Women and Technology in India; A Philosophical Discourse

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Abstract- Women as a class are oppressed and subdued by the hegemony of social patriarchy. Gender concerns and discourses service within the development bureaucracies dominated by men. The continued male dominance in science and technology is due in large measure to the enduring symbolic association of masculinity and technology by which cultural images and representations of technology converge with prevailing images of masculinity and power. The use of technology is always discriminatory. Women in technical roles often feel that the skills and feedback they bring to their jobs are not valued technology and development, are considered gender-neutral. Women are forced to seek employment in other areas which may have no relationship with their original experience, expertise and interest within the Masculinity- technology association, one can discern a series of highly gendered dichotomies. Most obvious of these is the distinction between being people focused and machine focused. This article is an attempt to analyze the role of family & society in masculinizing technology and how society is using technology as a instrument for 'engendered' bise. It will focus on the fact that how ideological and conceptual differences have prevented significant progress. There is three section of the article first section will focus on the status of women, second section on gender bias in science and technology and the third section will through light an reason for gender gap in technology followed with conclusion.

I.   STATUS OF WOMEN

I would like to begin this article by thanking all the women pioneers who have struggled personally to prove that a women can get any job done.

In the course of Indian history from prehistoric to modern and contemporary time there were distinct stages of the rise and fall in the status and role of women in India. The recorded evidence found in a certain period and in a particular place / province has express opposite views about the worth, nature and importance of women. According to one school, a woman is the best gift of God to man. She brings prosperity when she is properly treated and respect, and is called Lakshmi, the goddess of wealth and prosperity. The second school of through holds the view that the best way to reach God is to avoid women[1]. The Status of woman is a complex question and has to be studied as an integral part of the socio-economic structure in which women live. The changes that have place in their position are a part of the process of transformation of a traditional society.

There is almost a consensus of opinion among great scholars of classical literature that during the age of Vedas (2500-1500 B.C) a women's status was equivalent to that of man. The position of women in Vedic period can be judged by the way in which the birth of a girl was received. None of the hymns of Rigveda considered the birth of a daughter as inauspicious. But we find prayers for the birth as a son in Atharva Veda which says, "The birth of a girl,grant it ealsewhere; here grant a boy."[2] We do find a frequent longing for a male child in the Rigveda, while during the Vedic Age, there were some parents who would perform Kanyasraddhas on the second day of the moon for the blessing of getting learned and capable daughters.Girls were educated like boys. Like their brothers the girls wore the sacred thread (Upavita-Dharana) and used to pass through a period of Brahmacharya.According to Sarvanukra-manika there were as many as twenty women who are credited with having composed the hymns of the Rigveda. Many of them became distinguished poetesses and where honoured by having their peoms including in Vedic literature. Some of the high class women were highly educated and they actively participated in intellectual and philosophical discussions. Apart from a literary career, women entered fields of teaching, medicine, business, defence and administration.[3]

In the post Vedic Period, women were known to take up teaching career. She was accepted as an Acharya. Some of the lady teachers were specialists in theology and philosophy, the most abstruse and difficult subjects. Women had the privilege of adoption. For instance, Vadharimati adopted Haranyashasta and Loppada adopted Santha, the daughter of Dasaratha.[4]With the lapse of time the position of the daughter also changed. During this period there was a gradual decline in women's education. Girls were not allowed to go to the houses of the preceptor or centres of education but were taught only by near relatives like father, brother or the uncle. Thereafter only the girls of rich and cultured families received religious and other training. As a result, there appeared a tendency to curtail the religious rights and privileges of women in general. During this period the desire to get a son to provide for the future became quite intense and daughters came to be looked upon as encumbrances.The discontinuance of Upanayana, the neglect of education and lowering of the marriage age produced disastrous consequences regarding the position and status of women. Early marriage became a hindrance in the education of girls. Women came to be regarded as being of the same status as the Sudra.Unjust and archaic social customs like child marriage, Sati and polygamy reduced the status the women to the level of mere goods or cattle. They were regarded as 'nari-sudras'. Altekar says that the period between 500A.D to 1800A.D was one of progressive deterioration in the position of women. In the history of India, these depressing days of total injustice, intolerance and inequality would remain as the darkest spots for ever. There were

varied and many reasons for the deterioration in the position of women. The only good thing that developed during this period was the recognition of certain proprietary rights for women.[5]

