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FEMINISM AND SCIENTIFIC RESEARCH

Dr. Vipin Jain*

*Teerthanker Mahaveer Institute of Management and Technology,
Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, INDIA

Email id: vipin555@rediffmail.com

ABSTRACT

Reductionism and the mechanism were introduced simultaneously during the scientific revolution. These ideas were interwoven with many of the history of philosophy and science which resulted in study methods focusing on the tiniest parts of the nature. This combination of ideas is subject to strong feminist critique since it promotes biological determinism, restricts the options of researchers about issues and techniques and enables researchers to overlook the contextual characteristics of the phenomena they study. I suggest that the historical relationship between mechanism and reductionism is not essential, that this connection should be separated and in many instances already broken. The mechanical perspective of science should explain how things function without dictating techniques and approaches that limit the subjects of scientific research to their simplest components may be held by separating reductionism from a mechanism. Mechanism without reductionism emphasizes decent ways, thus creating conceptual room for a multitude of methods that may engage the world at a wide range of organizational levels. This diversity provides the door to a broad range of research methods, including feminist and gender-sensitive science.

KEYWORDS: *Diversity, Feminism, Feminist, Nature, Reductionism.*

1. INTRODUCTION

Modern science is a historical company founded in the 16th and 17th century. The "fathers" of this intellectual honor continue to exist: Francis Bacon, Rene Descartes, John Locke, Galileo Galilei, Sir Isaac Newton, Robert Boyle. They discovered a method to generate information that was amazing to describe the natural world. In her book *The Death of Nature* (1980), Carolyn Merchant points out that contemporary science evolved and depended on a shift in nature's metaphors. Merchant believes that contemporary science has taken Mother Nature and made it a machine and that this mechanistic worldview enabled new methods of seeing order in the intricate relationships between nature and cultivating a position of control and dominance over both women and the natural world.

As the new technique and metaphor evolved from "founding fathers' baby inventions" into strong social institutions, researchers believe women intellectuals are systematically excluded from contemporary science. The birth of modern science included the dominance of the world of men and the exclusion of women. Can there be a feminist science(s) like that? In the past 20 years, the development of answers to this issue has become a cottage industry.

Scholar add to this literature an examination of the connection between mechanism and reduction[1].

Scholar believes that we must distance ourselves from destructive and discriminatory reductionist ideologies from the notion of a mechanism and adopt a diversity of scientific methodologies, rather than just tolerating them. Reductionism and the use of a multitude of techniques, which include the world at many levels of organization, may provide room for feminist methodology and for a more inclusive science between women and people with previously underrepresented viewpoints. The methodological pluralism I support includes a diversity of scientific techniques and approaches that identify causal patterns at various organizational levels.

1.1 Mechanism and Strengths Reductionism:

Reductionism is the opinion that objects in the universe are hierarchically organized and cause happens exclusively at the lowest levels of this hierarchy. Reductionism is a connection between parts and wholes that explains wholes as their components, and thus a reductionist scientific approach concentrates on the description and understanding of a phenomenon by its parts. Reductionist perspectives vary from strong to weak depending on the organizational level, to which phenomena are eventually reduced. Strong reductionism supposes that the basic level is the actual things, the causes, the explanations and where methods need to be concentrated. For example, severe reductionism in biological research suggests that events should be reduced to their physiochemical components. Weak reductionism believes that wholesale components are the cause, explanation and methodology. However, it does not insist on these parts being the simplest or smallest feasible entities.

Researchers have pointed out that there are frequently various reductionist perceptions. Brandon distinguishes between ontological, explaining and methodological reductionism, while scientists distinguish between onto logical (or metaphysical) and methodological reductionism. Ontologically (who refers to the world's structure), reductionism implies that large things consist of smaller things and small things consist of little things, and so on, with causal relationships only occurring among the smallest functional components of a whole[2]. Researchers describe this concept of causality as 'bottom up' or 'inside outside,' which means that 'pieces of the whole and their interaction affect the behaviour of the entire thing, but never the other way around. It never occurs that wholesale characteristics influence their components to behave.'

In its weak and strong meaning, methodological reductionism requires us to seek the physiochemical foundation of biological phenomena, or to describe and seek to comprehend the phenomes in their component. Explanatory and ontological reductionism in the causal mechanical perspective of explanation are very closely connected. According to this approach, we comprehend things by demonstrating how they are generated causally.

