

Towards an Indian Feminist Science Studies?

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Feminists and Science: Critiques and Changing Perspectives in India.
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The book under review¹ is a thoughtful and passionate, and occasionally angst ridden, contribution to the field of feminist science studies. It may even be considered a brave book, depending on which side of the fence you are.

Science studies looks into, among others, the socio-cultural and historical factors that lead to scientific discovery, and into the everyday practice and rhetoric of science, and related technology and policy issues. All scientific work is, at the risk of simplification, in greater or lesser measure, socially and historically situated and mediated and there is no such thing as 'objectivity' in its pristine sense, whatever that be. Hence you have expressions like 'all observation is theory laden' and 'all theory is, well, value laden'. Naturally therefore, the 'science' of science studies stands accused/imbricated of subjectivity among debated claims of objectivity. Indeed subjectivity is celebrated by many scholars of feminist studies. To the best of the writer's knowledge, feminist science studies (except possibly in a couple of chapters in these volumes) has focussed mostly on modern science – alternatively called 'Western' science. That itself is a subject of debate, as to how modern science can ever be universal, if it were primarily a Western white male imagination?

Contesting a Masculine Enterprise

Around the mid-1970s, the field took an interesting turn with the entry of contemporary feminists and feminisms. These feminisms were often supplanted with post-modernism(s). Feminist science studies have tried to look at the field with a feminist lens. The terms 'feminist'/'feminisms', etc., and probably even 'lens' do not arguably have a consensual definition, but there is a broad understanding, a kind of common denominator, on the subject matter of the terrain. That is, science (by which term, technology produced by science is sometimes included, and is sometimes not) is a biased, largely masculine enterprise, driven by masculine notions and world-views of dominant, hegemonic male groups, and is therefore hopelessly gender-biased. If half of humanity is not involved in this enterprise, how can the practice of science make claims to gender equity and objectivity, however they may be

¹ Unfortunately eSS editors could locate only Vol 2 of the book when they requested the writer to review the book.

defined? Feminist epistemology – according to one school – provides stronger objectivity to science and does not deride objectivity, per se.

Nobody – that is people who have been exposed to a certain kind of progressive discourse – in his/her right mind would question the fact that life and everyday living can only get better with active involvement of women - and indeed members of the whole continuum of gender from female to male - in the practice, research and articulation of science. Our perspectives on culture, development and progress would be definitely better informed and broader by real efforts at ensuring gender equity, equality and sensitivity.

Proof of the Pudding?

An obvious question that strikes sceptics is the proof of the pudding of feminist science epistemology (FSE) – some say proof is a subjective experience and there is no pudding or porridge and there are no Goldilock stories. Nevertheless, does it (FSE) lead to new discoveries or better understanding of existing scientific readings of nature? While the answer to the question is still a work in progress, something along these lines was asked of Evelyn Fox Keller, one of the early thinkers of the field, at a seminar in the early 80s:

Feminist scholars of science have worked to recover the lost contributions of women to science, to examine scientific theories of women's nature, and to study the ways gender considerations have affected both the practice and the technical content of scientific theories, norms, and methods ... One of the greatest challenges has been to show the influence of gender considerations on the technical content of the physical sciences. To dash cold water on the feminist hunch that no area of science is immune to gender politics, doubters often ask, "What could gender have to do with something like Boyle's Law?" Boyle's Law of Gases, classically expressed as $k = pvt$ or $p_1v_1t_1 = p_2v_2t_2$, is supposed to provide an especially tough and resistant example because it is the mathematical expression of the scientifically established fact that (roughly speaking) the pressure, volume, and temperature of a gas are proportional to one another. The law says, for example, that if the volume of a gas remains the same, but the pressure increases, then the temperature of the gas will rise; if the volume increases and the temperature remains stable, the pressure will decrease.

Work for this book was undertaken following just such a challenge issued to Evelyn Fox Keller following a public presentation of the work for which she is now so well known. In the early 1980s, the Boston University Philosophy of Science Colloquium featured a two day session on the emerging field of Gender and Science. Keller's lecture was followed by a very peppy, occasionally heated question period in the course of which one person, finding his objection answered not only elegantly but rather thoroughly, changed course and ended with, "Yeah, but you'll never show that gender affects something like Boyle's Law!" This book is a response to that challenge. [From Elizabeth Potter's Introduction to *Gender and Boyle's Law of Gases*.]

