Should Necessity Triumph Ethics? Perceptions on Assisted Reproductive Technology among Women in Eastern India

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Abstract: The links between health, society and technology can be witnessed in the era of globalization through developments in science and technology, which enable new forms of prevention, diagnosis, and treatment. Obviously, technical developments concerned directly with the treatment of patients generate a lot of excitement as well as anxiety. Developments in medical technologies in specific areas, for instance, Assisted Reproductive Technology (ART) offers an illuminating case study of the localglobal intersections and sheds light on how such technology interacts in the field of health and gender. The objective of this paper is to understand the context(s) and process through which ART is introduced to the arena of public health, the assumed and expected functions and roles of such technology, and risks that such technology may have on the users. Drawing from theoretical insights with an empirical grounding through extensive fieldwork (comprising in-depth interviews with 'users/ patients' and 'providers/practitioners') the paper focused on diverse geographic locations in eastern India (Odisha). The paper argues that the technology is, in fact, instrumental in 'fixing' bodies, making them fit for the demands of the society (to enact the potential identity), to the extent that medicalization of the infertility is designed to deal with 'incapacity', with failure and with a flawed body. Thus, the paper attempts focusing on the experiential trajectories for users/patients resorting to ART and bringing a triad of practices, institutions and beliefs together in a single overarching argument.

Keywords: Technology, Gender, Body, identity, medicalization

Context

...It is not just that science and technology are possible means of great human satisfaction, as well as a matrix of complex dominations...It means both building and destroying machines, identities, categories, relationships...(Haraway,1985:181)

Science and technology are regarded as a central part of culture with discourse and practices tightly interwoven with everyday lives. Science and Technology play a key role in transforming society (Russell, 1948). For instance, technology associated with life sciences has transformed and are continuing to transform society and human relationships in particular directions. The paper will examine these transforms through such technology, e.g. assisted reproductive technology (ART)¹ at the local levels and consider their impact on individual lives. ART emerges as the theme for a sociological analysis, which is a tricky topic to explore in India and depending on its context. ART quite controversial and for the same time points to a field of research, with a robust market and present issues related to ethics and governance. From this perspective, the paper makes an attempt to discuss the relationship between ART and health/body to allow a deep understanding of new technology and society. What does the emergence/institutionalization of new social forms such as motherhood by ART tells us about the possibilities and limits of human relationships?

Before we probe into the actual matter, we must be clear as to what we really mean by the ART? ART focusses on procedures ranging from intrauterine insemination (IUI) to in-vitro fertilization (IVF) that enable couples who have trouble conceiving on their own (genetically linked child)² arising from infertility.³ Almost four decades have passed since 'Louise Brown' (Steptoe and Edwards, 1978) swept the world's headlines, as the world's first child born through the technique of IVF⁴. Since the birth of Lousie Brown in 1970, ART evoked fears of masculinist appropriation of women's reproductive abilities. It may be noted that the availability of ART was regarded as driven by [economic] globalization and further by denationalization. Especially in developing societies, where poverty and infections are commonplace, fertility and foetal care are affected by many different cultural, environmental and socio-economic factors. The most cost-

^{*} The Author participated in the Professor Radha Kamal Mukerjee Young Social Scientist Award Contest held during the Conference: Science, Technology and Society at Indore Christian College, Indore on January 6-7, 2018.

effective approach to overcome infertility predicaments in developing countries is prevention and education (Leke et al., 1993). However, in those cases where prevention has failed, ART must be thought of as a valuable option (Malpani and Malpani, 1992). Gradually, the corporate medical sector emerged to cater ART services resulted from policy decisions at the national level, for instance, there are 392 ART clinics in India according to the year 2017⁵ implying the availability of ART from big cities to smaller cities in the country. Furthermore, the United Nations Programme of Action of the International Conference on Population and Development (ICPD) in Cairo in 1994 (United Nations Population Fund, 1995), mentioned issues on future actions on 'prevention and appropriate treatment of infertility where feasible'.

