SUCCESSFUL EFFORTS AT SOME U.S. UNIVERSITIES
TO ATTRACT MORE WOMEN TO COMPUTER SCIENCE MAJORS

(*Below we summarize an important article published in the* Communications of the ACM, *62:2, February 2019. The Association for Computing Machinery (ACM) is the world's largest computer science organization.*)

The article starts by reminding us of the deplorable under-representation of women in computer science: "In spite of numerous studies, reports, and recommendations we have seen little change in the representation of women in computer science (CS) — consider that only 17.9% of bachelor's degrees in computer science [in the U.S.] were awarded to women in 2016." But then the article strikes a note of optimism: several American universities have been able to attract a far higher proportion of women to CS. For example, Harvey Mudd College (a small, top-notch engineering college in California) went from 10% women in CS in 2006 to 40% in 2012. The article, written by C. Frieze and J. Quesenberry of Carnegie Mellon University (CMU) in Pittsburgh, focuses on the efforts at CMU, which is another highly regarded engineering school that has managed to increase its proportion of women CS majors to nearly 50%.

The basic approach at CMU is to provide role models and social support to women entering the major, at the same time "monitoring student attitudes toward, and experiences in, the CS major. Are men and women getting similar opportunities for...leadership, visibility, networking, mentoring, and advocacy?" For more details, see the website:
    https://www.women.cs.cmu.edu

Much of the article is devoted to disputing the notion that the curriculum has to be altered — watered down or made "pink" — in order to attract more young women to CS. At CMU the problem of under-representation was successfully addressed "without compromises to academic integrity, without changing the curriculum to suit women, nor by accommodating what are perceived to be 'women's' learning styles and attitudes to CS."

Frieze and Quesenberry explain their objections to "gender difference" approaches. Advocates of such approaches

> often argue that there are strong gender differences in the way girls and boys, or men and women, relate to the field, gender differences that work in favor of men and against women. To solve this problem and increase women's participation in CS it is suggested that we need to pay more attention to women's interests and attitudes and change CS accordingly. But approaches that recommend accommodating differences — without recognizing that such differences can change according to the culture and environment — risk perpetuating the gender divide.

> This has not been our approach. Indeed, we questioned these assumptions and constraints. Gender is first and foremost a cultural issue, not a women's issue, so rather than looking at "gender differences" as our working model we need to address the underlying culture in which attitudes and opportunities for equality are influenced and situated. This approach is supported by evidence from other cultures outside the U.S. Galpin* describes the participation of women in

undergraduate computing in more than 30 countries, concluding: "[t]he reasons that women choose to study computing will vary from culture to culture, and from country to country." Studies of women in computing in Mauritius and in Malaysia found no problem with women's participation. [Galpin concluded that] "the under-representation of women in CS is not a universal problem."

* V. Galpin, Women in computing around the world, *ACM SIGSCE Bulletin — Women in Computing*, 34:2, February 2002.