1.2 Feminist Worries:

In view of the success of the mechanism/reductionism, what justifies feminist worries about this kind of science? There are numerous reasons why some feminist thinkers are opposed to the practice and production of science. I will concentrate on three of these concerns: the biological/epistemological issue, the cultural/historical problem and the problem of the determinism. These issues are linked in complex ways and these connections in future work should be considered more carefully.

1.3 The Problem of Biological Determinism:

Biological determinism (in relation to gender) is the opinion that appropriate sex relations are caused or determined by sexual characteristics. There is a close connection between mechanical reduction science and biological determinism. In feminist discussions on the relationship between sex and gender, in feminist criticisms of biology for sex differences, and

feminist criticism of animal behaviour and sociobiology, she has been extensively treated. This relationship is due to the reduction in the assumption that the cause acts from a lower organizational level upwards to higher organizational levels.

This implies that biological reasons are the sole causes, or at least the leading causes, of female behaviour. With this kind of tight, unidirectional causal connection the higher level events are viewed as having lower level phenomena such as genetic or hormonal influences, for example. According to this reasoning, as long as the phenomena of the lowest level stay unchanged, the phenomena of the highest level will remain unchanged. Specifically, a healthy woman can't help but nurture or tend to be emotional rather than logical, or have anything of gender to name. This kind of thinking is problematic not only because it suggests that the search for political reform is fruitless in view of biologically established sexual disparities, but also because the sex and gender processes are not accurately explained[3]. While focusing on sex and gender as an object of scientific investment, these particular concerns regarding reductionism and biological determination are equally important for women as scientists. The findings of deterministic reductive analysis of gender and sex promote the cultural concept of femininity that calls into question the capacity of women to join the traditionally male scientific field. "With these biological deterministic reasons valid, a 'woman scientist' should be in contradiction in terms," says Sandra Harding.

Take into account the gender features argued by reductionism to be biological in nature and therefore static, and ask which ones tend to be associated with women and associated with men: mathematical and spatial ability, rationality, competitiveness, compassion, abilities to listen and to nurture, sensitivity to the mind and cooperation. The four initial features relate not just to conventional Western masculine concepts, but also to traditional scientific concepts as objective, dispassionate and competitive. In at least two ways, this clash between the traditional feminine and scientific values may be improved. On the one hand, the link between male values and science may be broken, demonstrating that this connection is already mythological or unnecessary. Researchers, for example, say that she could carry out her Nobel Prize winning work in transposition via her personal, emotional link between Barbara McClintock and the individual plants, cells and chromosomes of the maize she examined.

On the other hand, one may also argue against the reductionist outlook, which leads to biological determinism and therefore the creation of an essential character for women (and men). Addressing male-gender concepts of science is an essential job, but I would want to address the problem of reductionism and determinism which contributes to the hardening of cultural preconceptions about the intellectual nature of women. If non-oppressive scientific research on gender and sex is to be carried out, scientists need to confront reductionism[4]. One approach which protects both science and improves the consequences of stereotypic findings on women's nature is to claim that research "shows," for example, that women lack spatial skills- it is just poor science. Studies that demonstrate that women have less ability than males to do science-related activities, for example spatial or mathematical skills, were generally rejected due to static issues and incorrect assumptions. What the "poor scientific answer" refers to must be apparent. If the statistical analysis is badly performed, the study presumably may be reworked more clearly and generate better results.

In contrast, if it relates to beliefs about the nature of cause, such as disregarding or dismissing the presence of social factors at a higher level, the "Bad Science Reaction" is more extreme since it exposes a fundamentally reductive worldview. Although these specific findings are justified, the issue of reductionist determinism still remains. So long as one assumes that the cause only operates from the bottom up or out, greater levels of gender are therefore dictated by lower levels of gender-related phenomena[5].

1.4 Hormones for Behavioral Sex Differences:

Significant feminist study of gene and hormonal research have been carried out as reasons for behavioral sex differences. The function of masculine prejudices in this area was examined and utilized as a case study to demonstrate how various types of values affect scientific activity. In her book *Women, Feminism and Biology* (1986), researchers examine the issues that reductions in the function of hormones in developmental biology have created. The study of hormonal influences on the development of sexual behaviour in rats is one example. These rat studies are not only an intriguing example of animal kingdom sex studies, but also significant since animal study studies are prominently used in research into variations in human sex, especially in scientific investigations of human sexual orientation[6].

