Women at work

Unsupported assumptions have no place in scientific research, so why should they be tolerated when judging the talents and motivations of women in science?

Despite several decades of commentary about women's underrepresentation and marginalization across high-performing jobs in general and in the science and technology sectors in particular, women faculty remain in the minority in the science departments of most academic institutions. In 1999, a report on women science faculty at the Massachusetts Institute of Technology (MIT) provided some of the first quantifiable data to illuminate this point, highlighting disparities in the treatment of men and women across six departments (http://web.mit.edu/fnl/women/women.pdf). In response, MIT and numerous other institutions adopted new policies and created initiatives to counter gender bias and discrimination. In March of this year, both the U.S. Department of Commerce (http://www.esa.doc.gov/sites/default/files/reports/documents/womeninamerica.pdf) and MIT (http://web.mit.edu/newsoffice/images/documents/women-report-2011.pdf) released reports focused on women in American society in general and in MIT's science and engineering departments specifically. Both reports highlight outstanding gains toward equality but still relate a sobering message regarding the scope of the challenges that remain. We suggest that the most urgent of these challenges is for scientists to move beyond assumptions regarding a woman's qualifications, motivations and goals and instead bring their scientific training to bear in interacting with their colleagues and evaluating their contributions.

Perhaps the most valuable aspect of a scientific education is in gaining the ability to think critically about a scientific question: What information is available and how credible is it? What assumptions have been made? What hypothesis can be put forward and how can it be tested? Although scientists are often adept at applying this logic in a dispassionate manner towards their research, we are less in the habit of taking this approach in other contexts. Yet the evaluation of women scientists could benefit greatly from a scientific perspective. Toward that end, we submit three examples of unscientific thinking highlighted by the MIT report that pervade the scientific community at large.

A common misconception encountered by women faculty hired at MIT after the 1999 report is that they obtained their positions because of quotas or affirmative action, and as a result they are less qualified than their male counterparts. This is incorrect. As highlighted in the 2011 report, the steps taken to change hiring practices have been focused on eliminating bias, not creating unfair advantages. However, one of these steps—to broaden the scientific scope of faculty searches and thus expand the pool of applicants—yielded unanticipated barriers for women hired in untraditional subject areas in integrating with their new department. This concern will certainly be familiar to both women and men in chemical biology, who are scientifically multicultural and so often at the boundaries of diverse scientific departments. As a result, we suggest that chemical biologists can play a more active role in both communicating the importance of seeking candidates that cross traditional scientific borders and supporting them when they arrive, as universities only stand to gain from investing in these exciting scientific frontiers.

Second, women continue to suffer from stereotypes that presuppose demure personalities or sympathetic mentoring styles. Because both women and men display these traits (and some diverge from them), it is simplistic and unproductive to judge women based on these expectations. Perhaps an instructive analogy is to consider what has been learned with single-molecule studies. In some cases, the behavior of a single protein directly recapitulates the average, but in others, the 'average' is not represented by any one measurement but reflects merely the space across disparate populations. Similarly, scientists should judge their colleagues on the basis of direct professional interactions rather than applying averages and stereotypes.

Finally, it is still often assumed that women value their careers less than men. However, the extensive training required of any scientist seeking a faculty position demonstrate the significant commitment required to participate in science at the highest levels. This misconception leads to an overemphasis on the personal lives of women scientists—both in casual conversation and in formal evaluations—which further perpetuates the problem. A frequent corollary of this mindset is the expectation that all women want to have children and, upon doing so, will at best become permanently less productive and at worst will drop out of science altogether. However, the Department of Commerce analysis demonstrates that the first expectation—that all women want to have children—is not valid, as trends show fewer American women are having children. More importantly, for those who choose to have children, the amount of time 'lost' to maternity leave is minimal in comparison to their entire career. Still, the habits of scientific culture mean that women do face a penalty for having children. Even for universities such as MIT that have introduced family-friendly initiatives, such as extending the tenure clock to accommodate family leave, some scientists view these as 'women's' rather than gender-neutral programs. Thus, attempted solutions have unexpectedly reinforced the negative stereotype for women. This biased perception may also make it uncomfortable for men to use these policies, further polarizing the issue.

As an alternative, we argue that it is time for the artificial constraints of the tenure clock to be put aside. Beyond childbearing penalties that fall most heavily on today's 'superwomen', the timing of good science does not always align with the unforgiving deadlines of tenure review. This is particularly true of scientists who take on the most challenging—often multidisciplinary—projects or must compete in a funding environment where obtaining a major grant, much less renewing it, has become a significant challenge even for the most established scientists. Although this would require a different approach to progressively evaluate the success of young faculty members, it would foster an environment that is not only better for women scientists but for science as a whole.

Scientific progress is best achieved when multiple viewpoints are both encouraged and fairly weighed on their merits. Universities, funding agencies and scientific societies will play an essential role in the development and implementation of systemic solutions that ensure gender-blind practices, encourage young scientists to tackle challenging problems and promote open communication and awareness. Individuals hold an equal responsibility in making progress and should challenge themselves to use scientific logic in identifying and questioning their own assumptions, biases and expectations. By actively engaging the scientific process in this context, we can look forward to the day when conversations about the careers of women scientists are only about the science. ■

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