

the St. Louis Hyatt Regency meeting rooms and hallways buzzed with talk of engineering, women, and education. Are girls really more innovative, practical, and disposed to out-of-the-box thinking than boys? Can — and should — engineering and science departments use Title IX to ensure gender equity? While the tech-savvy hunched over BlackBerrys, blogging about women’s tech careers in India, others debated whether project-based learning renders university courses more relevant — or more watered down. Key-note speaker Jacquelyn Sullivan urged her audience to “rebrand” engineering, emphasizing discovery, design, imagination, and contribution to society.

The occasion of this heady gathering was the 19th annual meeting of the Women in Engineering ProActive Network, a national not-for-profit organization that aims to attract, retain, and support women in engineering fields of academia. According to WEPAN executive director Diane Matt, the need to reach women and minority students is more important than ever: In 2007, she notes, the rate of non-Caucasian students entering kindergarten was 40 percent; within 12 years, high school graduating classes will contain a similar ethnic composition. Yet, “engineering schools are nowhere close to that kind of demographic. The culture in those schools isn’t attracting that kind of demographic. So, if you take 40 percent of kindergarten kids and say, ‘OK, we’re not appealing to you,’ and then you look at the remaining 60 percent and say, ‘Half of you are girls, so we’re not appealing to you either,’ that means 70 percent of the students aren’t on the radar screen of engineering schools. That’s astounding.”

From its conception, WEPAN filled a strong need. One of its founders, Jane Daniels, had served as the director of the Women in Engineering Program at Purdue University since the 1980s. Daniels was accustomed to getting calls from people trying to set up similar programs to increase the number of females studying in the male-dominated field. But by the end of the decade, she found herself spending almost as much time advising other schools as she did working on her own program. So, together with Susan Metz, her counterpart at Stevens Institute of Technology in New Jersey, and Suzanne Brainard from the University of Washington, she decided to bring together everyone interested in women in engineering. “I sent out a survey card to deans of engineering and Society of Women Engineers (SWE) advisers and asked if they would be interested in sending someone from their institutions to a meeting,” Daniels recalls. “Almost overnight we got 70 cards back that said, ‘Yes, yes, yes!’”

With a sponsoring grant from the National Science Foundation, Daniels convened 200 people in Washington, D.C., in 1990 to share ideas and experiences. At the closing session, participants strongly endorsed the creation of a permanent national group. Thus was the Women in Engineering Programs and Advocates Network — later renamed the Women in Engineering ProActive Network — incorporated to serve as “a catalyst for change to en-

hance the success of women in the engineering profession.” Daniels became its first president.

## 150 CAMPUSES

SINCE THEN, WEPAN, which has offices in Denver, Co., has grown to 600 members at 150 U.S. campuses, reaching 42,000 female engineering students, or 60 percent of the total number in the country. From the outset, the network has supported educators and administrators who recruit and retain women engineering students — typically, women-in-engineering program directors, heads of minority-in-engineering programs, department chairs, and community college educators. It does so through a variety of outreach and on-campus activities organized by campus representatives. Unlike SWE, which consists largely of professional engineers and engineering students, “WEPAN supports the people who support women in engineering,” says Donna Reese, WEPAN membership chair and associate dean of academics and administration at Mississippi State University. “They might have engineering degrees, or they may have math and science backgrounds or education backgrounds and are doing K–12 outreach.”

Rendering engineering more attractive for women can take many forms. At Virginia Tech, the WEPAN campus rep is Beville Watford, associate dean of academic affairs and director of the college of engineering’s Center for the Enhancement of Engineering Diversity. Aided by three full-time staff members and five graduate students, Watford has organized high school summer camps, mentoring programs, and residential communities, where female freshmen and sophomores live on the same floor. A bridge program allows incoming freshmen to enter the summer before they start university to get a taste of what it’s like to be an engineering student.

