Change the rules

Enacting structural changes to systems that reinforce existing gender norms is a critical step that we must undertake in academia.

The end of this month will see the announcement of the winners of the inaugural Nature Research Awards for inspiring science and innovating science (go.nature.com/2OgtxqA). These awards are intended to celebrate and support, respectively, the work of women in science and the efforts of those people and organisations encouraging girls and young women to be active in science, technology, engineering and maths (STEM). Also this month, 9 October marked Ada Lovelace Day, an international event celebrating the accomplishments of women in STEM (findingada.com). Events such as these are important and hugely valuable in highlighting issues of under-representation in STEM, helping to create role models and combating feelings of not belonging that contribute to the leaky pipeline in academia and industry.

Similarly, profiles of women in science[1,2] and 'Women In' events at conferences offer platforms for women to talk about their experiences and careers — to audiences of all genders — and to share the lessons that they have learned, so that we can move towards a greater shared understanding. The same notions extend beyond binary representations of gender, and equally to issues of ethnicity and sexuality.

All of these activities are absolutely vital and should continue to be encouraged and celebrated. Yet we must avoid the risk of framing the problem of gender bias in STEM (or anywhere, for that matter) as one that must be solved by female scientists. Women are not and should not be responsible for fixing this. Men have a critical role to play as allies; a role many of them are heavily engaged in. More can be done to raise awareness of gender issues among men — particularly those in positions of power who can effect change — and to help them to understand their own implicit biases.

At the same time, structural change is desperately needed to help break problematic paradigms in academia. Altering the structures and systems within universities and research institutions in light of gender issues is key. A recent announcement from the American Association for the Advancement of Science (AAAS) is very welcome in that regard[3]. The AAAS has introduced a new policy, effective from 15 October 2018, that defines sexual and gender-based harassment as a breach of professional ethics. This change clears the way for AAAS Fellows to be stripped of their fellowship if found guilty of such misconduct. As noted in the editorial in *Science*[3], more steps must still be taken but organisations can work towards bringing about a culture of equality, integrity and inclusivity.

There are many other important avenues for systemic action. Cultural change and gender training among managers (at a minimum) can help to challenge stereotypical expectations around workplace attitudes and practices. It can also improve the way that staff are recruited, trained and mentored, creating more opportunities. Hiring practices can be re-examined to combat disparities in recruitment, and promotion processes can take account of gender distinctions. For instance, some universities have departmental panels designed to assess the readiness of their staff for promotions. The panel's aim is to make recommendations to those candidates that they think should apply for promotions, recognising the propensity of women to not put themselves forward as frequently as men.

The way that academics are incentivised can also be changed to alter the status quo. Metrics and key performance indicators used to assess career progression should be realigned to support a more-level playing-field. The centralization of large pots of funding around single principal investigators typically reinforces existing power dynamics for men (who are more likely to be the funding recipient); funders can change this to create more opportunity and shift the paradigm.

Importantly, tackling gender equality in academia should not be limited to counting chromosomes. As Sarah Bradshaw discusses in a Comment in this issue, sex disaggregation alone will not solve the problem. Consider the example of peer review. Recent analysis has shown[4] gender biases at work in the success of manuscripts submitted for publication at *eLife*. The study found that all-male or all-female reviewer panels tended to accept a greater proportion of manuscripts whose last author (taken as a proxy for seniority) shared their gender; mixed panels showed a more equitable distribution. Similar effects were encountered when considering nationality. Encouraging diversity among peer reviewers can thus clearly increase author diversity among publications. Imposing diversity quotas on reviewer selection would then be seen as a positive thing to improve science. But if women — or minority groups — are under-represented among academic communities, then such an approach risks putting an additional burden on them. To paraphrase Bradshaw, the solution to diversity in publication success involves increasing the representation of women but it isn't really about improving their situation — particularly if credit for peer-review duties is not properly recognised. This is not to excuse journals if they fail to address the issue; they have an important contribution to make and should continue working on this problem. Rather, we should recognise that simply achieving equitable balance among peer reviewers — or among faculty or conference speakers — is not evidence that we have somehow fixed the reasons for their under-representation.

We all benefit from increasing diversity and inclusion, and all can contribute to achieving it. Celebrating the successes of women in STEM and recognising their struggles is an essential step on this path, and one that is having positive impacts on the world. But it will be a much longer path so long as the structures in which we are operating remain unchanged. ❐

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