

Procreation, Power, and Personal Autonomy: Feminist Reflections

Chapter 1

The Pronatalist Imperative: Medicine, Money, and Markets

Woman's status as childbearer has been made into a major fact of her life. Terms like "barren" or "childless" have been used to negate any further identity (Rich 1976, 11).

Despite the enormous historical and geographical diversity of childbearing and rearing arrangements, childlessness has persistently left an indelible mark on women's lives. Across vastly different cultures, failure to give birth to a child has severely diminished a woman's felt sense of her own identity and her community social standing.¹ In recent generations, as more women have gained access to socially and financially valued forms of work, the severity of the traditional stigma of childlessness seemed to be lifting. But with the advent of new fertility technologies, social pressure to produce biologically related children is again intensifying. To understand this seemingly paradoxical resurgence of pronatalist sentiment, it is necessary to examine the social context that nurtures the allegedly urgent need for a child and the political and economic interests that foster it.

The Burgeoning Baby Business

Promoters of new reproductive technologies stress the rising incidence of infertility. Though it is difficult to separate data on involuntary infertility from voluntary childlessness, it is by no means obvious

¹ This is still the case in China, even under the celebrated "one child" policy, where Confucian patrilineal values which place high value on large families coexist in uneasy tension with official government policies severely limiting family size. Common to both the traditional and the modern attitude, however, is the assumption that the female body is an entity to be regulated. For an insightful evaluation of China's conflicted attitude toward infertility see Lisa Handwerker's "The Hen That Can't Lay an Egg: Conceptions of Infertility in Modern China" (1995). The source of her title is an expression used by Chinese rural women to insult their neighbor's daughter-in-law. Handwerker uses the expression to illustrate the ways normative feminine gender ideology equates womanhood with motherhood. Though my own attention is directed principally to Western infertility practices, much of my analysis is extendable to such non-western practices as well, particularly insofar as they have been influenced by the dissemination of new reproductive techniques. For Handwerker's discussion of the alacrity with which China has adopted new fertility technologies see her essay in Donchin and Purdy (1999).

that infertility rates have risen markedly in recent years apart from the 20-24 age group. For the past generation aggregate rates have remained fairly stable at between ten and twenty percent in most industrialized countries.² What has altered appreciably are social, cultural and economic influences that intersect physiological and biological conditions. Delayed childbearing, damage to reproductive organs caused by hormonal contraceptives, intra-uterine devices, prior abdominal surgery, unidentified and untreated pelvic infection, invasive diagnostic procedures, prescription drugs, prior exposure to DES (diethylstilbestrol, an estrogen commonly prescribed in the 1950s to prevent miscarriage), and exposure to environmental and workplace toxins—all diminish fertility.³ Congenital adrenal hyperplasia (CAH), a hormone deficiency easily treatable when properly diagnosed, but often overlooked.⁴ The perception that infertility rates are climbing is due, in part, to heightened awareness. Changing definitions of infertility skew statistics too. Not so many years ago a couple desiring children who experienced difficulty conceiving were advised to wait at least two years before seeking medical assistance. Now, if pregnancy does not occur within a year of unprotected sex, they are medically defined as infertile and referred to a specialized facility for treatment.⁵ Often, they are encouraged to seek medical assistance even sooner,

² In “International estimates of infertility prevalence and treatment-seeking: potential need and demand for infertility medical care” (*Human Reproduction* 22, no. 6(2007), 1506–1512) Jacky Boivin et al. report that infertility rates have hardly risen between 1982 and 2002. However, the number seeking infertility services increased from 1.1 million in 1982 to 6.6 million in 2002 (Chandra A, Martinez GM, Mosher WD, Abma JC, Jones J. “Fertility, family planning, and reproductive health of U.S. women: Data from the 2002 National Survey of Family Growth” *NCHS. Vital Health Stat* 23(25). 2005: 137, http://www.cdc.gov/nchs/data/series/sr_23/sr23_025.pdf)

³ Wagner and Stephenson (1993) note that most of these contributing factors are iatrogenic and hence correctable by proper physician education. Delayed childbearing is not. There has been little research on the mutations developed in aging ova which are commonly associated with the increased incidence of Down syndrome in older women. However, on the contrary, there have been studies on the effects of both the environment and ageing on oogenesis (McTavish, Kristen J. “Rising Follicle-Stimulating Hormone Levels with Age Accelerate Female Reproductive Failure.” *The Endocrine Society*. 2007; Gorsden, Robert, and Bora Lee. “Portrait of an oocyte: out obscure origin.” *The Journal of Clinical Investigation*. 120, no. 4. (2010); Ruder, Elizabeth H. et al. “Oxidative stress and antioxidants: exposure and impact on female fertility.” *Human Reproduction Update*, 14, no. 14, (2008) p. 345-357; Dalo, Diane T. “Ultrastructural analysis of egg membrane abnormalities in post-ovulatory aged eggs.” *International Journal of Developmental Biology*, 52 (2008), p. 535-544. Further research will be required before there is a full understanding of the relation between these mutations and environmental contaminants. In any case, mounting evidence indicates that sperm are adversely affected by environmental pollutants (see below).

⁴ Incorrectly diagnosed patients often undergo expensive and unnecessary in vitro fertilization (IVF) treatments. Note the *New York Times* article by Laurie Tarkan, 07/07/09, D5.

⁵ The World Health Organization uses the 12 months or more standard (see F. Zegers-Hochschild et al., “International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology.” *Fertility and Sterility* 92, no. 5, 2009: 1522.) and the 1994 State of Israel *Report of the Public-Professional Commission in the Matter of In Vitro Fertilization* refers to a study (unnamed) that indicated that in the second year without a pregnancy, the percentage of spontaneous pregnancies was the same as medically assisted pregnancies (20). Though several studies (See: Pittman, Geneva. “Think You Can’t Get Pregnant? Try again, study says.” *Reuters*, February 2, 2012. <http://www.reuters.com/article/2012/02/02/us-pregnancy-idUSTRE8112AF20120202>.; Forti, Gianni, and Csilla Krautz, “Evaluation and Treatment of the Infertile Couple.” *Journal of Clinical Endocrinology and Metabolism*, 83, no 12(1998) 4186. Gnoth, C et al. “Definition and prevalence of subfertility and infertility.” *Human Reproduction*, 20, no 5.(2005)1146.) [Mention several studies reporting high conception rates without medical

especially if the woman is beyond her peak reproductive age.⁶ Based upon the one-year definition, the U.S. National Center for Health Statistics reported in 1988 that about 2.8 million married couples including women of childbearing age were infertile.⁷ But statistics vary considerably. An infertility study done at Yale claims that the number of infertile couples in the U.S. has now reached 6.1 million.⁸