Watford got involved in WEPAN in the early 1990s after attending a training seminar. “You met a lot of people and you learned a lot of things that others were doing, tried-and-true techniques,” she recalls. “Let’s talk about retention, let’s talk about how to find money, how to get staff — issues like that. It was fabulous.” In 2008, Watford was honored with the WEPAN Founders Award for her own role as “a catalyst, an advocate, and a leading resource for institutional and national change.”

## PUBLICATIONS AND GUIDES

AS IS THE CASE for most administrators of a women-in-engineering program, Watford’s salary and those of her staff are covered by their academic institution, while the program is funded largely by grants from organizations and corporations. “Everyone is always scrambling for money,” Watford says ruefully. Recognizing that fact early on, WEPAN published a two-volume

work in 1996 addressing grant proposal writing, as well as the development of retention and mentoring programs. It was all part of the effort to disseminate knowledge, says Daniels: “If people wanted to do something on behalf of woman students in their university, they didn’t have to start from zero. Why waste time when there was such a pool of resources already available?” Today WEPAN continues to assist its members through publications and training-curriculum guides.

The newly launched WEPAN Knowledge Center is another project aimed at sharing information. Developed in partnership with ASEE, this online library provides an array of materials. The data tables of current university enrollment and a portfolio of slides are open to members only, but anyone can access material on K–12 and university women-in-engineering programs, as well as past WEPAN conference proceedings. They can also download conference papers and PowerPoint “webinar” lectures. “Over the past 20 years, many resources about women in engineering have been developed,” Matt says, “but they are scattered and often not easily

but also of administrators, recruiters, schoolteachers, parents, and students — all of whom tend to exhibit unconscious biases against female students, Daniels believes. Change is also needed in the way courses are offered, the type of material presented, and even the techniques and examples used by professors. ASEE President Sarah Rajala notes that improved teaching benefits all students: “When faculty members use multiple teaching strategies in their classes — i.e., a combination of visual, tactile, and auditory learning — not only are the women and underrepresented students more successful; the male students who struggled because of a mismatch in learning styles are also more successful.” Thus, in working to support female students, WEPAN has “encouraged others from the general population to think about some of the issues they haven’t thought about before and facilitate the discussion that would allow change to happen.” And for Rajala, that’s crucial: “If we really want to attract the brightest and best from across the board, we need to be thinking about these issues.”

In the two decades since WEPAN formed, the organization has

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accessible by those who need them to develop and assess policies, outreach, and retention activities and research programs.” Funded by a three-year NSF grant, the Center will help develop an online professional community to give WEPAN the best return on its investment, Matt believes. That’s an important consideration for a group that operates with a small staff and slim budget. Its funding derives from membership dues, an annual conference, and corporate donors. The organization also has 50 representatives at companies such as IBM, Exxon Mobil, DuPont, and Intel, often in human resources departments, or through engineers who are working with HR to diversify the workforce. “Corporations find it interesting and attractive to build relationships with people who run women-in-engineering activities because they know that it’s an important effort,” says Matt.

## BETTER TEACHING BENEFITS ALL

**I**N RECENT YEARS, WEPAN has increased efforts to help make engineering colleges more appealing to, and supportive of, women. That involves altering the mindset not only of the faculty

witnessed significant progress in society’s attitudes about women. As an illustration, WEPAN cofounder Susan Metz recalls the time in 1980 when a female civil engineering graduate who worked for the transportation department of the state of New Jersey — the first woman to hold that position — was profiled by a local newspaper. The headline? “Curves on the Highway.”

Still, few WEPAN members imagine that their work will become redundant anytime soon. As Susan Metz told a reporter in 2001, “My goal is to get out of business. But I’m still here after 20 years.” Eight years later, she is still at it, serving as senior adviser at the Center for Innovation in Engineering and Science Education at Stevens. “I was drawn to this work because I felt that engineering was a terrific field in terms of creativity and making a difference in people’s lives,” she says. “I wanted women to be able to participate in this process because they would find engineering professionally challenging. And the perspective of women — of all races and ethnicities — would improve the solutions and processes that engineers contributed to our world, which is full of complexity. I feel the same way today.”

*Pierre Home-Douglas is a freelance writer based in Canada.*