The book mentioned above is Elizabeth Potter's *Gender and Boyle's Law of Gases* (Indiana University Press, 2000) and the above quote is from Potter's Introduction in the book. Potter's book is considered a good lam at doubting Thomases of feminist science

epistemology. “Boyle’s case,” according to Potter, “ shows us that the assumption that contextual values cause bad science, or conversely, the assumption that good science is value neutral, is false.” That is, depending on your perspective, your politics and values might stink but you may still produce good science. And value neutral science is an illusory goal.

Also, if you accept/believe in hylozoism, roughly a philosophy that matter has spirit/life, you may convince yourself, like the natural philosopher Linus, with an alternative hylozoic explanation of the data gathered by Boyle leading to his eponymous law (actually Boyle’s and Mariotte’s law). Boyle, of course, had problems with hylozoism, because his worldview was different, as also the particular strand of Christianity he espoused. Hylozoism in his time was associated with radical gender and class politics, and therefore defined by association, an early, if inchoate, feminist epistemology of science. Whether Potter’s work has satisfactorily answered the question of feminist science being able to produce alternative explanations of natural phenomena and even discover laws hitherto undiscovered, is arguably not clear. Probably her intention was more modest: to show that gender politics influence science and science is none the worse for it.

To be fair to the editors and contributors of the volume under the review, they have not brushed these questions of competing epistemic lens under the carpet, although, they may be termed as more partisan to the cause of feminist science cum epistemology than some of us would dare to be. The terrain is laden with many contested articulations in the byways of feminist science epistemology.

Feminist or Feminist Scientist?

In an interesting interview - among the handful reproduced in the book – there is one with neuroscientist and behavioural biologist Vidita Vaidya (VV) in the chapter titled ““Blue Flower Mentoring”” (p.72 ff). Some of the questions in the interview by the editorial team (GC, SK, UT) would be called leading questions in a court of law – but that is okay if you do not believe in privileging neutrality/objectivity:

GC, SK, UT: *Would you call yourself feminist or a feminist scientist?*

VV: I would call myself a feminist but not a feminist scientist. What is a feminist scientist? Is it the same then if you ask me are you secular or are you a secular scientist? I am asking the value of the adjective to the science?

Being feminist might influence the way I am as a person? Yes absolutely. Influence the way I do science and the practice of my science? No. In the way my being secular will inform my behaviour in the lab, in the much the same way my being a feminist will inform my behaviour in the lab.

VV goes on to say that her being a feminist might not affect the interpretation of her data set but if it has practical implications (‘relevant to humankind’) she might worry. “But I still have not understood how it changes the way you look at data”.

Indeed, after Hubbard, do ovaries and testes determine how and what science you do?

Epistemic Privilege

The question of giving primacy to readings by and of feminist science and epistemology – epistemic privilege – is one that haunts the book, even if unstated upfront, with some claiming epistemic privilege in strong to modest ways and some denying such a thing exists. Closely allied is the question of universality of women's experience and the contestations of whose experience to give primacy to in constructing feminist knowledge: the learnt-from-the-textbook expert (the specialist doctor), or the organically grown expert from the field (the dai), or the pregnant woman who is at the receiving end of both. It is clear, for instance, that the medical college setting, apart from being terribly gender blind, misses out a lot of useful tips from the field; but the field too, or people's knowledge – the site of traditional wisdom – cannot be uncritically valorised. One of the authors (Achuthan, Chapter 20) reads resistance into the grassroot experiences of the dai and the woman who solicits advice from both the dai and the doctor. Underemphasised in the narrative of aporia, the celebration of loss/fracture/trauma/perplexity, is the urgency to solve the woman's problem of safe delivery and prevention of her avoidable death or as in the aforementioned narrative in the book, definitive access to safer contraception. Because in grappling with practical problems of life and death, especially for a doctor/health professional, one perforce makes epistemic choices. The open mind of the interlocutors in the process often needs to interrogate their own openness. The midwife and the dai's traditional skills are important as much as that of the modern medical doctor in preventing the pregnant woman from haemorrhaging and becoming a statistic thereafter. No amount of standing high on any version of stand point epistemology, at this juncture, will do.