In Manusmriti we find two contradictory statements (i) Where women are honoured, there Gods dwell (ii) A woman is to be protected and sheltered all through her life by her male relatives – by the father during her childhood, the husband when a housewife and the son during her widowhood. The position of women in all other spheres, except the proprietary rights, continued to deteriorate in this period. Most of the causes responsible for the degradation of women during the last period continued to operate in this age also. The reasons that are responsible for the deterioration of the status of women in India were (i) patriarchal joint family system (ii) polygamy and the sati customs (iii) enforced widowhood, denial of the right to divorce and right to remarry after widowhood, and (iv) child marriage and the purdah system. Because of child marriages to much older men, there were increase in the number of widows. Both child marriage and the purdah custom led to low literacy rate among women. Their entry to social, political and religious functions was prohibited.

The British were the first who unified the country as a whole and were liberal in their thinking. They believed that rational thinking had to be the basis for all customs and institutions and customs and institutions not based on reason had to be done away with. Hence, during the British rule, Indian society faced significant medications. The British government worked slowly and succeeded in providing an alternative way of life for those who wanted change, by introducing a new type of economy, state structure, educational system and also by passing new social legislations.

For the upliftment of women in India several factors are responsible. The first one was the direct influence of the British, noted for their courtesy towards women and the second, the general awakening of Asians in the twentieth century. The political struggle for India's independence also gave considerable force to the feminist movement in India.[6]

The British introduced female education in India. But the system of child marriage came in the way of the spread of female education. Hence in 1929 they also passed the Child Marriage Restraint Act. This Act was also amended by the Acts VIII and XIX in 1938 and in 1978. This act restricted the evils of early marriage and increase in the number of girl widows. The Act not only prohibited the solemnization of child marriages but also raised the minimum age for marriage of girls to 14. Under section 5 of the 1929 Act, the marriage of girls below 14 years and boys below 18 years of age was to be penalized. The 1929 Child Marriage Restraint Act was also known as the sarda Act. Besides removing the evils of child marriage, it promoted female education. This led to the improvement in the position of the daughter.

Besides these governmental efforts, in 1917 Mrs. Annie Besant tried to promote women's education through the Indian Association. In 1920 the Federation of Universities of women was established and in 1925 the National Council of women started. Great personalities like Raja Ram Mohan Roy, the founder of Brahma Samaj, Ishwarchandra Vidyasagar, Dayananda Saraswati, the founder of Arya Samaj, Keshub Chandra Sen, Gopal Krishna Gokhale, Ramakrishna Paramahamsa, Swami Vivekananda, Padita rambai and other tried to bring out unprecedented awakening among women who were downtrodden and had been oppressed for centuries. During India's struggle for independence, thousands of women took part under the leadership of Mahatma Gandhi, Sarojini Naidu, Vijayalakshmi Pandit and Kasturba Gandhi were some of the unique women personalities.

Due to the principles of democracy based on liberty, a woman's role began to change towards greater emancipation from man's domination. The role of wife-mother was affected by this new freedom. In India, due to efforts of social reformers and social legislations, women were brought out of the confines of their homes.[7] The process of industrialization and urbanization and their share in the changes which followed.[8] It was the 20th century that brought about dynamic changes and new concepts which affected the status of women, giving them fresh dignity and importance.