Given this context, ART offers an illuminating case study of the local-global intersections and there is a growing importance of interrogating what is 'local' in an increasingly global world. The paper focuses the local articulations (i.e. from eastern-India) while encountering with a global technology (i.e. ART). The objective of this study is to understand the context(s) and process through which ART is introduced to the arena of public health, the assumed and expected functions and roles of ART, and risks that ART may have on the users. The paper presents women's experiences which come through in the documentation of women's voices. Currently, experts in law and medicine dominate the existing literature on the practice of ART and women's own perceptions have been overlooked. We address the questions such as: What do women expect from ART? How do they explain the medical procedures associated with ART? How do they adjust to possible health implications involved in ART? What makes them decide for ART?

Theorizing Body and ART: A Postcolonial Feminist Approach

The body as a strategic system is the key idea of recent scholarship in the feminist theory. Feminist theory emerged in the post-Second World War period characterized by the translation of Western scientific and political languages of nature from those based

on work, localization, and the marked body to those based on codes, dispersal and networking and the fragmented postmodern subject. In feminist theory, sex, sexuality and reproduction are theorized in terms of local investment strategies where the body ceases to be a stable spatial map of normalized functions and instead emerges as a highly mobile field of strategic differences (Haraway, 1991). The biomedical-biotechnical body is a semiotic system, a complex meaning-producing field, for which the discourse of immunology, that is, the central biomedical discourse on recognition/misrecognition, has become a high-stakes practice in many senses.

Feminists question the medicalization of women's body in the context of ART and how ART is a clear manifestation of gendering of technology. In an era of technological advance how art maintains the integrity of marriage, reaffirms the 'conventional' understandings of 'motherhood' and hence, contributes to the solidification of heteropatriarchy. Scholars like Maria Mies and Gena Corea, who view the development of ART as the patriarchal exploitation of women's bodies. For them, ART turns the female body into a laboratory for the industrialized production of living beings (Corea et al. 1985; Wajcman, 1991). These positions reflect two divergent streams of thought in feminism-radical and liberal feminism. Radical feminism locates women's oppression in the contemporary sexual division of labour. Hence, stripping off the biological responsibility of reproduction is seen as choice of liberation for women (Firestone, 1970). Cultural feminism, on the other hand, conceives women's oppression in the appropriation of women's lives and bodies by men and male principles. And hence ART can be viewed as tool for exploitation and appropriation of women reproductive materials and their reproductive capacities.

The mode of procreation facilitated by the ART creates not only new objects like ova, sperm, wombs or embryos for sale but also new historical subjects like women willing to sell or donate their egg or womb, couples contracting their biological reproduction to another women, couples willing to donate extra embryos for another couple etc. From this lens, cultural feminism not only views ART as technology for appropriation of women's reproductive capacities but

also as technologies for reinforcing patriarchal structures on women. Further, ART fails to go beyond hetero-normative framework, reinforce the deterministic notion that it is genes that matter most and strengthen traditional patriarchal norms in Indian society. This critical feminist understanding is articulated in this article while tracing the gendered roots of ART in culture.

It has been shown that how central humanist concepts like nature, body, and identity get figured through techno-scientific discourses and practices. The relations of nature and technology concomitantly those of gender are profoundly reshaped in the process of appropriating nature in societies, facilitating the idea of the conconstruction of science, technology, society, and gender. Reproduction technologies like ART helps to enact the 'potential identity' (i.e. fertile) while overcoming the 'spoiled identity' (Goffman, 1963), who are 'stigmatised' by, for example, infertility. Goffman was concerned with deviant or stigmatized bodies and their social acceptability. It can be argued that ART is in fact instrumental in 'fixing' stigmatized bodies, making them fit for the societal expectations, to the extent that the medicalization (Illich, 1976) of the infertility is designed to deal with 'incapacity', with failure and with a flawed body. In order to resolve the flaws of women's bodies, technology (i.e. ART), therefore, seeks to impose social order and to discipline (Foucault, 1973), as it were, errant bodies. ART have been viewed as a promising technological fix for infertility predicament. Technological fix means using the power of technology to solve problems which are non-technical in nature (Volti, 1995; Weinburg, 1997).

In line with a post-colonial feminist approach we argue that it is crucial to look into the cultural specific context when discussing notions of motherhood and analyzing the experience of motherhood that is specific to women demands consideration of women's differences (DiQuinzio, 1999). Women from different cultural backgrounds have different perceptions and experiences of motherhood and as Shari Thurer (1994: xv) notes that the good mother is reinvented as each society defines her a new, in its own terms, according to its own mythology.