Some Other Themes in the Book

Chapter 21 by Madhumita Mazumdar ('Science and the Making of a New Nationalist Masculinity in Colonial Bengal') is an interesting reading of the 'great' scientist persona of the late 19th to early 20th Century of Bengal. Mazumdar's description of the scientists – the Rays and Boses – along with an approving Tagore, reminds one of the Shakespearean observation of the world being a stage and how these great persona strode along on the stage acting out their austere characters of Rishis purposefully bashing on regardless, even as they were doing science as a service to Mother India. There is only one quibble: if it was masculinity that was sought to be constructed in juxtaposition to the trope of the weak Bengali, the bomb throwing Bengali youth of those times would be a better example. These poor, real life scientific heroes would have hardly guessed that a century down the line, feminist science studies would have dissected their heroism as a construction, with suggestions of something put on, as contrasted to something genuine from within, to impress the public.

Chayanika Shah (Chapter 19, 'Body, Reproduction and Technology') in a wide ranging chapter, surveys the dangers of provider controlled contraceptive technologies and women's lack of control over their bodies. She is also angry that in all the history of the Nobel Prize for Medicine, no other intervention in reproduction but for the IVF (In-Vitro Fertilization)

technique was deemed worthy of the Nobel. Well, what do you expect from big science and big medicine practitioners!

In spite of the fact that women metabolise medicines differently than men, medicine safety and efficacy data are not analysed by sex/biology in a significant amount of studies. Women using hormone containing contraceptives and drugs (as in hormonal replacement) need special study. There is also very little study and understanding of drugs in severely malnourished and underweight women especially in diseases like TB, malaria, dengue, chikungunya, HIV/AIDS, etc. There is also very little study of drugs on poor, underweight people in general.

Chayanika Shah ends her anguished essay with the plea that there needs to be an active conversation on concerns related to control of the woman's body by medical science and technology, itself enmeshed with society, patriarchy and the pharma-medical complex. The C word, Capitalism, does not appear in the chapter as one would expect. Capitalism's gender-biased construction of science and technology leads to products that medicalise lives and commodify healing with its dominant focus on the bottom line, a fact aggravated by the endemic character of health markets: market failure. Medicine and biosciences, in general, are probably the areas where feminist science studies can have their maximum visible impact, both in the definition of problems, and the way scientific research is conducted inside the lab and outside. In epidemiology and evidence-based medicine, what constitutes evidence may need a proactive gender sensitive gaze and redefinition.

Chapter 18 is a mellow recollection of Dr V. Shanta's journeys in cancer treatment and care and her negotiation of societal norms and prejudices in post-independence India. It is not clear after reading the chapter, whether Dr Shanta's ethic of care owes its genesis to her biology. Most men, in feminist eyes, may be nasty and brutish – deservedly characterized as such – but one sees enough caring humans from all parts of the gender continuum so as not to essentialise sensitive care giving as something that 'naturally' comes to women. Enough counter examples within the Adyar Cancer Care Center itself are hinted at in the chapter.

Somebody may respond by saying sensitive feminists include men. That is nice. But why do men come out as mostly morons in feminist readings?

Construction of Genius

One cannot escape the feeling, ah paranoid male reviewer, across essays in this volume that all the delightful qualities of being human are appropriated as feminine aspects, meaning attributable to the female gender. For instance, the role of intuition, the leap of insight in discovering a theory or a solution to a nagging problem or the path-breaking, world view altering theory. According to the author (and one of the editors) Gita Chadha, in her essay 'Fingerprints and Erasures' (p.227 ff), knowledge production and creativity in science involves a 'complex erasure of intuition'. And this marginalization of intuition in the feminist interpretation is a 'clear indication of the gendering of science'. And "In this twist to the

