

Women and Biotechnology's Pledges: Colonial Legacy and Postcolonial Biologics

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ABSTRACT- Feminist science and technology studies have influenced our developing knowledge of sex, gender, and biotechnology for three decades. We tend to think of sex and gender in binary terms, which significantly limits our understanding of human variety as well as advances in science and technology. The Indian Genome Variation Project and transnational surrogacy are used as case studies in this article to examine how popular biotechnology views are reduced to binary stances that promote and oppose biotechnology as a solution for India's economic and social progress. The article contends that the effect of surrogacy and genomics on women and gender is much more complicated since they are situated within the broader geopolitical, historical, economic and cultural changes of postcolonial India. What is it about technology that makes it a significant source of future hope? Is it because of genomics' promise of excellent health that it has become the location for such promises? Why has India become a popular destination for transnational surrogacy and other forms of reproductive tourism? For this reason, the article makes a case for the social studies of science to show that technology and human beings are never really neutral. These colonial and postcolonial histories of science and technology should inform our understanding of surrogacy and genomics.

KEYWORD- Colonial, Gender, Genomics, Transnational Surrogacy, Women.

I. INTRODUCTION

Scientists explain how when people inquire about their work, they tell them they study gender and scientific problems, yet they are often questioned about what they have learnt about women in science in their renowned article, "Why it's hard for us to count beyond two." The majority of the population, she claims, continues to mix up sex and gender despite feminist explanations of the distinctions for decades. In her complaint, she regrets our inability to go beyond the number two. Binaries are still around 20 years later. One of the most remarkable things about today's society is the prevalence of "binary" terms such as "male/ female," "masculinity/ femininity," "upper/lower classes/castes/races/ethnicities/sexual orientations/ability/disability/ability." While these categories may seem binary, they really reflect a

spectrum of individuals who fall under many different categories, if not a whole continuum[1].

However, the need to divide this richness into two lesser and superior groups endures. However, although there is some overlap when it comes to the words "sex" and "gender," they are not interchangeable and have a far more complicated connection than binary thinking suggests. Most people's conception of sex is based on physical characteristics, whereas gender now reflects the social connotations we've given to a binary sex system, such as the societal norms of masculinity and femininity associated with occupying male and female bodies, respectively. However, even in its simplest version, this formulation displays binary thinking, with sex denoted by biology and gender denoted by society. No matter whether human bodies are phenotypically binary or not, the notion of a huge machinery of gender distinctions remains despite this. We hear a lot about the differences between men and women in terms of things like aggressiveness, nurture, reasoning, rationality, and emotions[2].

Scientific assertions concerning difference whether they regarding sex, gender, color, class, or sexuality have persisted for decades in the social studies of science, as shown by decades of work in the field. Political elites frequently use biological differences to justify their superiority over the rest of society, while those on the fringes are seen as inferior. Science, it seems, is essentially a social institution that reproduces and repeats the systems of power in which it is situated. Science and society are inseparable in that they create and, in fact, are each other. As new information circulates between science and society and back, it arises from the circulation of old knowledge as well. Although science professes to be value neutral, it is inextricably bound up in power systems and therefore has an impact on the history of sexism and racism.

Science, as a strong institution, has been welcomed and used by social justice programmes and organizations. Increasingly, science is a contentious area, with progressive organizations and causes using it as a tool, and laboratory movements using it as a tool. The fact that science has been controlled by males and has evolved into a "world without women" should come as no surprise, given that women have historically been seen as lesser creatures. For as long as the world has had a

"persistent patriarchy," the interests of the wealthy have influenced scientific research, which is counter to science's more egalitarian nature. As a result of the development of science as an all-male domain, scientific methods, cultures, and knowledge creation have all been significantly influenced. To add insult to injury, race, class, caste, and sexuality have all had an impact on scientific advancement. As "the crown jewels of modernity," science and technology have played a crucial role in empire building and are still vital in today's globe. The sciences should be seen as "sciences of empire," and almost all contemporary science should be viewed as "research in a colonial setting".

I will concentrate on sex and gender in this article, although there are many ways to look at how science has influenced and been affected by other power systems, such as sexism, heterosexism, racism, caste, and so on. There is no such thing as a neutral sex or gender ideology; historically, characteristics considered masculine have been prized and overrepresented in the halls of power in comparison to those deemed feminine. These gendered concepts and ideologies permeate most areas of knowledge, including science and scientific knowledge creation, according to the social studies of science that have examined them. Sex and gender ideas influence our thinking in ways that extend beyond the physical body. Western science has traditionally been infused with masculinist goals, according to early feminist work. These objectives include controlling nature, developing reductionist natural science models, and extolling an illusory "objectivity" in our study of the world around us. The objective, analytical, reasonable, unemotional scientific temperament extols those who are detached from society and politics[3].

