

Women in STEM disciplines*

A consultation meeting held recently about women in the Science, Technology, Engineering and Mathematics (STEM) disciplines under the National Institute of Advanced Studies (NIAS) project scrutinized issues around the themes of organizational factors, policy initiatives, institutional hierarchies and differences, and mentoring, networking and leadership.

The participants were drawn from the Department of Science and Technology (DST), Department of Biotechnology (DBT), Technology Development Board (TDB), Council of Industrial and Scientific Research (CSIR), and National Association of Software and Services Companies (NASSCOM); scientists who were previously or are currently members of Task Forces or Committees set up by the Government of India regarding the issues of women in STEM; social scientists who have worked on these issues and women scientists from various organizations, including Central and State universities, National Institutes of Technology, and Government, autonomous and industry-based research laboratories across disciplines like agriculture, biological sciences, information technology, physics, mathematics and engineering.

The larger NIAS project seeks to document the experiences of women scientists in research institutions, universities, industry laboratories and entrepreneurial spaces, since scholarship notes that women negotiate diverse challenges in institutional, administrative, field/laboratory and family spaces to assemble basic conditions for research work¹⁻⁶.

Discussions about organizational factors centred round the role of institutions in enabling or eroding the entry of women into research, their subsequent career development and the responsibilities placed on them by institutional

action/non-action. These relational processes were explored more specifically in the contexts of recruitment and promotion, nomination to prestigious bodies like the Science Academies and committees, as well as spousal hires and child-care facilities.

The representation of women in committees has been an important step by the government to address gender equality. Discussions regarding women in committees revolved around the fact that provision and token representation would not suffice. The need to have critical numbers and women who can succinctly articulate their opinion is equally important. Women articulated the need for structures and mentoring systems that could permit substantive participation. Further, it is important to increase the number of women inducted into committees to enable the existing women representatives, to balance their multiple responsibilities, including advancing in their careers.

Participants debated the merit of introducing a deprivation points system similar to the one instituted at the Jawaharlal Nehru University (JNU), New Delhi for student selection. The JNU system works to ameliorate disadvantages that may accrue not only with respect to gender, but also caste and location of schooling districts. However, the constant fear of any form of affirmative action impacting the recipients adversely continues to be a point of contention, as witnessed by the participant responses. Secondly, there were mixed responses to maternity and childcare leave. While some expressed that this was a much needed relief to strike the work-life balance in Indian society, where child-rearing largely remained the responsibility of women, a few were of the opinion that the reduced paternal leave affected men scientists who wanted to take family responsibilities more seriously.

Outlining the process of selection for academies, the participants discussed the possible reasons for the small number of nominations of women S&T professionals. Women Academy members may need to walk that extra mile to increase their representation in the pool of nomi-

nations to the Academies. Participants conceded that the Academies are still a highly homogeneous group with most sub-groups severely under-represented. However, under-representation of women in the Academies cannot be compared with ethnic under-representation. Efforts to increase the diversity of Academy fellows are vital.

Institutional hierarchies and differences, which define the formal spaces of science, have been an important axis along which gender differences continue to exist. The important challenge for India is bridging hierarchies between science institutions and universities. Building synergies and creating S&T hubs by inter-linking institutions within a geographical zone may be an idea to experiment with. Building credibility from the margins will require revisiting the definition of merit that will also value capabilities and skills of the scientists from the margins.

Importantly, the consultation drew focus to the complex and intrinsic relationships between mentoring, networking and leadership-building among women S&T professionals. The consultation drew on the experiences of the formal mentoring practices of Indian Women and Mathematics (IWM), a network which provides a platform to raise awareness about current research in mathematics and opportunities to meet other women mathematicians, especially for those living in small towns. Similarly, the University of Baroda experience of inter-generational mentoring pointed to the complexities of mentoring. Senior faculty, as they moved up in the hierarchy, took time off to mentor young girls in a challenging cultural context where they were married off early. The challenge is greater in universities, where a research is the 'poor cousin' of institutional research, which is reflected in its low-risk research, lower funding and subsequently low rewards and recognition. Segregation and discriminatory practices that are seemingly rational favour men and work against women scientists.

Women leaders in S&T discussed their experiences of moving from isolation to

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networking, and the changing role of mentoring to provide support for young leaders. While experiences of senior women scientists and engineers could be traced along a continuum, they did not fall into a linear pattern or simple explanation of women travelling the untreaded path of leadership. Veiled hostilities at home and work spaces are important signals to be recognized. The low aspirations of women are often cited as the reason for their absence in leadership positions, but participants suggested that hostile environments actively worked to erode their leadership aspirations. While mentors may be from a different disciplinary field and could also be men, it is important to constantly reflect on whether mentoring is helping one face the challenges in his/her career. Patriarchal parochialism in State Universities is another important challenge and requires a different set of skills. Meanwhile, 'return to work' programmes adopted by IT industries underscore that one size does not fit all and that multiple vectors require attention. The group suggested that practical, inter-generational, interest-convergent models are useful in the Indian context.

Leading the NIAS project, Anitha Kurup argued for a shift in policy-level conceptual orientation from providing opportunities to seeking accountability in the form of outcomes. Women scientists are a heterogeneous group and there is a need to unpack the culture of scientific organizations by focusing on their practices and processes. Efforts to document

and analyse the societal changes, including changing family structures and gender roles will continue to be as important as working and building alliances with men.

The following are some of the practical suggestions reiterated at the meeting. It is unfortunate that the same relatively simple recommendations made by others^{1,3,5} have to be repeated. However, these are yet to be addressed. This gestures to the marginal focus accorded to the concerns of women in STEM.

Some of the important recommendations are:

(1) Institutions to mandatorily collect, analyse and make publically available their gender data.

(2) Time-bound recruitment policies to reduce gender gap that have funding sanctions attached in case of non-compliance.

(3) To prevent maternity leave impacting promotion, the need to exclude maternity leave from residency requirements may be a useful consideration. Building excellent childcare centres in and around the organization, and reviewing paternity leave policy could be useful.

(4) Invite more than equal women to conferences to account for dropouts and ensure equal representation. Even if women decline once, invite them again. Childcare facilities in conferences and relaxation of DST's exception to travel on non-Air India carriers may increase the participation of women in such events.

(5) Sensitize men about zero tolerance for gender bias on committees. Mentor women to be assertive and polite at the same time; inspire them to take up leadership roles. Networks similar to IWM that cut across disciplines and institutions are useful support mechanisms.

In conclusion, it has been suggested that collating and analysing the diversity of women's responses to similarly challenging situations could perhaps take this conversation forward in a more systematic manner.

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