

Women in Science : The Indian Scenario

Science and scientific research remains an extremely male-dominated field. India is no exception to this trend. Only 25% of women are in scientific faculty in universities across the nation. Women make just 14% of the nearly 3 lakh scientists employed in R&D fields in the country, compared to the global average of 28.4% (a dismal number in itself). In 2017, of the total applications to the various IITs, only 10% were women. Only 5% of fellowships awarded by the Indian National Science Academy, Indian Academy of Science and National Academy of Agricultural Science were to women. These numbers highlight how divided the scientific community is on the basis of gender. It further adds to the public perception of science being a male dominated field. The gender divide is worrying in science for a number of reasons.

Yet, when the issues of such a gender rift in science and technical fields is brought up, the response is often a defensive one. At some point or the other, the argument is made that women are “simply not smart enough” for science. Not only is this biologically unfounded and not based in facts, it also ignores the struggle that women had to go through historically to obtain a scientific education and progress in technical fields.

Scientific fields may be objective and based only on truth and facts, but scientists are still human. And to be human means to have some amount of bias, no matter how small. All of us are conditioned with some amount of bias, due to the way our society has been built. The foundation of our current reality was historically based on suppressing certain voices and favouring others. And although we may have moved past that ideology today, we still carry some implicit ideals about the world around us due to it.

This systemic bias and cultural conditioning play an important role in women electing not to go down research paths. Statements like “women are simply not smart enough” may be objectively false but do fashion a culture that leads to women being hesitant to choose science and/or research-oriented fields. Other reasons include science involving a certain level of long-term commitment with is in contrast with societal expectations of women getting married and leading families – the so-called “biological pressure of a ticking clock”.

That isn't to say that women haven't made it – there are various examples of bright scientific-minded Indian women who have broken this glass ceiling. Examples of some prominent women in science today include-

- **Nandini Harinath** : Nandini is a rocket scientist at the Indian Space Research Organisation (ISRO) Satellite Centre in Bengaluru. Inspired to take up science by Star Trek, Nandini has worked on 14 missions in her 20 years of work. She served as the Project Manager, Mission Design as well as the deputy operations directors on the “Mangalyaan” mission.
- **Rohini Godbole** : Rohini is an Indian physicist and a professor at the Centre for High Energy Physics of the Indian Institute of Science in Bangalore. She has worked for over three decades on Particle Phenomenology, and is particularly interested in exploring the Standard Model of Particle Physics (SM). She is an avid science communicator, often motivating young students. She routinely encourages women to take up science and has edited “Lilavati's Daughters”, a collection of biographical essays on women scientists from India.
- **Sunetra Gupta** : She is currently Professor of Theoretical Epidemiology in the Department of Zoology at the University of Oxford. She sits on the European Advisory Board of Princeton

University Press. Her research interest involves malaria, HIV, influenza and bacterial meningitis. In July 2013, Gupta's portrait was on display during the prestigious Royal Society's summer exhibition along with Madam Marie Curie. Gupta is also a celebrated novelist, having won the several prizes for both her English and Bengali novels. Her novels have won the Sahitya Akademi Award, Southern Arts Literature prize, etc.

- Aditi Pant : The first Indian woman to visit Antarctica, Aditi is an oceanographer. She travelled to Antarctica, as a part of the 1983 Indian expedition, to study geology and oceanography. She was inspired by Alister Hardy's book *The Open Sea*. She pursued her MS in Marine Sciences, with a US government scholarship, at the University of Hawaii. She then returned to Goa where she worked at the National Institute of Oceanographer.

While these women are influential in their own right, there is only so much they can do to promote scientific attitude amongst young women today, when society is so unfairly balanced against them. The problem doesn't lie with India alone – this under-representation of women is seen all around the world. Public portrayals of researchers are mainly men. In popular culture, most scientists are men. A default has been unjustly established, and that's what we need to fight against.

The process of scientific development, innovation and discovery can only benefit from diversity, gender being just one component. Science and scientific research can only benefit from multiple perspectives and views of a problem. Diversity in all fields needs to be encouraged, and especially in gender. Given the fact that women are 50% of humanity, their intellectual potential is something that we cannot afford to ignore.

At the end of the day, science is shaped by the culture around it. The only way we can promote diversity in science is by fostering an inclusive community, that supports women and helps them overcome the maybe unnoticed biases they encounter on a daily basis.