Researchers, hospitals, free-standing fertility clinics and advocacy groups, such as RESOLVE, lobby aggressively to generate a sense of alarm about the "epidemic" of infertility and mandate insurance coverage for treatment of this "disease."⁹ They stress the need to relieve the suffering of the infertile and provide the fulfillment they purportedly long for. Proliferation of the ideology that *all* parties are bound to benefit from high technology medical intervention insures a continuous flow of infertile women into reproductive clinics. The number of women seeking infertility services has increased from 1.1 million in 1982 to 6.6 million in 2002 (Chandra A et al., 2005,137). Repeatedly, physicians and other professionals with related interests urge infertile women to fulfill their "full reproductive potential" with little regard to economic, psychological or bodily cost. But the perception that infertility has reached epidemic proportions also owes much to media enthusiasm that publicizes the proliferation of medical technologies and their promise to conquer infertility.¹⁰

Together, the rapidly growing array of infertility treatments and their fervent dramatization by the media are rapidly transforming public attitudes toward infertility and reinscribing a renewed ideology of motherhood. The inability to produce a child at will, once deemed inevitable and accepted with resignation, is now more likely to be viewed as a surmountable impediment to personal self-fulfillment. Seldom, though, do these techniques correct the bodily incapacity or satisfy an original psychological desire. More often, they circumvent the incapacity or redefine the desire by enabling a potential parent to gain access to the fertility of others (Strathern 1992). Those whose bodies resist conformity with the model of the traditional mother are offered fragmented motherhood. They may become genetic or gestational or social mothers. Even adoption, once an obvious alternative for aspiring parents unable to conceive, is now more likely to be viewed as a last resort, to be pursued only after all medical options are exhausted.

assistance among those previously classified as infertile, they, as well as a host of clinical practitioners, continue to employ the twelve month standard.]

⁶ Paul Lauritzen (1993, ix), for example, reports that he and his wife were diagnosed as infertile and referred to an infertility specialist after only six months.

⁷ Chandra A, Martinez GM, Mosher WD, Abma JC, Jones J. "Fertility, family planning, and reproductive health of U.S. women: Data from the 2002 National Survey of Family Growth" *NCHS. Vital Health Stat*23(25). 2005: 108, http://www.cdc.gov/nchs/data/series/sr_23/sr23_025.pdf.

⁸Wang, Samantha. "The Past Present and Future of Embryo Selection in In Vitro Fertilization." *Yale Journal of Biology and Medicine*, 84(2011) p. 487.

⁹ RESOLVE is funded in part by Serono, a corporation which manufactures hyperovulatory drugs used in the treatment of infertility.

¹⁰ For insight into social uses of the language of "epidemic," see Singer (1993) and Murphy's use of it in her analysis in her 1995 book, chapter 4.

The Media's Misleading Message

Though success in achieving birth through medical intervention remains slim, failures seldom make news.¹¹ The tendency of the media to dwell on successful outcomes entices many to the doors of fertility clinics where medical authorities are likely to escalate the expectation to become pregnant and bring home a healthy baby.¹² Media talk of "the desperate plight of childless couples" validates and intensifies the preoccupation with procreation as a major life project, thereby transforming into medical consumers people who might not otherwise view their condition as pathological. Lisa Koch has noticed a narrative thread woven through her interviews with in vitro fertilization (IVF) candidates that transforms the actual experience of physician and patient into a fairy tale fantasy, thereby displacing rational assessment of likely outcomes and driving exaggerated expectations (1992). Onora O'Neill faults the media culture for distorting news reports, often mixing them with "sensationalism, sentimentality and misrepresentation" (2002. 179).

Sara Franklin (1997) shows how such stories structure the experiences of infertile couples, dramatizing tension between their "desperate desires" and their struggle to overcome barriers to fulfillment.¹³ Despite variations in particular narratives, they follow a repetitive pattern complete with stock heroes (dedicated doctors) and heroines (women who will sacrifice everything for motherhood): the urgent desire to found a biological family and fulfill one's biological destiny, disappointment and loss of hope, discovery of medical cures, faith rekindled and, ultimately, the happy ending.

An article in a widely respected and highly reputed daily newspaper¹⁴ exemplifies the ubiquity of this basic theme and illustrates the inventive and ingenious devices by which journalists adapt it to novel situations, thereby creating new markets for fertility technologies. The caption reads: "A Mother's Gift: Bearing Her Grandchild. At 53, a woman lends her womb to help her son become a father." The heroine interprets her own story as "a politically correct update of 'All in the Family.'" To accent

¹¹ A notable exception is journalist Anne Taylor Fleming's account of her own "baby hunger" (1994).

¹² Ken R. Daniels (1989) discusses a number of studies that consistently found that patients in treatment or awaiting treatment typically overestimate the chance of a successful outcome. Adler et al (1991) reach the same conclusion which is confirmed by more recent studies (see Peddie et al. "A qualitative study of women's decision making at the end of IVF treatment" *Human Reproduction*. 20, no. 7. (2005), 1946). In 1996 Israel Nisand reported on studies showing that, despite being given precise information on IVF success rates, couples persistently overestimate their chances of a baby—putting it at 60-90% instead the actual 20-30% average rate for IVF patients under 35 years of age to age 40. (Human Fertilization and Embryology Authority. "HFEA Fact and Figures 2006--Fertility Problems and Treatments." *Human Fertilization and Embryology Authority*. October 2008: 5).

¹³ See particularly Ch. 2 of Franklin's *Embodied Progress* which describes the influence of popular representations on the production of public knowledge about infertility.