But unfortunately gender biased laws are still prevalent. Women are still deprived of their rights. The 'Lakshman-Rekhas' still confines Hindu women. India is considered a country of male chauvinism. Male chauvinism has been taken so much for granted throughout the entire course of human and social evolution that no one even raises the question of the position of men in any particular society. It needs a brilliant perspective and acute mind such as that of Bertrand Russell to point out the steady deterioration of the male role in modern society, since almost all his functions have been taken over by the state. In contrast, the question of the position of women in any society is one that is often asked. Most veiled is it in the case of these societies which have just emerged from the feudal stage of social development in a sense. The UNO can be said to have put another nail in the coffin of male superiority by declaring 1975 as the International Women's Year, thereby attracting even more notice towards the status of women in present day society, a question that men would prefer to hush up. The justification of the UN decision lies obviously in the fact that women are still treated as more-or-less second class citizens in respect of many democratic rights. They have yet to taste real equality though of course isolated examples of women who have won a place for themselves in their society can be cited. Notably the names of Mrs. Indian Gandhi in India, Mrs. Thatcher in Britain, Mrs. Bandarnaike in Sri Lanka spring to one's mind. Not only have they demonstrated their quality with men, they have in fact established that women can prove more capable, given the opportunity. The last few decades have no doubt seen women coming out in the open and joining the mainstream of development of the country. Ever it is to be seen whether this has helped them in achieving a status for themselves, in the minds of people at large. Can we consider women in India now equal to man in status at least those who are working with men? No I really, don't think so this has been achieved. Women are today found in every field of man's working and several have even become economically independent but has even that enhance there status. The last sixty six years of the Independence of India, we have seen women coming out to be educated, to do jobs, to make careers, yet the perception that women are second to men has not been erased. Now thus it is time to study and analyze that anomaly that, though she works shoulder to shoulder with men, she still remain second why?

When examining gender bias, it is important to define and understand the term. Gender is defined by the American Heritage Dictionary as "classification of sex". According to this same source, bias is defined as "preference or inclination that inhibits impartiality; prejudice (American Heritage Dictionary 1983). Thus gender bias is separation of gender in a way which prefers one sex over the other. Gender bias in technology refers to preference for or favouring of one sex over the other in computer use and or access, software use and or manufacturing, and intenet use and content. As can be seen, gender bias in technology is a multifaceted and complex issue specially in India.

The gender gap exists between male and females in the use of technology was found in a 1994 study, it was found that in a grasp of fourth through sixth graders who were defined as "heavy" computer users, the ration of girls to boys using computer was 1:4 (Sakamto, 1994). This is only the beginning of a trend which reveals a gap between boy and girls that continues into high school, college and beyond "Girls' participation rates (in math and science) in elementary and secondary school have increased, but drop as women advance in higher education. Although girls achievement is approaching that of boys, a gender gap persist which increases with the grade level (Title IX at 25; Report Card on Gender equality). Many parents, educators and manufactures out there are indeed very sensitive to the issue of gender. They are making great strides to create equality in all area for male and female. On the other hand these are those parents, educators, and manufacturers shocked and surprised to realize that they are unintentionally separate signals about expectation for girls and boys.

II. GENDER BIAS IN SCIENCE & TECHNOLOGY

After the revolution of science and technology it was expected that male superiority will no longer work because science may revolutionized man's working and living environment so much that the old consideration do not apply. Now the task requiring tremendous physical energy can be performed by machines which can be operated by pushing a button, differentiation on the basis of physical strength are meaningless, but unfortunately for the women life is still the same. It is strange but true that computing remains a heavily male-dominated field even after thirty years of extensive efforts to promote female participation the gender gap and gender bias in technology are still a complicated issues. The issue is not about how many women are earning their Bachelors degrees in science, the question to be asked in how many of them are actually active in scientific research and how many of them are in the field of technology? Women earn more Ph.Ds then man in the humanities, social sciences, education and life sciences. It is hear warming to know that women now serve as a president of India.

But elsewhere, the figures are different women comprise just 5 per cent of profession in Math, 5 percent in Physic, 5 percent in Electrical Engineering. Women scientists form not only a very small proportion of women in India, but also a minor proportion all Indian working women. Most women scientists emerge in biology related fields. Even in these fields, their research is expected to be market driven. As a matter of fact, status of IIT Bombay shows that out of the total students persuing undergraduate studies only 10 percent are girls. Gender bias is made evident by the fact that only 34 women have awarded the Nobel Prize Since 1901 and only 2 in Physics.

