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# Women And Feminism In Science

## Reproduction and the labor of women

Women's bodies and biology has often been reduced to their reproductive capacities which goes on to show how this reduction has aided marginalization of women in social, economic and political aspects. This debate interestingly has garnered two major, yet almost opposite, opinions in feminist science studies. This highlights differences in feminist beliefs and that feminism is a broad range of movements and ideologies towards betterment of life for women. These ideologies do not have to be the same. Feminist scholars called to attention increasing medicalization of and recent laws passed in the US specifically Georgia regarding its 'abortion ban'. This shows a blatant pattern of the need to control women's bodies.

Some feminist scholars find power and beauty in female reproductive capabilities. These feminists are very much against reproductive technologies (birth control, IVF and the like) because they see it as desecrating women's bodies. Other feminists on the other end of the spectrum highly support reproductive technologies as their ticket to freedom from patriarchy and its oppression with the use of reproduction.

Feminists on the former end of the spectrum believe that reproductive technologies undermine women's reproductive rights. One such scholar named Janice Raymond claims that such technologies render women as objects of exchange, commodifying them. Raymond goes on to say reproductive technology is demeaning and a form of medical violence against women because it is intrusive and damaging. This raised the argument that reproductive technologies give women the illusion of choice and are in fact the patriarchal oppression system of which women are victims. This side of the spectrum claim that women's right to abortion is being diminished while the fetus is part of the body, as the fetus is more removed from the female body will these rights be further diminished if the fetus can be seen as an entity on its own?

Scientists and technologists were accused of aggressive marketing of the 'happy infertile couple that now have a chance to have a child' and exploiting the situation of infertility with the claim that it became a marketing ploy after these technologies were made and not the reason why they were made. The risks and success rates associated with reproductive technologies was also a point of query. To back their claim there was evidence of women in developing countries, e.g. Puerto Rico and Nigeria, being used as guinea pigs for experimentation of these reproductive technologies some of which had side effects.

On the other end of the spectrum on reproductive technologies, Shulamith Firestone advocated for reproductive technologies as a step in the right direction feminism. Her argument was that these technologies would "free of women from the tyranny of reproduction by every means possible". Firestone saw pregnancy and child rearing as a social and physical disadvantage upon women and the way to flip the script and make things level was for women to take charge of reproduction. She famously advocated for artificial wombs, IVF and gender selection in children.

There are also feminists that stay somewhere in the middle of the spectrum that do not see

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reproduction as a form of feminine power or a site of patriarchal oppression. Instead they stress that the female reproductive capabilities and the female body be an important aspect of student for feminist scholars to make the best decisions for women in a gendered world. Reproductive technologies have in essence expanded the picture of what a traditional family looks like today. It has made it possible for members of the LGBTQ communities to have their own children outside the option of adoption. It has also helped heterosexual couples that may have problems conceiving and/or incubating the fetus.

## **Gendered images and language**

This considers the critique of gendered (particularly patriarchal and masculine) language, values, metaphors and images in science by feminist scholars. This means that there is the prominence of ideas of masculinity and femininity in scientific discourse. Scholars have identified that gendered images and language have a significant influence on science. For example, it calls into question one of the obstacles that prevented women from being involved in the sciences early on. This obstacle being the theory that science needs to be objective and the female mind was emotional, but the male mind was objective and could set aside emotion. This is very obviously untrue as men and women alike have the ability to be emotional and objective. They are not mutually exclusive emotions. Such misgivings that females are subject to emotional whims have aided in marginalization of women in more than just the sciences. This also calls into question if science is truly value free because the language of science influences the content of science.

## **Challenging the boundaries between nature and culture**

Feminists have also critiqued science in its construction of environment and nature. Scholars have explored domination and commodification of nature which invariably led to environmental degradation and the exploitation of nature. Scientific language and images of nature as female have been used to justify the domination over nature and women by men of science. The imagery of nature in early times was that of a nurturing mother providing for an orderly and planned universe. This cultural construct put restrictions on actions that can be carried out on the earth by humans with respect to the earth. It was however no coincidence that just when the world was becoming industrialized, the female image of nature gradually shifted from the nurturing mother to an uncontrollable, dangerous and unpredictable entity that could cause violence and chaos. Nature needed to be portrayed this way to justify the domination and altering of the earth, e.g. mining and deforestation, to promote commercialization and industrialization of the times.

The study of scientific construct of nature has also brought to light nature-culture dualism and how it has functioned to allocate higher value or status to male-identified traits of culture and males and lower status and value to female-identified traits of culture, females and people of color. Environmental effect of pollutants on women's bodies have been studied by feminists in order to merge nature, science and women's health concerns.

## **Role of Capitalism**

The relationship between science and industry is one that feminists have critiqued. Study into this topic shows a pattern of science's involvement in the economy and capital. This brings to

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question the 'purity' of science as a practice.