Prenatal and perinatal hormone levels in the early model of this system, which researchers dubbed the 'linear hormone model,' are believed to be the foundation of behavioral sexual differences. The hypothesis is, that a gene on the Y chromosome initiates test development and that the hormones produced during the crucial developmental period influence the formation of the rat brain. The presence of tests and hormones they produce is believed to cause the male brain to develop to 'stereotypical' male sexual behaviour such as mounting; if the male brain does not carry out tests and hormones, it develops so that the female can conduct "stereotypical" female behaviors such as lordosis (when the female arches her back and raises her rear, presumably to solicit mounting). Researchers note that in this explanatory model, a "unidirectional and irreversible sequence of (biochemical) processes" is postulated[7].

2. DISCUSSION

Whereas a reductionist method of research leads either to a strong methodological monopoly or, if mechanisms and reductionism are torn apart, to a weak privilege of low-level methods, mechanistic science opens up to a plurality of methods that can be used to research nature at a range of organizational levels. The interactionist model offers a very mechanical account for the evolution of sexual behaviour, which is in keeping with the ideas of mechanism of Salmon, Darden and Craver. It shows how the development of sexual conduct operates both as regards the components of the behaviour in the organism and as regards the mechanisms both internally and externally to the organism via which the behaviour. This paradigm is pluralistic; it does not disregard or exclude the causative impact of genes and hormones, but also does not favor, over higher level causes such as social influences, these low level causes[8]. Social and genetic factors show causal regularities and productive processes. Very varied methods are needed to discover genetic effects and social behavioral influences. The interactionist perspective needs methodological diversity in order to clarify causal impact at these many levels of structure. It represents an example of an approach in science that produces results that alleviate many feminist concerns about the linear explanatory model and can be used to counter one of the most central and significant feminist critiques on biological science, biological determinism, because of the explicit inclusion of higher levels and social factors.

A perspective of the mechanism unimpeded by a priori reductive assumptions enables us to deal with the previously stated three feminist concerns. The probability of biological determinism is created by the belief that biological factors are the only or main determinants of sexual behaviour, which are low-level and unidirectional. This is supported by non-reductive, mechanistic methods such as the interactionist model. Including environmental and social variables and the explicit focus on their interconnections implies that high level phenomena are not controlled only by heredity or hormone states. Change in these high-level phenomena may be caused not only by genetic changes, but also by social or environmental changes[9]. The interactionist model provides an insight into how the methodological/epistemological issue is avoided by the non-reductive process. Although a reductionist

viewpoint encourages scientists to concentrate on phenomena with low causal regularities, a mechanistic approach is not necessary. An example of a mechanistic approach to the involvement of high-level causes in the explication of complex phenomena is the interactionist model. I claimed that methodological pluralism is a mechanism without reductionism.

Studies of low level phenomena may be much simpler to perform, but at least part of the rationale for this is because techniques involving the world are important in research such as physics and molecular biology in terms of their smallest pieces. Reductive techniques have been refined and taught over lengthy years in fields like these. A focus on mechanisms without reductions offers a way to reevaluation disciplines like as ecology and evolutionary biology that have given mechanical information on complicated ecological and biological processes for a long time. Mechanism without reductionism enables a diversity of research styles and methods. With any complex interaction of factors, it may turn out that some women approach research differently than most males. One of the most frequent features in female laboratories is that they tend to take a more textual and comprehensive approach to their job. It removes numerous accusations that such work is not scientific. This notion of mechanism. A multiplicity of techniques, such as those that are inherent in the interactionist model, will open the door to researchers choosing a methodology that best fits their political objectives and not just the topic of study[10]. The approach that is developed as a consequence of pulling mechanisms away from reductionism may allow feminist researchers to look at gender-based problems from a viewpoint that can ease past injustices or address previously neglected areas of study. Finally, research that appeals to most women tends to be seen as the science of "low status" or "softer." This method provides us with an intellectual foundation for the reevaluation of these disciplines. It does not only imply evolution is not reductionist that it is less scientific or even less mechanical.

3. CONCLUSION

Carolyn Merchant's thesis was that a mechanical view of the universe prepared the way for a cultural philosophy of dominance and control, both women and the environment. The separation from reductionism may help alleviate its legitimate worries. A reductionist position influences the way we view the world. If the techniques used to learn about the world are to divide our things into parts, the impacts that change these components has on the whole easily may be overlooked. It also encourages us to ignore the context in which we do our study. This is just the myopia that represents a lot of reductionist science's achievement, but it also made feminists worry. This approach to the environment and health care in parallel has led to the abandonment of a more holistic, contextualized perspective, and it has not helped us solve our current environmental problems or to create an empathic medical practice. A science that enables higher level and inter-level processes makes study feasible which focuses on context and complex causal circumstances.

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