In an analysis of 500 letters of recommendation for research, IIT's and clinical faculty position at a medical school, researchers concluded that recommenders often unconsciously describe candidates in stereotypically gendered ways. It was found that letters written about women compared with letters written on behalf of man, were short and more likely to lack basic features, such as how they knew the applicant, concrete references about the applicants read, or evaluative comments about the applicants traits or accomplishments. The researchers also found that descriptions of men were more likely than those of to be aligned with the critical job requirements research record and ability adjectives used to describe both male and female applicants were often based in gender stereotype ; men as successful and women as nurturing. Words like "Compassionate" were frequently used for women, while words like "accomplishment" were more often used for men. Grindstone words - adjectives describing applicants as hard workers – were also more often used for women than for men, implying that women may have strong work ethics, but men have ability. Word and phrase repetition leads to cohension and can be a persuasive rhetorical device when superlatives and status words (e.g. Outstanding, research) were repeated more often in letter describing men than women. Letter recommending women were twice as likely to include doubt raisers (e.g "it appears that her health is stable", "while she has not done") than letters written for men. Letter describing the positive qualities of men more often emphasized their rate as researcher and professionals, while letters describing the positive qualities of women more often emphasized teaching. The pronoun "her" was followed by "training", "teaching" or "personal life", much more often than was "his". Similarly, "his" was more often followed by "research", "skills" and "publications" than was "her" all shows that unconscious biases influence decisions and practices in ways that are beneath the surface of our awarness. From birth, we develop "knowledge Schemas" that shape over beliefs about people, events, and things. They are based in generalization or stereotypes rather than information about individuals or specific situations. Gender schemas can lead us to judge the same action or outcome differently for women and men. When this happen it is unconcious gender bias in action. Research shows that we become more aware of one's gender in situations where someone is the only person, or one of only a few, of that gender, as is the case for most women in it.

In the IT workplace, unconscious gender bias can mislead employers both male and female to make inaccurate judgments in hiring, performance, reviews and promotion. Experiments consistently shows that women and their work are misperceived as less valuable than man even when their demonstrated ability is identical. Women at all levels of IT have to work harder and often violate norms about famine behavior to build authority and demonstrate belonging. Women in authority positions are especially vulnerable to unconscious bias, perhaps because they are fewer in number than male leaders. Studies show that women more often suffer from unconscious bias when the number of women in an applicant pool is small; evaluators are under the time pressure, fatigued or needing a quick decission : or when performance criteria are ambiguous.

Former Harvard head Larry Summers had once angered feminist across the globe by suggesting that women may not have an innate ability to handle Science and Math. The theory has many takers in India too, reports the national task force for women in science that released its findings recently. Prejudiced mindsets, the burden of their family roles, and gender-biased administrators have ensured that women scientists and technologist remain a minority in the workforce. Though women make for 37% of science Ph.Ds, a depressing large percentage drop out of the workforce. Women are poorly represented in top post in most government departments related to science and not one of the 37 council for scientific and industrial research (CSIR) labs in the country is headed by a women. "Science and technology make for a demanding career and women often run into the glass ceiling. There are less than 20% of women in the faculties of research institutions and universities and less than 4% women fellows in sciences academies. Only a handful of them are in selection committees. According to Dr Mahtab Bamji who head the task force set up by the department of Science under the ministry of science and technology "there is no single women Bhatnagar award winner".