Methodological Framework

Study Design and Sample Characteristics

This research was carried out across four treatment sites at Bhubaneswar, Cuttack, Bhadrak and Rourkela in the state of Odisha. The infant mortality rate (IMR) of 65 is much higher as compared to the national average of 53 (Government of India, 2011). With a total fertility rate (TFR) of 2.2 percent, infertility afflicts one-fifth of all couples in Odisha. The infertility rate of 2.5 percent in the state is above the national average of 2.3 percent (Syamala, 2012). In Odisha, infertility may become a predicament eventually because the data shows a little above the national average which could be alarming⁶ in the near future. An exploratory study was carried out on married women who applied to the infertility treatment clinics in the state. Though clinics talk about the male infertility, socially, however, women's infertility is still the issue. The study included 50 participants (N=50): 40 women treatment-seekers and 10 treatment-providers. The inclusion criteria for the women in this study were (1) being married (2) having infertility (3) undergoing treatment for the past 1-5 years. In order to obtain their verbal consent, all participants were informed of the purpose of the study, ensured that the collected information would be used solely for scientific purposes, would be kept confidential and not shared by others except the researchers.

Among the infertile women included in the study, 70 percent were from 22 and 28 years of age, 35 percent were high school educated. The majority (65%) of the infertile women had been married for about 3-5 years. With the number of married years increasing, the aspiration to have a child increased, for example, it was found that only 1 clinic was visited per woman, aged between 19-23 years; 3 clinics per woman aged between 24-28 years and four clinics per woman aged between 29-33 years and 4-6 clinics per woman aged between 34-43 years. In addition, it was detected that 55 percent of the women used ART treatment for the last 3 years, 30 percent used for 4 years, and 10 percent used for 5 years.

Techniques of Data Collection

Data were collected on a standardized checklist of openended questions by face-to-face interviews conducted through extensive fieldwork between April 2011 and April 2014. The multisited field visits (Marcus, 1995) used a network of mutual referral ('snowball' technique), to get in touch with treatment-providers and those of intended ART users. The ART users were usually referred by the treatment-providers. A set of interviews was conducted with a specific group of treatment providers where a pool of ten medical practitioners associated with ART treatment in Odisha for past couple of years. The present study sampled medical practitioners from eight infertility treatment clinics/hospitals. These clinics were identified based on their involvement in ART treatment practices in Odisha. The interviews with treatment-providers were carried out at the clinics. Interviews with treatment-seekers were conducted in the waiting room of the clinic/hospital where they could feel comfortable. All interviews were conducted in Odia⁷. The interviewer read the questions to the women and recorded their responses. Each interview took about one to two hours. Themes and contents were extracted from the recorded responses. An interview guide was developed for this study. The interview guide was also tested with two infertility treatment clinics in New Delhi for its quality checks and completeness. The socio-demographic questions contained closed questions and was developed specifically for this study and used to obtain data on the profiles of the interviewed women. The following items were included: age, education level, occupation, age at marriage, duration of marriage, dwelling conditions, etc.

Analysis and Findings

ART in Odisha

The private health care began offering ART treatment services during the late 1990s. The proliferation of the private healthcare in Odisha has been characterized by a heterogeneous structure consisting of institutions varying sizes and patterns of ownership. The bulk of the private sector still consists of doctors, who essentially provide primary level, outpatient care and are located

in both rural and urban areas. The secondary level of care in the private sector is provided by nursing homes with a bed strength ranging from five to fifty and promoted by single owners or partners. The concept of 'nursing home' is largely urban phenomenon in Odisha. Most nursing homes offer generic and maternity services. Within this category, there is a further division between small and large nursing homes, which differ widely in terms of investments, equipment and facilities, range of services offered and quality of care. The tertiary level of care consists of multi-specialty hospitals that are promoted by capitalistic enterprises. The private health centres, particularly the corporate medical sector, emerged to cater ART services in Odisha. Further, the growth of ART centres in Odisha can be attributed to the formation of Odisha chapter of the Indian Society for Assisted Reproduction (ISAR) in 2010.