On the other hand, there is less focus on concepts considered feminine, such as less exploitative ways of living in harmony with nature, multidisciplinary approaches to knowledge creation, and subjective explorations of the universe. Men and women together constitute an essential resource for all humanity, according to feminists, and our binary system should be dismantled in favor of a set of principles that embrace feminist goals while also recognizing both the masculine and feminine qualities.

It's a special issue on "women and biotechnology" this time. Feminist research over the last three decades has shown that this is a far more nuanced subject than first seems. There are a variety of demographic questions that may be asked regarding the number of women working in biotechnology, as well as whether or not they are represented at various levels of the research and administrative spectrum. The participation of women in research may also influence the kind of study conducted. Beyond the presence or absence of women, we may also examine the gendered aspects of biotechnology. What impact have gendered attitudes and beliefs had on biotechnology's innovations? Biotechnology's objectives and beneficiaries are unclear. Have we asked ourselves the right questions, and if not, what are the consequences? Lastly, we may contemplate the ways in which biotechnology has impacted the lives of women in general. Have women benefited from this empowerment and improvement in their lives, or have they been

marginalized and their concerns ignored? The answers to these questions are intertwined[4].

In the words of Indian entrepreneur and Biocon Limited founder Kiran Shaw, "Today anything can be done with the technologies." Instead of saying "You're not carrying the world on your shoulder," environmental activist and scientist Shiva stated "Never forget that the Earth carries you." Our conversations about women/gender and biotechnology are dominated by binary views, as shown by the two sentences above: is it good or bad? Is it a step forward or a step backward? Is it beneficial to women or detrimental to them? Is it a life saver or a life slayer? Does this mean feminist should support or oppose this policy change? According to Kiran Shaw, technology has great potential as a tool for India's social development. Since she is a pioneer and a woman in the industry, she views technology as a place of social justice and trusts in its possibilities for women in India. According to her, technology has the ability to have a broad effect and be a benefit to India, therefore we should make use of it. Additionally, with the reach and creative possibilities that technologies provide, "everything is possible." According to Shiva, an Indian environmentalist and anti-globalization activist and novelist, biotechnology is harmful to people and the earth and is macho and masculinist. As a substitute, she suggests that we go back to India's ancient agricultural methods, which concentrate more on women and draw on the feminine prakriti to go back to a more human and natural "nature." Both individuals are well-liked in the pro- and anti-technology sectors[5].

It is not my intention to take a position that is either pro- or anti-technology, but rather to join the growing consensus in science and technology studies that technology is best understood as a site that is intricately interconnected with power and society rather than as a neutral tool that is subsequently appropriated by political actors for either good or evil. As a result, we must track and analyse how technology transforms into a platform for knowledge and social action, as well as how it interacts with other social forces and institutions.

A. Sexism, Women, And Science

When it comes to how scientists are portrayed, it has a direct connection to the country's power demographics. According to research, those who belong to socially dominant groups are more likely to pursue careers in high-profile areas. The historical and current marginalization of women and minority groups in the sciences reveals itself in an examination of the contributions of women and minorities in certain fields. The politics of gender and caste have a significant impact on Indian science and the people who practice it in India. Despite an increase in the number of women enrolled in undergraduate and graduate programmes, few of these women go on to careers in science. In addition, the underrepresentation of women in the sciences follows a trend across fields.

In India, like in many other nations, women outnumber males in the fields of physical and biological sciences as well as engineering. It seems from worldwide demographic trends that the status of a sub discipline has a direct impact on the representation of women. Higher-status and more economically significant fields tend to

have more male domination. The percentage of women in computer science, for example, was considerably greater when the discipline was starting out, but as the area has grown in importance and prestige, the number of women has decreased. However, despite the fact that computer science is an increasingly popular career choice for women, the percentage of women in the area has decreased, making it a distinctly "boy's club" now[6].

Women's under-representation is not due to biological inadequacy, as shown by this trend, but to socioeconomic and political reasons. Also, women and gender aren't universal concepts; they're shaped by factors such as politics, race and religion. Even though statistics on the demographics of Indian women scientists are few, the information that is available reveals a trend that is consistent with other countries. Women are still underrepresented in scientific and engineering professions across the board. Women are overrepresented in the biological sciences, but in India as a whole, women scientists still make up a tiny percentage of the population and are underrepresented among India's working women.

Why is there such a glaring omission? Various ideas contend that women quit the sciences for a variety of reasons, including a lack of interest, poor performance, or a hostile or unwelcoming atmosphere. Several decades of research have shown that women have always shown a strong interest in science and have consistently performed well in the classroom. To be sure, female scientists persevere in the face of discrimination and other obstacles because of their passion for the field.

The gender pay gap persists despite decades of programmes aimed at empowering women scientists. This is particularly true at higher levels. Women in science and technology face ongoing obstacles and systemic discrimination as a result of historical inequalities in the scientific community. Women in science literature have reported a highly "leaky pipeline," as women quit the scientific profession at all stages of their journey from elementary school to the highest echelons of research, to explain the under-representation. It is common for initiatives aimed at increasing the number of women in science to be predicated on "plugging" the pipeline's leaks[7].