¹⁴ *New York Times* 2/16/93. In recent years the press, the *Times* particularly, has adopted a more critical stance toward the fertility industry. (See Artificial Reproductive Technologies series: 21st Century Babies—Made to Order: Saul, Stephanie. "Building a Baby with Few Ground Rules" *The New York Times*. December 12, 2009. Sec. A1.; Saul, Stephanie. "The Gift of Life and its Price." *The New York Times*. October 10, 2009. Sec. A1; Saul, Stephanie. "The Birth of Octuplets Puts Focus on Fertility Clinics." *The New York Times*. February 11, 2009. Sec. A1.]

this tale's narrative structure, each major shift is conveniently marked for readers: "The Beginning...The New Life... The Process." In "The Beginning" the heroine's reproductive career is marred by three miscarriages, followed by an unanticipated pregnancy and birth, then a hysterectomy and divorce. In "The New Life" she meets prince charming in their apartment complex and they while away many happy hours by the swimming pool. Tension mounts as they plan their future together which, of course, must include another child.¹⁵ Our heroine notices a newspaper ad for "The Christian Fertility Institute" and recalls her Lutheran heritage. Enter the hero. The physician prescribes surrogacy. A woman is located who will do it for a price, but she refuses to oblige unless they marry first. Another "anguishing few weeks" passes before they decide to tie the knot. In "The Process" the heroine and the surrogate begin taking fertility drugs to synchronize their menstrual cycles (the astute reader infers that she had only a partial hysterectomy) but still no pregnancy. After two more surrogates come and go, the couple is in deep financial distress. Their physician suggests they explore their own families for possible candidates. What about the husband's mother? The aspiring father objects: "she's already been through menopause." "That's no deterrent," the doctor reassuringly explains, because medical science now has the power to reverse menopause. The mother is recruited and both she and her daughter-in-law begin daily hormone treatment followed by a battery of increasingly intrusive bodily interventions (that the article disregards). After two failed embryo transfers, the mother finally becomes pregnant and carries the fetus to term. The mother's own health insurance covers much of the cost. Of course, the baby's a boy!

As variants of the familiar romantic narrative, such accounts of infertility experience serve many purposes, normalizing not only technological intervention, but also the appropriation of other people's bodies to fulfill the wish for a genetic child. No mention is made of the risks to the husband's mother who is pumped full of hormones three times over and then endures the hazards of pregnancy at an age when neither her heart nor kidneys can so readily bear the stress. Note, also, how subtly the narrative incorporates the ideology that it is the "couple" who is the subject of intervention. Though it is women's bodies that suffer the hazards of infertility procedures, women's agency is eclipsed.¹⁶ The "couple" is the unit that does all the deciding, and the physician-hero rescues them from their plight.

Boundaries between such popular accounts and authoritative discourses that purport to disclose medical truth about infertile bodies is not always sharp and clear. They often shade into one another, particularly in popular literature (some by physicians) addressed to prospective patients, in researchers' testimony to regulative bodies, and frequently even in the medical literature. In actuality, insofar as infertile people tend to conform to the caricature that has dominated popular representations of infertility, their "desperation" may be due more to the treatment that purports to correct infertility than to the

¹⁵ A significant percentage of the clients in fertility clinics are already biological parents. Many now have a new spouse and are seeking a second "family." But with advancing years it takes longer to conceive.

¹⁶ In 1997 Richard Paulson and his colleagues at the Los Angeles Program for Assisted Reproduction reported in *Fertility and Sterility* the birth of a healthy baby girl to a 63 year old woman who had lied about her age to get access to fertility services. This event provoked some bioethicists and fertility specialists to condemn arbitrary age cut-offs as age discrimination. The medical literature on what some have dubbed "retirement pregnancies" has grown enormously in recent years. The team that reported the record birth first described their procedure in *The Lancet* 341, 2/6/1993, 321-323. This record was broken when a 66 year old woman in Britain gave birth in 2009. She had traveled to the Ukraine to become pregnant using donor eggs and IVF treatment. (Watt, Nick and Ammu Kannampilly. "66-Year-Old to be Oldest British Woman to Give Birth." *ABC News*, May 18, 2009. <http://abcnews.go.com/International/story?id=7612856&page=1#.TzCdpFxrN-c>)

condition itself. At one point in this narrative, after the first surrogate imposed conditions, the heroine is quoted as saying: "One minute we're fine, going along knowing we can't have children; the next we find out we can, but we have to get married." This remark exemplifies two common features that have characterized much infertility treatment: the need to conform to traditional family patterns in order to gain access to services and the increased stress that new medical techniques impose on would-be parents. "Desperation" may also arise from the circumstances surrounding the treatment itself, but popular literature rarely mentions such common sources of treatment-induced desperation as humiliation by medical authorities, intrusive and embarrassing investigative procedures and uncertain diagnoses.¹⁷

To the extent that the popular press is critical of reproductive innovations, two themes predominate: the ominous specter of ultimate futuristic technologies and bizarre case scenarios--a grandmother bearing her daughter's child who gives birth to triplets, her own grandchildren; a divorced couple feuding over "ownership" of their frozen embryos, a couple dying in an air crash, thereby 'abandoning' their stored embryos. Admittedly, such cases bring into sharp relief a cluster of social tensions about the meanings of motherhood, family structures, relationships between sexuality and procreation, and boundaries between public and private life—all issues that merit more careful scrutiny. Omni-competent techno-reproductive possibilities reminiscent of Huxley's *Brave New World* and Orwell's *1984* generate headlines and fuel a public imagination already kindled on futuristic science fiction.¹⁸ But such scripts have little bearing on the situation of most women currently undergoing infertility treatment. Stress on 'revolutionary' developments and science fiction dramatizations may mislead on several counts.

The Present State of the Art

First, emphasis on futuristic reproductive transformations distracts attention from hazards inherent in technologies that are already available or loom on the near horizon. It is now possible to sustain fetal life outside women's bodies at both ends of the prenatal continuum; but full laboratory gestation is not likely to be achieved in the foreseeable future.¹⁹ Despite popular press reports and the concerns of some scholars enticed more by fanciful possibilities than mundane actualities, few potential

¹⁷ See, for instance, Pfeffer 1987, Edelman and Golombok 1989, Adler et al 1991, and Pfeffer 1993. All of these authors recognize the increased anxiety that often accompanies infertility treatment but point to conditions accompanying treatment that need to be taken into account to explain it, conditions which an astute clinic could circumvent. Pfeffer, in particular, points to the way in which women in treatment are deprived of their agency when medical authorities preempt their decision-making options. LP: the contribution of worry about the expense of treatment shouldn't be underestimated, as well.

¹⁸ Contributing to the ever-popular "designer-baby" scares as well. . . .