A Sense of Identity in Quotidian Life

As fertility manifests itself within a woman's body, women undergo much of the accusation and social stigma of childlessness. even when the problem lies with the male partner. Respondents expressed that it is the woman who was often viewed as 'guilty party' as Virani (2016) puts it, women live through the trauma of 'infertility' - cruelly attributed as their fault' - to undergo the tribulations of ART. In stratified societies, shared deviant identity may constitute the basis of stigmatised social categories whose members are denied full realisation of their humanity through segregation, derogation, and disadvantage, including impaired access to valued goods, services and opportunities. Such despised or disvalued characteristics are the bases for categorical relegation of persons to some kind of lower status (Goffman, 1963). Such characteristics, therefore, constitute criteria for an institutionalisation of inequality in the sociological sense, as infertile women in Odisha who, if not concealed by the families, are often relegated, irrespective of their natal caste, to a caste-like lower status where they can consort freely only with another infertile woman.

A 35-year-old woman in Bhubaneswar, the capital city of Odisha, undergoing treatment for the past three years said: 'Here, society won't let you feel like a complete woman if you don't have a child'.

Such evidence shows that how society paints childbearing as the essential role of a particular gender. One reason for this may be that a woman becomes a full member of the family in which she is married, only after birth of a child by whose name she is addressed. Respondents in the study confirmed that childlessness denied them 'complete membership' to large kin-group (biradari, khandaan, a clan). A 24-year-old woman with a postgraduate degree from Rourkela, an industrial town of Odisha admitted:

'[The] pressure is built within us; I was equally anxious and felt awkward at social gatherings especially when people inquired about whether there was any 'good news'. I felt 'crushed' being reminded of my childlessness.

A more theoretical rendering of the above idea could be found in Goffman's (1963) words: '...a spoiled identity can occur when a discrepancy exists between an individual's actual identity and an ideal, or what he calls as "virtual identity"... 'A 30-year-old woman from Bhadrak town of Odisha, in her sixth month of an IVF-induced pregnancy shared: 'without a child a woman has no identity, whether inside or outside a family'. Kakar (1978) goes a big step further in 'The Inner World', his psychoanalytic study of Indian childhood, when he writes that even the unborn child while still in the womb wins for its mother the love, respect and acceptance of the community. This study shows that a high percentage (80%) of women equated fertility with a major 'power' base through which they negotiate the terms of their existence. Hence, not only is the 'mother' requirement reaffirmed through the use of technology, but particular cultural dialogues about gender are also maintained and expanded. Further, having a child meant the continuation of the family and the human race, and it was also considered as a status for the women

Entering into ART: Chimera of Choice

Reproduction raises the fundamental questions of autonomy and choice. The decision to resort to ART was not straight forward for most women. The women in the sample were going through ART procedures because society and technology expected them to. If they had refused to take advantage of ART, they were going to be at odds

with their spouse, family members and friends as well as with the technology. They felt compelled by the unspoken pressures to do everything possible to produce a baby by utilizing ART. The findings indicate that the women respondents are under pressure from their spouses, families, environment and the society and this pressure leaves them open to the application of ART. There was no deep thinking about what they were getting into. All hoped for desired results so they did not have to face the society. Many herald ART as creating reproductive choices, which were previously consigned to destiny or nature. They argue that ART is enabling them to control over family property or resources.

ART could be a 'choice' for some and 'compulsion' for others. A 33-year-old woman from Bhubaneswar defines choice that:

if you were successful, you call it a 'choice', but if you weren't, then you would say that one would have been better off without it as medical treatment for infertility takes a long time and at the same time, an economic burden.

It seems that women could not bear these economic and social difficulties. Women are desperate enough to raise the money even if it means selling their valuable assets or borrowing money for infertility treatment. For instance, a 30-year-old woman from Cuttack, a business arm of Odisha revealed that:

Till now, we had already spent Rs. 50,000/. Still the pressures build from within the family. We had already sold off our land for continuing the [ART] treatment and, I am the second wife to my husband and the reason for his remarriage was childlessness from the first wife. I fear whether he rejects me, too.