Gender bias in technology have actually comes up in the open when top scientists have made indiscreet remark. In 2005 President of Harvard University actually said that innat differences between men and women might be one reason that fewer women succeed in science and math careers. This caused a furore in the academic community. Gender bias is made evident by the fact that only 34 women have been awarded the Nobel Prize since 1901, and only 2 in Physics. I feel that there is no uniform and meritorious judgment because of gender bias. Even today, the process of reviewing being followed is the standard single blind review system, in which reviewers are aware of the authors name and affiliations, while authors are keep in the dark about the identity of their reviewers. As a result it makes it a loprided method where the knowledge of authors identity – gender, nationality, research institution, level of experience in the field can (and does) bias reviewer's opinions on the merit of the research.

III. REASONS FOR GENDER GAP IN TECHNOLOGY

Observation tells us about diverse group have diverse opinion about the reasons for Gender discrimination in technology in India. According to some women tend to work in male dominated environments and are therefore more likely to face difficulties in their workplace culture. Women in India are more strongly constrained by cultural norms and family commitments than male collegues. In certain areas and also in certain families, the lack of access to good quality education for girl child is a core problem which reduce the number of women entering the technological profession. Women certainly do not lack confidence and determination, but being in a small minority with little career guidance, family pressure, restricted in their time, socital norms, psychological pressure, it simply difficult for women to compete for resources than it is for men. But it is not the case that women do not succeed, there are example of many successful women in technological profession, but their success rests not only on their scientific talent, hardwork, confidence and determination but also on a combination of an enabling social background, family approval, financial support, social support and more importantly their scarifies in every spheres of life.

Women in India are more committed to their family then career. Primary responsibility for family care and domestic work led to time restraints, and lack of flexibility. According to an Astrophysicist of India "ultimately it is much easier to be a man in research this is a career that demands more than 9 am to 5 pm involvement it requires one to be able to cut off from other during certain phases of concentrated work and to be free to travel for conferences and workshops. Try doing that if you are a women running on India household with your elders (parents / in-laws) and young children. Yes you can refuse to spend hours in the kitchen cooking special festival meals and performing endless pujas, and refrain from attending all those relatives weeding and naming ceremonies, sacred thread ceremonies and first grain ceremonies and Grihapraveshams and Satyanarayana pujas and what not, and refuse to observe them yourself, but you may end up fighting your way all the time".

Direct discrimination, sexual harassment and intimation in the workplace which is faced by most of the women. Women are sexually as well as financially exploited by their peers and often discriminated and suppressed in their workplace. Self imposed constraints which is due to psychological pressure. These referred to women's internalisation of various aspects of their socialization as women, their apparent, lack of self confidence, lack of aggressiveness, and moreover lack of assertiveness. As these are psychological traits or behavioural traits highly valued in most competitive work place and a women who appears to lack them is unsuccessful in technological field.

The most important reason for gender gap in technology is levels of discrimination in education from the childhood. It has been observed that the birth of a girl child in India is not considered desirable by any family when on one side boys get going to the school at an appropriate time girl child are prevented from attending school or they are sent to relatively inferior school with respect of child. The Phenomenon is more pronounced in rural regions which are still deeply entrenched in ancient customs and traditions. A number of social constraints like lack of adequate security, economic notions about dowry etc are seen to be responsible for such prejudices and it would not be wrong to say that such prejudices are the main reason for entering women in science and technological field. Right from the beginning the female is forced to be depended be subordinate to her male counterpart, explain the every complaint and submissive of her to any authority coming her way. She too gets manifested as being dependent on every male counterpart. The girl is never really allowed to establish her own identity. Initially she is educated, subsequently not allowed to work and make her living too. She is always either a daughter, wife, or a mother, or a grand mother and not really her own self. Pre marriage nothing significant happens in an Indian women's life due to familial and societal pressure of marriage post – marriage too things don't work out due to an interplay of variety of societal and familial factor of child care, husband care etc. To succeed under such circumstances takes a great deal.

IV. CONCLUSION

Unfortunately, gender gap in the field of Technology is not limited to Indian women they are significantly underrepresented in information and communication technology (ICT) in most countries. In view of the growing role of technology in the world at the beginning of the 21st century in education, communications, occupations, and entertainment, and as a tool for solving the world's problems – women's low and decreasing representation is a major worry. Technology remains a heavily male – dominated field even after twenty five years of extensive efforts to promote female participation. It has been claimed that there is a growing demand for IT workers with leadership, interpersonal and communication skills in order to combat the general drop in worker retention and ineffective training.