¹⁹ In an amicus brief submitted to the U.S. Supreme Court in the 1988 *Webster* case (in which the Attorney General's office asked the Court to overturn the 1973 *Roe v. Wade* decision) a group of 167 scientists and physicians sought to demolish the argument the Court had used in an earlier case that the trimester framework of *Roe* is on a collision course with medical/technological advancement. They pointed out that viability has remained at approximately 24 weeks of gestation since the 1973 decision and is not likely to be pushed back much earlier in pregnancy because crucial organs, such as lung and kidneys, do not mature before that time. See, for example, Breborowicz GH. "Limits of fetal viability and its enhancement." *Early Pregnancy*. 5, no. 1(2001):49-50.

parents would likely seek out such elaborate arrangements without considerable medical encouragement and social and financial support. Even when physicians might prefer extrauterine gestation--given, say, a family history of genetic impairment or prior difficulty carrying a fetus to term--the costs of such arrangements would exceed the reach of most potential parents. Profound alterations in reproductive practices can be brought about without resorting to such exotic innovations as ectogenesis or cross-species fertilization.²⁰

A vast array of new clinical techniques including pre-implantation genetic diagnosis and selection (PGD), multi-fetal pregnancy reduction, cytoplasmic transfer, intracytoplasmic sperm injection (ICSI), and intra-uterine therapies such as fetal blood transfusions, fetal shunts and surgery are already available or under development. Cytoplasmic transfer uses ICSI, preserves much of nucleus, and borrows part of cytoplasm including the mitochondria from another woman.

Increasingly, these innovations are finding their way to market with far less public attention than has been given to ultimate reproductive transformations.²¹ Meriting more systematic social and ethical scrutiny are the genetic screening techniques that increasingly accompany laboratory insemination, as well as techniques that involve gamete manipulation in the laboratory. However, cytoplasmic transfer already raises morally troubling issues about genetic engineering since the reconstructed embryo combines traces of the mitochondrial DNA of the donor with the maternal DNA, and will be transmitted to future female offspring.²²

The marriage of molecular genetics with reproductive technologies has far greater potential for radical social transformation than extra-uterine gestation. In combination with IVF the gametes of both donor and recipient may be genetically 'matched' to minimize the likelihood of transmitting genetic anomalies.²³ Commercial diagnostic laboratories are now offering PGD for a fast-growing array of single gene disorders including: Tay-Sachs disease, muscular dystrophy, hemophilia, fragile X, Down syndrome, Huntington's disease, and achondroplasia.²⁴ The use of preimplantation sex selection

²⁰ Qualifications are in order though, for the success of new techniques such as embryo splitting and uterine transplants have brought radical potentials to the foreground far sooner than many had envisaged. The 1997 success in cloning an adult sheep by somatic cell nuclear transfer (*Nature* 2/27/97) has provoked research into human cloning despite the rush to ban the application of the technique to humans.

²¹ For a succinct summary of recent developments in genetic techniques see Wang, Samantha. "The Past Present and Future of Embryo Selection in In Vitro Fertilization." *Yale Journal of Biology and Medicine*, 84(2011) p. 487-490. For a more critical appraisal of fetal therapies see Liao, Matthew. "The ethics of using genetic engineering for sex selection." *Journal of Medical Ethics*, 31(2005).

²² See "Scientists are to investigate "three parent IVF" for preventing mitochondrial diseases" in *BMJ*: 2012.e540.

²³ This is often informally done in the French CECOS banks where it has become a matter of some controversy (see Novaes 1990 and Chapter Five).

²⁴ See Bodurtha, Joann, and Jerome F. Strauss. "Genomics and Perinatal Care." *New England Journal of Medicine*, 366, no. 1(2012) p.64-73. Research projects are underway to identify many more genetic anomalies before transferring an embryo into a woman's body. See

technology in the absence of any evidence of sex-linked disease has been widely reported.²⁵ Development of these techniques is the effect of new norms of fetal quality that catalyze ever-tightening fetal quality control. Consequently, the birth of an impaired infant is less likely to be considered an “act of God” than the effect of human negligence. Increasing pressures on both practitioners and patients to ‘optimize fetal outcome’ are bound to expand markets for genetic modifications still further.²⁶

As preimplantation screening and gene replacement techniques grow more sophisticated, occasions to utilize IVF and related techniques expand. Advances in sperm separation techniques using fluorescence *in situ* hybridization (FISH) increase the probability of minimizing transmission of such X-linked recessive conditions as hemophilia, Duchenne's muscular dystrophy, and X-linked hydrocephalus. Such an advance reduces recourse to IVF (by “diagnosing” sperm rather than embryos), but also enhances the prospect of successful sex selection for nonmedical reasons that would insure a child of the preferred sex. Supporters call it “family balancing.”

Cultures with long traditions favoring male offspring are currently making extensive use of sex selection techniques. Amartya Sen has calculated that on the basis of sex ratio statistics, in South Asia, West Asia and North Africa more than one million female children are missing.²⁷ At last count in India the sex ratio for children up to six years was 914 females per 1000 males, comparing unfavorably with the global sex ratio, which is 106 females for every 100 males.²⁸

Laboratory insemination is favored in other situations, too, and improved cryopreservation techniques greatly enhance its feasibility. Men called to military service may now deposit their sperm in a “bank” as insurance against chemical or germ warfare. If they return infertile or die on the battlefield, their power to genetically father a child remains undiminished, safeguarded within the sperm bank. This option is also available to men who anticipate chemotherapy or radiation for malignant disease or who engage in risky occupations where exposure to pollutants is likely to diminish fertility or contaminate sperm.²⁹ Unlike women of childbearing age who are offered a Hobson's choice,

²⁵ Ginsburg ES. “Use of preimplantation genetic diagnosis and preimplantation genetic screening in the United States: a Society for Assisted Reproductive Technology Writing Group paper.” *Fertility and Sterility*. 96, no. 4(2011) 865-8.

²⁶ LP: This outlook is both promoted and reinforced by the growing bioethics literature arguing that parents have a duty to produce the best possible baby. See, for example, Julian Savulescu and Guy Kahane, (2009) “The Moral Obligation to Create Children with the Best Chance of the Best Life,” *Bioethics*, Vol. 23, no. 5: 274-290.