The study found that both very young women (in their early twenties who do not want to wait too long to prove their fertility and fear rejection by their husbands and in-laws, in case they fail to reproduce) and older women (10%) are finding their way to ART clinics, as revealed during interviews with both seekers and providers. This study demonstrates that women who are 35 years or above, missed out on these treatments when they were younger, or because they did not know about them. At that point of time, ART was an

alien concept. Gradually, people started talking about it. While some village women often do not know their (true) age, some older women try to conceal their (true) age. According to the treatment-providers, women sometimes do not reveal their true age because they know that treatment-providers often display reluctant attitude to help older women in order to avoid medical and social complications. Treatment-providers argue that women attempt to deal with medical and social complications through a technological 'fix'. They often try to dissuade such women, who are often very adamant, from going through IVF procedures. The treatment-providers also hesitate partly because it brings down their success rates. Therefore, it hasn't been easy to see choice and compulsion working exclusively in Odia society rather they are overlapping, often simultaneously, by the seekers to achieve their quest for a child.

Body as the Site of Appropriation

Though the human body (and its parts) have long been a target for commodification within many different cultural settings, Lesley Sharp (2008: 287) says that the clinical and scientific application of emergent [bio]technologies marks a paradigmatic shift in anthropological understandings of the commodified, fragmented body. Anthropologists have problematized the Cartesian "mind-body dualism", by asserting that body, self and personhood are, in fact, inextricably linked. Sharp further argues that in the medical realm, where this Cartesian framework is rampant, an expanding desire for blood, organs, transplantable tissues, ova and sperm, has fragmented the human body and reconstructed it in such a way as to cause a proliferation in the marketability of human body parts. So, ART in a globalised market creates a reproductivised image to sell to consumers/ seekers especially true for women, making their [fertile] bodies. The product [child] obviously plays a part in constructing the image of the self, resulting in an objectified body.

The technique associated with ART, is invasive. ART entrap women into a medical 'machine' for a time. Medical machines portray themselves as possessing agentic capacities to discipline bodies.

If medicalisation is the transformation of human conditions into medical problems, infertility treatment is the last step in the historical process of progressive medicalisation, which has reached its peak with the ART. Further, medical experimentations have been viewed as a marker of scientific practice and modernity.

Without using medical/techno-scientific vocabulary, medical practitioners briefly described the ART procedures as not being painful or something to fear. The women in the sample were not counselled regarding the risks of ART procedures. A 30-year-old woman from Rourkela married for nine years narrated: 'I took this treatment which cost Rs. 1,00,000. The procedure was very painful'. The technology was presented as being accurate in overcoming infertility. A 33-year-old woman from Cuttack explains: 'In the clinic, the treatment-provider speaks to you in a certain way, as if something is being [re]framed for performance'. According to the medical practitioners,

We [categorically] inform them what can be done and what cannot be done. We, also tell

we cannot produce miracles. It's a matter of probability; else, they need to go through numerous [ART] attempts, if required, to conceive a child.

The point is that the social actors (i.e. infertile women) have the capacity to affect biology and centre the body within a social context. However, it is the body that is being acted upon, resulting in a modified product. Brandth and Haugen (2005, p. 91) write, 'The body [is] reduced to matter, something that has to be controlled and managed. A 39-year-old woman from Cuttack expressed:

The experience of going through this whole treatment process has been a constant negotiation of hope, frustration and desperation till the end. Sometimes there has been frustration at "nothing happening", at failed cycles, at wrong diagnosis.

Ethics and Society

What happens when new technological tools come up against existing ethical sensibilities? For instance, ART provides normative challenges as they widen the scope of reproductive choices and contest

the traditional notions of motherhood, pregnancy, and child-birth. Detaching the child from traditional procreation may well be the most essential ethical issue raised by ART. Neither science nor the humanities have so far adequately prepared us for the consequences of sex in an age of mechanical reproduction. The philosophy of 'a baby at any cost' seems to prevail and it has been argued that the right to reproduce is today enshrined in the document approved in Cairo at the ICPD of 1994 which recognizes the right of access to appropriate health care services that shall provide couples with the best chance of having a healthy infant. At the same time it is difficult to imagine that the 'right to have a baby' can include the right to have babies that are not biologically the offspring of the couple involved. The right to use ART can be rationalised on the grounds of reproductive autonomy of an individual (Neill, 2002: 57). Reproductive autonomy includes within its ambit all ideas relating to reproduction such as whether or not to have a baby, when to have babies, where, how, and with whom to have babies. These decisions are profoundly important and intimate for individuals. In fact, for most people reproductive decisions are central to how they wish to live their lives. In this context, the state should, as far as possible, assist couples who are suffering from infertility.