There is a quotetation by a well known Nicholas D. Kristof, an American Journalist, author, open eyed columnist, and a winner of two Pulitzer Prizes and is widely known for bringing to light human rights abuses and social injustices, in Asia and Africa. I'm sure we can agree with him especially in connection with the way women are treated in India and particularly regarding the wife's role in society. Despite the economic industrial, educational, social development in India and the progress in communication and technology : women living in modern India still face many issues of gender discrimination which prevent them to succeed in their interested field. The married women face the braunt of it all as they lose even the little freedom they enjoyed before marriage in their parents home. All the women can recollect how they grow up as a girl or the way their sister or other girls they knew spend their childhood with parental restraint, rule and regulation? Either they have been a victim or they have certainly witnessed or hard stories of how the wife has been ill-treated by the spouse and her in-laws.

Yes, we are all familiar with the fact that women have been treated poorly in the Indian society and however modern Indians may claim to be, their personalized views traditions, superstitions etc do not make life easy for the wife in India. Though there are lot of improvement in the status of women, but they are still not seen as true equals by a large section of the Indian society. The evils of child marriage, the dowry system, restriction on education of girls, economic slavery, illiteracy, ignorance of their basic rights domestic violence, physical abuse dowry deaths, forced abortions, female infanticide etc are still prevalent making the women so vulnerable and victimized. India is still very much a male dominated society.

Women comprise 50% of the world's population. It is an anomaly that though they possess diverse capabilities and are of valuable service in various nation-building activities, had been relegated to secondary position by the modern society. They are normally referred to as the weaker sex, incapable and incompetent. Modern women have proved that are second to none in any area whether it is at home, where she rears children an does other duties as a housewife. Or it is outside home at their workplace in industry, media, IT, politics, technology administration / management, armed forces or civil services. They work shoulder to shoulder with men almost in all the areas. With changing times, the India wife has risen up to the occasion, has equipped herself with required skills education etc and is capable of doing her part, successfully managing the work both inside and outside the home (work place). But the unfortunate fact is that Gender bias in the field of science technology is still prevent in today's classrooms, home and society. What was once thought of as gender bias has moved into an updated term, gender inequality.

Many NGOs and advocacy group work both internationally and locally to support women scientists some of them are Indian women scientists association (IWSA) which is a voluntary non political, secular organization registered in 1973, under Society's Reg. Act. IWSA has ten braches all over India. The objective of IWSA is to develop scientific temple in society to promote understanding of economic and social problem of women with science education and to be a representative body for women working in natural and physical science, including applied sciences, like engineering and medicine. The Agharkar Reseach Institute (ARI) is an autonomous, grant in aid research institute of the department of Science and Technology (DST). The Institute is committed to promotion of science and technology with emphasis on high standards of research and development activities for the benefit of mankind and the nation. There are many scientific and Technological Institute which work for the progress of women in the Technological field but the truth remain the same, gender bias are still prevalent in every field. "It is high time for all the Institute or universities to move past thinking about underrepresentation of women in science and technology solely as a consequence of biased hiring and evaluation and instead think about it as resulting from outdated policies created at a time when men with stay at home wives rule the academy "This is said by Williams founder of Cornell Institute for Women in Science, research and outreach centre that studies and promotes the careers of scientists.

Thus it would not be wrong to say that Gender has figured in important way in shaping the careers of scientist in India. Ideologies of gender, nature and science developed over different areas have resulted in the exclusion of women from science for a long time all over the world. Science and technology has been considered 'masculine' and gender gap in science has been observed in many societies. The social norms, family norms, societal structure, relationship between family and work and the organizational processes of scientific institutions have created a series of interrelated problems for women in science. Science, society and women are closely linked and there is a need for changes within the social process and institution of science.

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