²⁷ Amartya Sen: “More Than 100 Million Women Are Missing,” *NY Review of Books* 37:10, 1990.

²⁸ For detail India Census 2011. “Size growth rate and distribution of child population.” *Provisional Population Totals – India*, p. 64, and K. Shanthi “Feminist Bioethics and Reproductive Rights of Women in India: Myth and Reality” in Tong, Donchin and Dodds, 2004. The situation in China may be even worse because of the one-child policy.

²⁹ On evidence of declining sperm quality over the past twenty years, see Larry Lipschultz in *Fertility and Sterility* 65, 5, 1996, 909-911. On the association between cigarette smoking and semen quality, note Chohan, Kazim, and Shawky Badawy. “Cigarette Smoking Impairs Sperm Bioenergetics.” *International Brazilian Journal of Urology*, 36, no. 1 (2010) p.60-65. For a more comprehensive discussion of associations between atmospheric pollutants and lower sperm counts that also considers environmental factors contributing to female infertility and breast cancer, see

sterilization or job termination, men in a comparable job environment need only bank their sperm.³⁰ Perhaps the success of techniques for cryopreservation of ova will offer women a measure of “equity” with men.³¹ But in a context of unprecedented technological innovation, including postmortem maternal ventilation (a procedure for maintaining pregnant cadavers until fetal viability), traditional norms identifying women with their reproductive capacity is more likely to intensify. For the increased practice of cryopreservation drives people on in their quest for a biological child who might otherwise look to other activities to shape their futures. During the furor over the destruction of several thousand frozen embryos in Britain, people came forward to say that as long as their embryos were in storage they had “unfinished business.” They could not bring their infertility experiences to closure.

Novel technologies also facilitate the use of fetal bodies as resources for the potential benefit of others. Fetal tissue is being used experimentally to forestall the progress of such common degenerative ailments as Parkinson's disease and diabetes. Since fetal organs are far less prone to rejection than the donor or cadaver organs presently employed, they have numerous potential applications (of course, their potential usefulness for transplantation would be greatly enhanced if they could be “grown” in laboratories as plants are grown in nurseries). Mastery of cloning techniques would open up opportunities to freeze carbon copies of individuals to be used: as “replacement” children (in the event of untimely death), by same sex couples looking to produce children genetically related to both parents, or as “spare parts” for those with the means and inclination to defer their own deaths indefinitely through surgery.³² A *NY Times Magazine* article relates how two men might have a child of their own if/when

Woodruff et al. “Proceedings of the Summit on Environmental Challenges to Reproductive Health and Fertility: Executive Summary,” *Fertility and Sterility*, 89(2), 2008, 6-10.

³⁰ One such important case, *Automobile Workers v. Johnson Controls*, was appealed all the way to the Supreme Court. Cynthia Daniels (1993) lists a number of other companies which have required women to prove their infertility to be eligible for certain jobs, including Eli Lilly and B.F. Goodrich. Uma Narayan (1995) gives an illuminating account of the selectivity of such policies and shows how they tend to exclude women only from jobs that are sought after by more privileged men. They virtually never address health hazards in traditionally “feminine” occupations such as nursing. LP: For another excellent treatment, see Joan C. Callahan, “Let’s Get the Lead Out: or Why *Johnson Controls* is Not an Unequivocal Victory for Women,” *Journal of Social Philosophy* 25:3 (1994): 65-75.

³¹ See Saragusty et al. “Current progress in oocyte and embryo cryopreservation by slow-freezing and vitrification,” *Society for Reproduction and Fertility*, 141 (2011) p.1-19. A number of fertility practitioners have alluded to a brave new world awaiting us after techniques to freeze ova have been mastered. Women will be able to deposit their ova in a bank during their prime reproductive years when the ova are still comparatively uncontaminated by environmental toxins, have their tubes tied, and enjoy uncomplicated sex until babies fit comfortably into their life script. Then using IVF, their ova will be fertilized with sperm of their choice and the embryo(s) will be transferred either to their body or the body of a gestational surrogate. [LP: Apple and Facebook recently announced that they would offer female employees egg freezing as part of their benefits package. See Claire Caine Miller, “Freezing Eggs as Part of Employee Benefits: Some Women See Darker Message,” *The New York Times*, Oct. 14, 2014, <http://www.nytimes.com/2014/10/15/upshot/egg-freezing-as-a-work-benefit-some-women-see-darker-message.html>

³² LP: This comment is surely limited to embryos, as cloned children and adults would be individuals with the same rights to life and self-determination as anyone else, even if they share a genome with another, like identical twins.

stem cells can be derived from the cloned embryo of one man and coaxed into a human ovum that would be fertilized by the sperm of the other man and implanted in a surrogate's womb.³³

Such newfound capacities profoundly alter common conceptions of human bodies: their identity, location, and the temporal barriers that traditionally marked the limits of human lives. They displace established conceptions of death and sexuality and rupture barriers between individual and species life. Many feel a profound unease and sense of dislocation in the face of these radically new uses for human reproductive material: deliberate creation of fetuses that will never be brought to birth, fertilization of fetal ova to create motherless persons, postmortem retrieval of stored sperm (potentially ova, too) to produce beings whose biological parent died before their conception, and postmortem ventilation of pregnant women's bodies to bring their fetuses to term. Replication of humans through cloning techniques has the potential to disrupt social institutions as fundamentally as the reproductive transformations prefigured by Orwell and Huxley.

Science fiction accounts of reproductive revolution are dangerously misleading on other counts too. Not only do they distract from more immanent applications of the technologies, but they often presume that enhanced government power is the principal threat attending exotic reproductive developments. This presumption obscures the power of medical researchers and practitioners, pharmaceutical companies and other commercial interests that can more readily snatch the initiative to maximize their own interests. As the announcement of sheep cloning reawakened fears of Armageddon in the popular press, one lone commentator pointed out that as long as governments continued to be under pressure to reduce health care budgets, they are unlikely to fund dystopian schemes to clone slave armies!³⁴ Actually, governments unwillingly bear much of the cost of negative externalities resulting from new fertility techniques such as uncovered costs of caring for low birth weight infants, and law-suits over contested parentage and care of unwanted impaired infants. Though medical researchers and therapists have effectively exploited the media to market their new techniques, the media rarely direct attention to the institutionalization of this thriving industry that, in the U.S. alone, currently brings in over four billion dollars a year.³⁵

In short, the tendency of the press to incite moral panic about the dangers of dramatic reproductive rearrangements deflects concern from current and approaching medical practices which pose a far more immediate moral threat.³⁶ Focusing public attention on the most atypical instances diverts attention from moral problems imbedded in everyday fertility practices. Urgent immediate dangers such

³³ Interview with O. Carter Snead, former a general consul to President Bush's Council on Bioethics cited in "Roberts v. the future" by Jeffrey Rosen *NY Times Magazine* 08/28/05, 24-44.

