DOI:10.1145/3056417

Valerie Barr

Gender Diversity in Computing: Are We Making Any Progress?

RECENTLY I CAME ACROSS notes for a talk I gave in 1991 about women and computer science. It was depressing to read through it. Change the date and I could give the same talk today. How can that be? Hasn't the situation for women in computer science improved in the last 26 years? The answer to that question depends on what measure(s) you choose.

Yes, there are more women enrolling in and staying in computer science degree programs, but we should not overstate the improvement. All U.S. academic degree data must be analyzed against a significant shift in the overall undergraduate pool. From 1966 to 2015, the U.S. undergraduate population shifted from 42% to 57% women, requiring that we be very careful with how we evaluate disciplinary data. Published analyses of degree production in CS always state that 37% of CS degrees went to women in 1984, and only 18% in 2015. Consider a different perspective. In 1984, 2.42% of all women's degrees were earned in CS (the high point was actually 2.97% of women's degrees in 1986).

During 1989–2006, between 1% and 2% of women's degrees were earned in CS, and since then it has been less than 1% each year. For comparison, 6% of men's degrees were earned in CS in 2015.

What about jobs? Yes, lots of women are being hired into tech. The exhibition hall at the Grace Hopper Conference and the career fairs at the ACM Celebrations of Women in Computing are full of companies eager to talk with student attendees and line up new hires. But, again, we have to temper excitement at these developments. While women are heading in the front doors of companies, they are hemorrhaging out the side and back doors. Approximately

45% of women entering tech leave within five years while only 17% of men leave. Bringing more women into tech has not succeeded in changing the climate there, nor apparently led to significant changes in the attitudes and behavior of many people who work in tech. There are other efforts being made, such as providing employees with training on implicit bias, and carrying out large-scale salary review to ensure that wages are equitable across job titles.

But attitudinal change is slow.

It is time to ask how ACM, a membership organization that reaches millions of people every year, can contribute to efforts to make people aware of bias and to encourage them to change their attitudes and behavior. For years ACM has supported ACM-W, the Council on Women in Computing. Thanks to ACM's support, and additional funding from Google, Microsoft, and Oracle, today we have 30 Celebrations of Women in Computing worldwide, over 160 ACM-W Chapters, and we annually award over \$35,000 in scholarships for women CS students to attend research conferences. These efforts have great impact on the women involved, but little broader impact on the ACM membership. What can ACM do to ad-

dress issues of diversity in ways that will reach broadly across the membership?

In an exciting development, the ACM Executive Committee last June authorized the establishment of a working group that will formulate the charter for a new ACM Council on Diversity and Inclusion (CDI). The working group met in January 2017, and the new Council should launch at the start of the next fiscal year, July 1, 2017. No single group can possibly address all aspects of diversity and inclusion, particularly when we consider that ACM is a global organization. The CDI will foster the development of new committees, created by groups of ACM members who are passionate about particular diversity areas. This will enable ACM to, for example, improve our understanding of what diversity and inclusion issues are around the world, address LGBTQ issues, and address access as an issue for members and for those wishing to participate in ACM-sponsored events, not just as a research topic.

The working group has started to address the overarching question of what the role is of a membership organization in addressing issues of diversity and inclusion. In what ways can ACM contribute to making tech (both industry and academia) a more hospitable environment for all who are interested in the field? ACM-W has expanded our work considerably in the last five years, including increasing our collaborations with other organizations. We commit to help in whatever ways we can as ACM extends and increases its organizational commitment to diversity in computing.

While women are heading in the front doors of companies, they are hemorrhaging out the side and back doors.

Valerie Barr, a CS professor at Union College, Schenectady, NY, is chair of ACM's Council on Women in Computing, ACM-W.

Copyright held by author.