The larger question arises here is that: should necessity triumph ethics? In one sense, technologies in the field of assisted reproduction fulfill individual needs. Ideally, as also demanded by the women's movement, besides contraceptive provision, reproductive health care should also include measures and services for the infertile and the norms governing them. In another sense, economic globalization-driven ART services are offered by the private fertility clinics, seemingly a capitalistic enterprise. Even though the women rationalised ART, women too had concerns in terms of safety and health risks. Sometimes, the desperation and ignorance of the infertile women put them into possible health risks, especially whose general health condition due to their low socio-economic background makes them more vulnerable to mortality associated with pregnancy. According to treatment-providers 'ART still has some safety problems and risks that need to be described and evaluated so that current

clinical policies and laboratory procedures can be revised, if necessary' (Malhotra et al., 2013).

What is at stake when bodies reframed by ART encounter established ethical norms in the clinic/hospital? In the larger scenario, the state's acceptance of ART in its health policies reflects how it is caught between attempts to regulate private ART clinics which provide access to technological options on the one hand and the state-led 'development' agenda to repress fertility in the provision of population policy (where couple/women in India are expected to produce not more than two children) on the other. The pressing need to regulate ART clinics can be traced back to the year 2008, when the Indian Council of Medical research (ICMR) drafted it and sent to the Ministry of Health and Family Welfare, which was then been revised and re-drafted in 2010 and later in 2014. However, the ART (Regulation) Bill came only in 2016 before the Cabinet for consideration. The ART (Regulation) Bill 2016 aimed at establishing National Board, State Boards and National Registry of ART in India for accreditation and supervision of ART clinics and ART Banks.

Conclusions

Technologies do have the capacity to alter nature, body and identity, for instance, even reproductive processes (such as conception and pregnancy) reproductive identities (motherhood, fatherhood and parenthood) and reproductive ties and obligations (such as kinship). The development of ART brought the creation of ART service industries, through which "conventional" reproductive activities became commercialized, professionalized and standardized. In Odisha, ART has not only brought some 'hope' into the lives of the infertile individuals but also enabled an expansion in the baby-manufacturing industry. The analysis suggests that women's reasons for opting ART are rather complex (e.g. family pressures and cultural expectations). Negotiations around child-bearing are perceived as a benefit made available by the existence of new technological options. As this paper has shown, reproductive choices through ART valued highly by the infertile women and accepted uncritically, to a large extent. The paper

concludes that globalization driven ART has been responsible for the new reproductive consciousness of infertile women/couples which will grow further in Odisha. With the breaking down of borders between technology and society, between nature and culture and with the understanding of technology as a cultural practice, it becomes more and more apparent that all technologies are determined by cultural values, language games and politics of representation.

Notes

- 1. The singular "ART" is used in this paper to refer to the entire scientific and technological complex that consisting of different reproductive technologies than plural "ARTs".
- 2. Gimenez (1991: 344) argues that IVF has the potential to alter kinships and produce several possible kinds of kinship between woman and child in terms of genetic, gestational and social.
- 3. Infertility has been defined in terms of a failure to achieve a successful pregnancy after a year or more of regular, unprotected intercourse (Pfeffer, 1987) rather than looking at women who are explicitly voluntary childless.
- 4. IVF is nothing but literally "in glass fertilization" where egg cells from a female are fertilized with the sperms from a male outside the woman's body, in the laboratory, to get a fertilized egg which is then transferred into the woman's uterus to establish pregnancy.
- 5. www.icmr.nic.in/icmr news/art/art.htm Accessed on December 20, 2017.
- 6. World Health Organization (WHO) considers above 5 percent as alarming.
- 7. Respondents' statements reproduced in the text are free translation into English rendered by the authors.

Acknowledgements

Our thanks go to the practitioners and patients who so generously gave of their time and attention throughout this research in Odisha. We would also like to thank Maitrayee Chaudhury, Centre for the Study of Social Systems, JNU; Dipti Ranjan Sahu, Department of Sociology, University of Lucknow for thoughtful advice and the anonymous reviewers for their comments on the earlier draft of the manuscript.