³⁴ LP: Conversely (and perversely), the media have been remarkably reticent about covering the real threats of Armageddon posed by followers of extreme sects of the Religious Right, especially during George W. Bush's second term as president.

³⁵ A notable exception to the dearth of media coverage was a NOVA documentary called "High Tech Babies" which featured a venture capital company specializing in surrogate embryo transfer. NOVA included clips from a cocktail reception for potential investors depicting a representative of the company telling the audience that, not only was the *demand* for this service inexhaustible, but the *supply* of donor women existed in "cost-effective abundance."

³⁶ For more detailed accounts of the influence of the press on the shaping of moral panic see also Singer 1992 and Yoxen 1990. On popular representations of infertility, see also Squier 1994.

as fraudulent clinical practices that expose patients to unwarranted bodily risk, unmonitored proliferation of for-profit experimentation, and pressures to intervene genetically in the reproductive process are left free to proceed with little public scrutiny.³⁷ Without responsible public education, it is impossible to forge a reproductive policy that is genuinely responsive to a broad cross-section of the population. Urgently needed is more systematic scrutiny of the clinical treatment of infertility directed, not just to the occasional crisis, but to business as usual.

The Fertility Industry

Though the media seized upon the birth of the first "test-tube" baby as a revolutionary development, embryo research had a long history on both sides of the Atlantic that for many years drew little public notice. The first documented attempts to fertilize mammalian eggs in the laboratory were made in 1878 using rabbit and guinea pig ova. By the end of the nineteenth century a number of researchers had already explored cellular development in the laboratory in numerous species. During the 1930s the study of embryology was extended to human oocytes (unfertilized ova). In 1946 and 1948 John Rock and Miriam Menkin published in the *American Journal of Obstetrics and Gynecology* photographs of two and three cell embryos, and Rock and his colleagues began to apply their research to the treatment of infertility. Meanwhile, Rock's work on human ovulation was being directed to such other uses as the rhythm method of birth control. According to Simon Fischel, by the '50s when work had advanced to the point that the IVF procedure was a live possibility, "the American climate was becoming hostile to such views."³⁸ Nonetheless, research in reproductive biology continued at a rapid pace as advances in mammalian embryology found ready commercial application in the cattle breeding industry. By the time work that applied this knowledge to humans was resumed in the '60s, researchers had at their disposal a significant body of knowledge on follicular growth, oocyte maturation, ovulation, fertilization and embryo culture. In Britain, Robert Edwards continued his work despite the Medical Research Council's rejection of his funding requests. In 1965 he published data describing the maturation of unfertilized human oocytes in vitro and in 1971 he and his colleagues, gynecologist Patrick Steptoe and Jean Purdy, reported the first human blastocyst observed after in vitro fertilization. For those who

³⁷ During the 1989 U.S. Congressional Hearings on advertising practices of IVF clinics, Gary Ellis, of the Office of Technology Assessment described several ads placed in U.S. newspapers by fertility clinics that contained false or grossly misleading information about their success rates. He testified that even a patient education booklet published in 1988 by the American Fertility Society and distributed for placement in physician's offices falsely claimed that: "Test tube baby or in vitro fertilization programs have a 10 to 25 percent success rate per attempt." Ellis pointed out that the success rate is actually 0 to 25 percent (U.S. 1989). Though federal government agencies have subsequently intervened to monitor clinic advertising, exaggerations persist. *Consumer Reports* cites examples of individual clinics which publish brochures advertising success rates far in excess of those they report to the Society for Assisted Reproductive Technology (SART) which compiles clinic-specific data (SART 2010 http://www.sart.org/find_frm.html)

³⁸ Fischel recounts the 1973 Del Zio incident. The chief of the obstetrics and gynecology service at a well-known New York hospital ordered a tube containing sperm and ova removed from the incubator because he believed this procedure was unethical. The couple who had entrusted their gametes to the hospital sued, and a jury awarded them \$50,000 for intentional infliction of emotional distress (1986, 11). Constitutional lawyer John Robertson cites this case in support of his contention that a couple contributing their gametes for fertilization *own* the embryos created in the laboratory (1994, 105).

followed these developments in embryology, the first IVF birth was not as astounding a feat as the international press supposed. Though Edwards pronounced gleefully: "Louise Brown's birth was a media sensation" (1989, 3), her arrival had long been anticipated by the scientific community.³⁹

The events of 1978 and the media blitz surrounding them rapidly transformed attitudes toward reproductive technologies. Medical resistance to laboratory fertilization quickly evaporated. A new medical sub-specialty was created called reproductive endocrinology. Almost immediately, an assortment of innovative techniques and products devised to promote pregnancy began to flood the market—not principally in response to consumer “demand,” as publicists claimed, but largely as an extension of developments in neonatology, endocrinology and molecular biology, worldwide expansion of commercial biotechnology, and globalization of the pharmaceutical industry. Pharmaceutical firms such as Organon and Serono began to invest substantially in the development of superovulatory drugs,⁴⁰ now routinely used to produce the simultaneous development of multiple fertilizable eggs instead of the one that normally develops in a single menstrual cycle. Innovations in tubal surgery and countless variations of IVF proliferated.

New IVF technology organized into clinical practice a number of different techniques including hormone therapy, surgical collection of ova, mixture of ova and sperm, embryo cultivation, analysis to determine the suitability of embryos, and finally their transfer to a woman's uterus. The increasing use of IVF and related techniques was facilitated by the development of noninvasive visualizing instrumentation which reduces the risk of the procedures—ultrasound to monitor ovulation and optical instrumentation to retrieve oocytes.⁴¹ However, their use compounds problems in two respects. First, new visualizing techniques may carry unanticipated risks. For ultrasound was incorporated into clinical practice without conducting any randomized clinical trials to confirm its accuracy and monitor its side effects. Second, their use has contributed to further innovations that extend invasive practices. Instead of utilizing existing techniques to minimize multiple pregnancies, some practitioners rely on ultrasound visualization to identify multiple fetuses and count on selective pregnancy termination to control the damage. Some physicians admit to transferring up to a dozen embryos to increase the chance of conception.⁴² But the procedure carries medical risks of its own and generates further moral quandaries.