Others believe that rather than "fixing" women to fit into the scientific culture, we should "repair" science itself to be a more welcoming place for all people to participate. Increasing the proportion of women in science does not, by itself, result in a society that is more progressive or supportive of women. According to research, women in science are active participants in the scientific endeavor, and as a result, they share many of the same motivations as males in the field. As long as scientific culture is built on a "world without women," it will continue to lie about these pasts.

We require structural change, where science's goals, methods for evaluating merit, promotion and advancement policies, and techniques of knowledge creation must adapt to reflect the various life histories, interests and demands of a diverse workforce. We need structural change. Due to this, current initiatives to raise the number of women in science are no longer focused on altering "women," but instead are aimed at making science a more welcoming environment for all scientists. In order to envision a more progressive and democratic

science, we'll need to "decolonize," "de-gender," and "re-gender" science.

As long as women continue to be disproportionately under-represented in biotechnological areas despite their presence, the effect of science on women will continue to outweigh their numerical representation. Biological sciences in general, and biotechnology in particular, have seen significant investment and attention in recent years. The twentieth century has been dubbed the "century of the gene." Biological warfare, from Bio-Nano-particles to industrial replicators, has penetrated virtually every aspect of society.

II. DISCUSSION

Biotechnologies include biological organism technologies, but the best way to understand their connections to gender is to look at human body biotechnologies. In the twenty-first century, our ideas about the human body and how it works have become more biological. According to a fascinating study done on biotechnology in India, the argument over genetically modified organisms has all the makings of a major "moral issue." That major moral dispute is sketched forth in the first two paragraphs of this article. Can biotechnology help us build a more democratic and progressive society? Are we looking at the dawn of a dystopian future for mankind as a result of this new technology? Biologists say biotechnology as a scientific enterprise in populist and technocratic imagination remains viable; but, as a component of the new democratic imagination dedicated to rules and regulations, as well as governance that takes into account the concept of risk, biotechnology seems vulnerable. We need a clear framework for biotechnology practice and a place for it in the broader discussions about innovation, property and the commons."

Biotechnology is best understood as an institution that has been built to support certain political and ideological goals, not simply as a collection of techniques that may be used for a variety of purposes. It is dependent on funding organizations, companies, or governments and their goals as to what biotechnology research questions are addressed and what inventions are produced. We may definitely envision feminist technologies, such as those that focus on the female body. However, the powerful have benefited much from biotechnology and much of modern science and technology as a whole. Feminist and democratic principles, as well as women's concerns, have been largely ignored in the field's creation and governance[8].

To demonstrate my argument, I'll use two completely unrelated examples: international surrogacy and genomic medicine. Transnational surrogacy is a rapidly growing business in India that commodifies the bodies of "individual" women and depends on a local and regional infrastructure to facilitate cross-border economic exchanges. Recent investments in the Indian Genome Variation Initiative Consortium (IGV) operate at the molecular level, are envisioned as a national database, and depend on national infrastructure and imagination. Other Asian nations have also embarked on similar initiatives, so India is not alone. Projects like this are well supported by the government, which establishes new connections between genetic identities and national

sovereignty. A growing "bio-nationalism" in Asia's expanding biotechnology sector is altering global genomics progress as Asian and other developing nations demand their "genomic sovereignty". Through the examination of such disparate examples, we can see the many ways in which modern biotechnology is envisioned as well as the disparate effects it has on both genders[9], [10].

III. CONCLUSION

Refuting the binary realms of nature and culture is a key methodological finding of feminist studies of science and technology. By defining the biological sciences as non-human life, we create the illusion of a universe devoid of humans, ideology, politics, and culture. Conversely, human culture persists in the social and humanities, a realm apart from nature. Why not reject the nature/culture binary? The word nature cultures were coined by scholars to reject the binaries of nature and culture and pay attention to the continuous flow of discourses, information, and ideas between them. Only natural cultures exist. Many feminists who oppose science, technology, and globalization argue that we need to rethink science, technology, and their connection to society. In this article, I examine two distinct biotechnology cases in India to demonstrate how gender politics affects and is changed by biotechnology, and therefore the lives of women. I use these two very dissimilar case studies to show how gender is deployed in very similar ways across macro- and micro-scales of research. In each, we observe how objective sciences and knowledge are intimately intertwined in postcolonial gender politics. Post-colonial biologics are therefore formed by the colonial legacies' gendered scripts, and then by the complicated political changes in independent India. Finally, biotechnology is an exciting area of research that has the potential to allow democratic and

progressive social ideals, but has instead been entangled in the nation's colonial and gendered scripts. But technological debates offer up new avenues for creativity and the development of a biotechnology that values women.

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