References

- Brandth, B. A. and Haugen, M. (2005). The gendered embodiment of agricultural work: Nature, machinery, and patriarchy. In Morgan, D., Brandth, B., Kvande, E. (Eds.), *Gender, bodies, and work*. Aldershot, UK: Ashgate Publishing Ltd.
- Corea et al. (1985). *Man-Made Women: How new reproductive technologies affect women*. London: Hutchinson.
- DiQuinzio, P. (1999). The impossibility of motherhood: Feminism, individualism and the problem of mothering. New York: Routledge.
- Firestone, S. (1970). *Dialectic of sex*. New York: Morrow.
- Foucault, M. (1973). The birth of the clinic. New York, USA: Vintage.
- Gimenez. (1991). 'The Mode of Reproduction in Transition: A Marxist-Feminist Analysis of the Effects of Reproductive Technologies' *Gender and Society*, 5 (3): 334-350.
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity.* Englewood Cliffs, NJ, USA: Prentice Hall.
- Government of India. (2011). Census of India. New Delhi: Government of India.
- Haraway, D. J. (1989). Primate Visions: Gender, Race, and Nature in the World of Modern Science. New York, USA: Routledge.
- ———. (1991). Simians, cyborgs, and women: The reinventions of nature. New York, USA: Routledge.
- Illich, I. (1976). *Medical Nemesis: the exploration of health.* London, UK: Calder & Bayles.
- Kakar, S. (1978). *The inner world: A psychoanalytic study of childhood and society in India*. New Delhi, India: Oxford University Press.
- Leke, R. J. et al. (1993). 'Regional and geographical variations in infertility: effects on environmental, cultural, and socioeconomic factors' *Environmental Health Perspectives*, 101 (Suppl. 2): 73–80.
- Malhotra, N.; Shah, D.; Pai, R.; Pai, H. D. and Bankar, M. (2013). 'Assisted reproductive technology in India: A 3-year retrospective data analyses', *Journal of Human Reproductive Sciences*, 6 (4): 235–240.
- Malpani, A. (1992). 'Simplifying assisted conception techniques to make them universally available: a view from India' *Human Reproduction*, 7: 49–50.

- Marcus, G. E. (1995). 'Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography' *Annual Review of Anthropology*, 24 (1): 95-117.
- Neill, Onora O. (2002). *Autonomy and Trust in Bioethics*. Cambridge, UK: Cambridge University Press.
- Pfeffer, N. (1987). Artificial insemination and infertility. In Stanworth, M. (Ed.), *Reproductive Technology: Gender, Motherhood and Medicine* London, UK: Sage Publications.
- Russell, B. (1948). 'The Future Man' The Atlantic.
- Sharp, L. A. (2008). 'The Commodification of the Body and Its Parts' *Annual Review of Anthropology*, 29 (2000): 287-328.
- Steptoe, P. C. and Edwards, R.G. (1978). 'Birth after the reimplantation of a human embryo', *Lancet*, 2 (8085): 366.
- Syamala, T. S. (2012). Infertility in India: Levels, trends, determinants and consequences. ISEC Working Paper No. 284. Bangalore: The Institute for Social and Economic Change.
- Thurer, S. (1994). *The myths of motherhood: How culture reinvents the good mother.* Boston: Houghton Mifflin Company.
- United Nations Population Fund, 1995. Programme of action adopted by the International Conference on Population and Development (Cairo, 5–13 September 2004). UNFPA, Doc A/CONF.171/13/Rev.1, New York, USA.
- Virani, P. (2016). *The Politics of the womb: The perils of vf, surrogacy and modified babies.* New Delhi, India: Penguin Random House.
- Volti, R. (1995). *Society and technological change*. New York, USA: St. Martin's.
- Wajcman, J. (1991). *Feminism confronts technology*. University Park, PA: Pennsylvania State University Press.
- Weinberg, A. M. (1997). Can technology replace social engineering? In Teich, A. H. (Ed.), *Technology and the man's future* (pp. 55-64). New York, USA: St. Martin's.
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59

60