Disappointing success rates and the limited applicability of IVF (it tends to work best where infertility is caused by blocked tubes or endometriosis) catalyzed experimentation with many different

³⁹ A more complete historical outline can be found on www.timeline/TestTubeBabies/Americanexperience/wgbh/pbs.org

⁴⁰ A number of feminist critiques have called attention to the involvement of the pharmaceutical industry. The IVF Registry which publishes an annual report in *Fertility and Sterility* was initially financed exclusively by Serono Laboratories. As noted above, Serono also extended their patronage to RESOLVE, a prominent support group for infertile women in the U.S. that strongly favors medical intervention.

⁴¹ See, for instance, Serena H. Chen and Edward E. Wallach: "Five decades of progress in management of the infertile couple" in *Fertility and Sterility* 62, 4, 1994, 665-685; Pundir et al. "Uterine cavity assessment prior to IVF." *Ultrasound in Obstetrics and Gynecology*, 10, no. 1(1997), 59-62.

⁴² LP: See the notorious “Octomom” case, described in more detail in chapter 2.

combinations of procedures.⁴³ Instead of returning all of the embryos fertilized directly to the uterus of the woman from whom the ova were taken, as had been the earlier practice, cryopreservation makes it possible to reserve some for later use. They can then be frozen for use in future IVF cycles, donated to other women, or offered to the fertility clinic for research. However, for some, these options raise moral problems. Legislatures and groups with moral objections to cryopreservation, such as the Roman Catholic Church, may require transfer to the woman undergoing treatment all of the embryos fertilized. This practice is likely to compound problems when several implant successfully. Or people may “forget” the embryos they have left in storage. Then if there is a statutory storage period, “orphaned” embryos will have to be destroyed when the period expires. Or people unable or unwilling to undertake another IVF cycle may be deterred from exploring non-medical routes to parenthood as long as they still have embryos in storage.⁴⁴

Emergence of an Expert Elite

Clinics eager to be at the forefront of medical practice vie with one another to coin their own acronym.⁴⁵ A variation, invented by Ricardo Asch, is GIFT (gamete intra fallopian transfer).⁴⁶ In this procedure the sperm and ova are placed in a catheter and injected into the fallopian tube(s). Unlike IVF,

⁴³ The term, in vitro fertilization, is sometimes colloquially extended to many other medical procedures involving “assisted reproductive technology” (ART) (the favored acronym of the American Society for Reproductive Medicine) or “medically assisted procreation” (MA), the term most commonly used in Europe. ART was introduced to replace ‘assisted conception’ as the generic term for conceptive technologies. Neither term is merely descriptive. Both carry a positive connotation that avoids explicit reference to the medicalization of these techniques. Either could be applied to donor insemination and/or informal contract pregnancy involving no medical intermediary, but this is seldom done. The term “medically assisted procreation” is not strictly accurate either (since it is far from evident that medical intervention is equivalent to assistance!). More recently, the term “reprogenics” has come into favor to distinguish modifications that are both reproductive and genetic. If I occasionally use one or another of these terms, it is only for want of more adequately descriptive characterization.

⁴⁴ LP: It should be noted that there has been experimentation recently with less invasive approaches, such as foregoing ovulatory drugs and single embryo transplant.

⁴⁵ Among clinical practitioners there is considerable doubt about the efficacy of many of these variants of IVF. Robert Winston, a leading British clinician, has maintained that neither ZIFT (zygote intrafallopian transfer) nor a number of other novel procedures have any proven value (1989, 181). See Zhu, Tian. “Zygote intrafallopian transfer.” *Embryo Project Encyclopedia*. 16. Mar. 2011. <http://stsrepository.mbl.edu/bitstream/handle/10776/1149/TechZygoteIntrafallopianTransferTZMG.pdf?sequence=1>, ZIFT encompasses less than 1% of all ARTs currently conducted in the United States. Although its success rate is comparable to that of IVF, ZIFT requires a more invasive procedure and is more expensive. Nevertheless, because the zygote is implanted into the body sooner than other ARTs, some couples consider ZIFT more natural and therefore prefer it.

⁴⁶ Asch later became the focus of a scandal when it was discovered that he falsified patient records to hide the fact that he was appropriating eggs and embryos from patients in violation of their written instructions and transferring them to other patients.

fertilization takes place inside the body, in vivo, instead of in the laboratory, in vitro. GIFT has been used where at least one fallopian tube is intact, where the cause of infertility cannot be determined, and for male factor infertility or endometriosis. In Catholic hospitals, where laboratory fertilization is commonly forbidden, GIFT is sometimes permitted. However, GIFT has certain disadvantages. It requires laparoscopy and general anesthesia, often for egg recovery and always for transfer of the gametes to the fallopian tubes (a more precise procedure than IVF demands). Also, the process of fertilization cannot be observed, the risk of tubal pregnancy is greater, and the incidence of multiple pregnancies is higher than for IVF. As IVF success rates have improved and procedures simplified, the use of GIFT has also declined. Additionally, the tendency of insurance carriers to scrutinize medical procedures in increasing detail discourages use of such complex procedures where simpler ones would be comparably effective.

