The underrepresentation of women in almost all science and engineering fields is a well-documented statistic. The National Academies have issued four significant reports since 2001 examining the status and challenges of women in academic science and engineering and offering recommendations to broaden the participation and advancement of women in those fields. It released its most recent report, "Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty," last month following a study mandated by Congress.

While those prominent studies focus attention and resources on an important issue, much of the emphasis is on those institutions described as Research I universities, using the former designations of the Carnegie classification system of institutions of higher education. Universities with less-extensive levels of research support, such as master's (comprehensive) universities and undergraduate liberal-arts colleges, are widely overlooked.

The primary consideration of Research I campuses might initially appear logical. The importance of basic research science to the American economy as well as the substantial amount of federal support for research on Research I campuses are compelling reasons for gender-equity studies focused on those institutions. The large student enrollments and faculty sizes of Ph.D.-granting institutions further justify making those campuses the focal point of efforts to improve the status of female scientists and engineers. Certainly any issues associated with a given institutional type are also best dealt with through analyses that concentrate on similar populations.
But overlooking other institutions of higher education is shortsighted and potentially harmful to the American scientific enterprise.

The belief that gender disparities are most likely to occur at research universities is itself questionable. The quantitative analysis provided by the American Association of University Professors in the "AAUP Faculty Gender Equity Indicators 2006" report demonstrates conclusively that, even using only a basic assessment of equity in terms of employment, salary, and rank, academic women face gender inequities and challenges at all career stages and at all types of institutions, including non-research-intensive campuses. In fact, seemingly exclusive attention to the challenges of one type of institution may serve to minimize the critical situation at other institution types and even suggest the existence of gender equality.

For example, data in a 2008 report of the National Science Foundation, "Thirty-Three Years of Women in S&E Faculty Positions," indicate that women with science backgrounds at research-intensive institutions have reached percentages at the full-professor level comparable to female scientists at liberal-arts colleges. But such parity was achieved only as the percentage of female scientists at the full-professor level at liberal-arts colleges stagnated (16.9 percent, 16.2 percent, and 15.8 percent in 1999, 2001, and 2003, respectively) while the percentage of female full professors at research institutions rose significantly (11.2 percent in 1999, 13.4 percent in 2001, and 15.6 percent in 2003). Those trends will need to be further examined when more current data are available.

Three immediate suggestions come to mind to better balance the assessment of the status of female scientists and engineers in academe. A key first step is for the programs, professional societies, and organizations that deal with aspects of academic culture and institutional structure that may affect female science and engineering professors to continue and expand their financial support. The Advance program of the National Science Foundation is an outstanding example of a vital program that seeks to develop systemic approaches to increase the representation and advancement of women in academic science, technology, engineering, and mathematics careers. A second suggestion is to commission separate studies of gender-equity issues for each type of postsecondary institution. Finally, as research studies, panels, conferences, and other committees of experts are assembled to examine the challenges and successes of academic women in science and engineering, organizing bodies should seek inclusion of people from all institutional types.

Additional mechanisms for determining potential experts to analyze the status of academic women in science and engineering, especially in liberal-arts colleges, should be pursued, including surveying college and university administrators for suggestions of leading female faculty members in science and engineering, and tapping the database of Advance grant recipients. For example, the female full professors in chemistry and physics at 20 distinct liberal-arts colleges who participate in the project "Collaborative Research for Horizontal Mentoring Alliances" are one group with experience in promoting the leadership and visibility of women in science and engineering. That project, for which I am principal investigator, involves the formation of five-member alliances of senior female faculty members at different liberal-arts institutions to test a mentorship strategy that tries to enhance the advancement of academic women in science and engineering careers. Many other talented and extraordinary female scientists and engineers beyond the research university are also available to contribute.

Let's use all of our resources to improve the future of the scientific and technological enterprise and enhance America’s global competitiveness.

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