process of gendering in science, the marginalized feminine aspects are recovered not in a female form but in the form of a male demi-god, the genius". This is a bit too pat a generalization, arguably after interviewing some fine minds in TIFR, who are also friends of the author. Both in first person and third person narratives of scientific discovery by the less gifted as much as the geniuses, and even in narratives of male (and female) practitioners of every science and technology, shying away from announcing to the world the role of intuition, is the exception than the rule – maybe not verbalized as such – and therefore giving the impression of erasure if at all. In fact, the high points of doing science or arriving at a diagnosis of a problem, is the intuitive leap, the feeling of communion with the universe. One does not have to be a genius to experience this. We regular human beings can access the joys of intuitive leap, if we are only open to it and some of us do unashamedly talk about it. But these are subjective views of the reviewer and he would provisionally defer to the author, as she in her scholarly meditations would have spent more time thinking about the issue. Incidentally one is puzzled by the recollection of TIFR researchers of chiefly Newton, Einstein and Feynman, as paradigmatic geniuses worthy of mention, when the last 400 years has been strewn with geniuses – certainly geniuses in math and physics, and many with well documented biographies and personalized writings of their journeys.

More Women in Science and Gender Balance

The chapter by Anitha Kurup (Chapter 25) has 'modest' goals: it calls for gender diversity in science and technology: the more-women-in-science-education-is-generally-good-for-everybody school of thought. In that sense, the phrase 'Engendering Science' used in the essay (p.292) may be a disappointment if you are looking for a way of setting up the stage for many other me-too Elizabeth Porter style interrogations of Boyle's and other laws. Maybe it will still happen. Maybe it will not. More women scientists may end up being grist to the capitalist mill. After all having more women scientists in BARC has not led to interrogation of its atomic energy for weaponisation programme. Many of these women are cut from the same patriarchal cloth or they are just your routine bread and butter survivors caught in an economic trap of survival and upward mobility who probably think feminist science studies is a luxury for the nation state. Or maybe, it is this humdrum life that will produce a feminist critique of a masculine quantum mechanics or a gender neutral narrative of blackholes or produce a gender sensitive number theory or topology. We await all possibilities without losing sleep. The world is not only queerer than we imagine, but queerer than we can imagine, to paraphrase Haldane. The only philosophical problem is the anthropocentrism of the whole exercise in a vast universe laden with alien beings in other planets.

Somewhat in similar vein (to Chapter 25) is the essay entitled 'An Inclusive Science and Technology Education' (Chapter 26). It is not very clear, after reading this chapter, how would one go about gendering the textbook and the classroom at some depth – that is beyond replacing in the text 'he' with 's/he' or 'they', and 'mankind' with 'humankind', etc. Some case studies of how the authors have gone about doing this may be more illuminating to the school teacher practitioner in search of light.

Constraints of space and partly limited competencies of the reviewer inhibit him from commenting on other seemingly interesting chapters – especially the essay on local knowledge of soil management (Chapter 16) and the one on science in architecture (Chapter 23). There is an interesting foray on Lila Majumdar's science fiction and gender and science (Ipshita Chanda, Chapter 24) but the reviewer has not read her (Majumdar's) works to comment on it.

Concluding Remarks

This is a pioneering book of essays from pioneering Indian scholars of feminist science studies. It is the reviewer's regret that he could not access Volume 1, but looks forward to reading it in the near future. The introductory essays by the editors are a must for readers, even if you have difficulty in agreeing with them or understanding them because of the technical language. Underlying the book is an under/unstated dilemma. Many authors – even the introductory essays – indicate their dissatisfaction with masculine science and Western science, the adjectives often conflated in various degrees. Then why use Western feminist scholars' lenses and standpoints in Indian feminist science studies?

Of course in the process, we need to reflect on the question: Is there an Indian feminist science studies way of thinking? With emphasis sequentially on certain words in the question: *is, there, an, Indian, feminist, science, studies, way, thinking*. AK Ramanujan did this exercise in a different context.²

The book could do with a good index.

²² A.K. Ramanujan. 'Is There an Indian Way of Thinking? An Informal Essay' in Vinay Dharwadkar, ed. *The Collected Essays of A.K. Ramanujan*, New Delhi: Oxford University Press, 1999/2006.