"The increasing connection between science and industry is a recurring theme, the study of which has grown ever more urgent, in modern biotechnology, in genetic engineering, in consumer technologies, and in the growing surveillance of a security state. The making and selling of drugs, the rigor of studies, the conflict of interest involving researchers and entrepreneurs, the funding of science, a weakening Food and Drug Administration, and a politicized national science policy bureaucracy are all critical issues" (Subramaniam, 2009)

## **Knowledge and its production**

Feminist scholars have queried science in its ability to be objective and produce value free information. This raised the issue of accuracy and morality: that human scientists must, as a matter of duty, restrain themselves from imposing their expectations, generalizations and ideals in their work. It has however been shown often how social norms and paradigms make their way into theories and law. This is where feminist philosophers are most important as they delve into epistemologies of different scientific studies to produce new knowledge based on feminist thought and methods. Is it possible for science to produce completely value-free knowledge? Maybe not as science is written by scientists who are still humans with personal ideals, but the involvement of feminist philosophers can improve the objectivity of science.

## **SCIENCE, GENDER AND RACE**

Studies and works of feminists of color brings to light the issue of race which is usually brushed aside and overlooked in science and even feminist literature. White women personify the category woman, just as men embody the racial minorities categories. Where does this leave black women?

In the past as there have been 'studies' to reassert the inferiority of women, there have also been cases of the use of biological determinism to assert inferiority of non-white, particularly black, people. Phrenologists and craniologists of the nineteenth century measured dimensions, shapes, and bumps of the human brain and skull of different races and found that they categorized into 'types' could justify and explain different characteristics of the different races. They used the white European male as the standard for comparison being the pinnacle and the bottom being the proximity to apes which was black people. As most, if not all, of such studies have been refuted today, it is very evident that science could have been a lot more different and would have benefitted more if women and black people were involved. It was clear that anything was measured and manipulated until it fit the numbers and could be used to support their biases.

It is also evident that while black feminist studies are growing today, its presence in science is still minimal and was at some point non-existent. Pointing to the issue of slavery and segregation, the cause is clear. While white women were able to fight for feminism and their rights, black women had to choose between feminism, which frankly at the time did not take into account women of color, and civil rights. Black women chose to fight for the civil rights movement. Now that segregation has been abolished, black women are present in all kinds of fields today and although discrimination still exists, there will hopefully be more presence of black women in feminist science studies.

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## IMPRESSION OF FEMINISM IN SCIENCE

Feminism has brought about a truly remarkable progression in science. They have proven beyond reasonable doubt that most of science, even up to the twentieth century, and its studies were riddled with gender bias. Has feminism made impression on science? The answer is yes and the change is evident. In a sense, feminist sciences opened the discussion of absence of female data in health studies. Biochemistry was beginning to be aware of female health concerns in the late 1980s. Feminists pointed out several influential medical studies that omitted women completely, one notable one being the 1982 'Physicians Health Study of Aspirin and Cardiovascular Disease' performed on 22,071 male physicians and 0 women and the 'Multiple Risk Factor Intervention Trial' studying coronary heart disease in 15,000 men and 0 women. Even in studies where women were included, the male body typically represented the normal human; the female body has traditionally been studied as a deviation from that norm (Rosser 1994). The 1990 founding of the NIH Office of Research on Women's Health represented a triumph for feminism. Between 1990 and 1994, the U.S. Congress enacted no fewer than twenty-five pieces of legislation to improve the health of American women. (Schiebinger, 2000). This goes to show that the constantly pointing out and actively showing bias on the concerns of women finally yielded results.

Science will improve by an increase in awareness of biases and how they make their way into science. Evelyn Fox Keller suggests in her account of what gender-free science would be like 'it is not to be understood as a juxtaposition or complementarity of male and female perspectives, nor is it the substitution of one form of parochiality for another. Rather, it is premised on a transformation of the very categories of male and female, and correspondingly, of mind and nature. . . . A healthy science is one that allows for the productive survival of diverse conceptions of mind and nature.' (Keller 1986, p. 178).

The problem posed now is how to make scientists more aware of gender bias in science. Reconstructive approaches aim to cause re-evaluation of social institutions in respect to science. Perhaps it is the way science is being taught in schools, the way traditional families tend to stereotype daughters and sons into gender biased professions or how the media tends to enforce racial stereotypes, especially that of males of color as miscreants and thugs. These social institutions should also undergo reform in the chance that this evaluation yields negative results. The critical stances in form of feminist critiques of science has been a great contributor to uncovering gender and racial biases in science. This however needs to continue and expand to other field of science and technology e.g. engineering. Diversity in the sciences should not be ignored as it is evident that science would have progressed quicker had women and people of color been allowed to participate. This diversity does not just mean inclusion of different races but goes deeper to show inclusion of different perspectives that could bring a wealth of data to science. Perhaps science will be more objective if these approaches are followed. It can said that science too is a victim of society and culture and for science to effectively change, society has to undergo a massive change as well.

Feminism can typically be said to have two major goals in science: to bring women into science and to successfully embed feminism in science. Both goals are difficult to achieve but it is going to be easier to bring more women into science than to bring feminism into science. Feminism is still wildly unaccepted especially in developing countries and is seen almost as a form of terrorism with women having equal rights as the threat. Maybe in decades to come, people will

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come understand and even embrace the movement. To be a woman in the sciences is to be grateful for the path the ones before you toiled to create and yet to be aware that there are still paths to be created.

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