Other variations of IVF have been developed that permit embryo monitoring; for example, intravaginal culture (IVC) which differs from IVF only in that for the first 48 hours the sperm and ova are placed together inside the woman's vagina in a sealed tube containing culture fluid. After removal they are assessed and standard IVF procedure is followed. Further variations are used when the woman who wishes to experience pregnancy and rear the child is infertile. Sometimes ova are "harvested" from aborted fetuses (McGleenan 1994). More commonly, ova are secured from another woman through an invasive procedure that involves the synchronization of the ovulation cycles of an embryo donor and a recipient.⁴⁷ The oocytes can then be retrieved from the donor woman and fertilized in the laboratory, or the donor woman can be inseminated with sperm from the infertile woman's partner or a donor. Then using the procedure called "ultrasound guided retrieval" or "lavage" (washing out the donor's uterus after fertilization), the embryo is recovered and transferred to the infertile woman's uterus. Both procedures are known as surrogate embryo transfer (SET).⁴⁸ The latter was featured in a widely publicized commercial venture in the late 1980s that engendered considerable professional controversy. Since it exposes the donor woman to significantly increased risk (ectopic pregnancy, infection), it has fallen into disrepute. As we have seen, many further variations have been attempted, such as ZIFT. Recent advances have been due principally to newer techniques for handling gametes, such as intracytoplasmic sperm injection (ICSI), a procedure in which a single sperm is injected directly into an egg, and refinements in 'hatching' procedures to reconstruct poor quality embryos.⁴⁹

So how successful are these techniques? Some doubt that the likelihood of bringing home a healthy baby has increased very much, if at all, by all this fuss, bother, and expense. But that's not easily

⁴⁷ A caution is called for to avoid being misled by the term "donor." The use of transactions in both sperm and ova are largely commercial in the U.S. and other countries that permit commerce in human gametes. To avoid the misleading connotation some authors refer instead to sperm or ovum "contributors" (see Daniels, K. R. "To give or sell human gametes – the interplay between pragmatics, policy and ethics," *Journal of Medical Ethics*, 26 (2000) p. 206-211). The terms "marketed sperm" and "marketed ova" are also used. See Doris Baker and Mary Paterson: "Marketed sperm: use and regulation in the United States" in *Fertility and Sterility*, 63, 5, 1995, 947-952 and Ronald Green's discussion of the egg market (1994, 350). An illuminating article on advertisements for egg "donation" appeared in *The New York Times*. (Tuller, David. "Payment offers to egg donors prompt scrutiny." *The New York Times* 5/10/10). I explore these issues in greater detail in Chapter 5.

⁴⁸ [LP: Surrogate Embryo Transfer should not be confused with the desirable Single Embryo Transfer, also known as SET.]

⁴⁹ For details see the website of the American Society for Reproductive Medicine at <http://www.asrm.org/Patients/patientbooklets/ART.pdf>

determined considering incomplete reporting of results and the improvisational arithmetic many clinics devise to conceal their failures. What clinics count as *success* varies enormously depending on the criteria used and the method of tabulation. Clinics have often cited statistics that count the number of embryos transferred rather than the stimulation cycles performed (on which they customarily base their fees). This method of calculation bypasses several junctures in a cycle when things often go wrong. No eggs may be recovered or those that are may not successfully fertilize. Statistical data may not distinguish between egg retrieval attempts and eggs retrieved, so they provide an artificially inflated figure.⁵⁰ Some clinics drop from the data reported in their advertising brochures women who begin treatment but do not become pregnant. Some count as successes biochemical “pregnancies” confirmed by blood or urine tests (which may merely reflect the hyperovulatory drugs administered) even though no independent evidence confirms the presence of an embryo and the woman experiences no symptoms of pregnancy. Some subtract miscarriages and stillbirths from their total of cycles undertaken and others add as “successes” pregnancies which don't result in live birth.⁵¹ None take into account infants who fail to survive the first year and only rarely do they include infants born prematurely who require extensive medical intervention after birth.

Some countries now have mandatory reporting regulations requiring individual clinics to submit their success rates in a standard format, but in the U.S. reporting is voluntary. Data are collected by the Society for Assisted Reproductive Technology (SART) in conjunction with the ASRM. Member clinics agree to abide by a strict set of standards but in the first year of centralized data collection, over 10% of SART member clinics failed to report.⁵² The Fertility Clinic Success Rate and Certification Act passed by Congress in 1992 includes a provision for publishing clinic success rates as well as inspecting laboratories that handle gametes. Implementation of the Act was dogged by lack of funding. Congress assigned responsibility to the Centers for Disease Control but initially failed to appropriate any additional funding. Five years later summary data became available at their web address. Astute consumers now have access to clinical success rates, but still no reliable records are available for clinics that are not linked to SART.⁵³

Patients who rely on only the publicity brochures of a particular clinic are often deceived by misleading success claims, but the savvy can get from SART reliable clinic-specific data from which they can extrapolate their own chances of success. Their luck will depend on a number of variables including the reason for the infertility, their age (the woman's particularly), and the practices of the particular clinic. At the time the 1988 U.S. Congressional report was issued, virtually half of the 270 clinics then offering IVF had never had a live birth. Many more clinics now report successes but larger more established clinics usually have higher success rates than less experienced ones. The categories of patients they

⁵⁰ Personal communication with reproductive endocrinologist Dr. Marguerite Shepard.

⁵¹ Such misrepresentations were reported in Congressional hearings as early as 1989 (U.S. House of Rep. 1989,156 ff.) and have subsequently been noted in other federal investigations.

⁵² Their first report using this new system covers success rates in 1994. See *Fertility and Sterility*, 66, 1996, 697-705. A less formal reporting system was used in prior years.

⁵³ CDC Morbidity and Mortality Weekly Report ART Surveillance 2006 – 2009, p.2.

accept for treatment and the types of infertility they treat also influence statistical outcomes. Clinics that principally accept patients with less serious fertility problems or previous pregnancies report higher success rates than those that take the more difficult cases. Yet, reported rates seldom approach and rarely exceed 30% per IVF cycle according to the CDC 2009 report, and 44% per IVF cycle according to the SART 2009 report.⁵⁴ Even these numbers may be too high considering the perinatal mortality rate for IVF which is over twice that of the general population, due in part to the higher than average number of multiple pregnancies (HFEA Report 1992, 9). So replacing the widespread practice of distributing raw data on clinic success rates, the British Human Fertilization and Embryology Authority now publishes clinic-specific data in a format that employs statistical modeling. Figures are adjusted to compensate for differences in patient groups and specific treatments, taking into account the population of each clinic and distinguishing among groups of women with relevantly different histories.⁵⁵ To reduce the multiple pregnancy rate, some regulatory authorities are imposing limits on the number of embryos that can be transferred to women. Centers in Great Britain have shown that they can achieve a pregnancy rate with two that is just as high as when three are transferred.⁵⁶ The HFEA is now publishing live birth rates by number of embryos transferred. The rate for three is about 3.5% higher than two, but the complication rates for three or more increases substantially.⁵⁷

Newer reproductive techniques have also somewhat reduced the physical pain and discomfort of diagnostic procedures and treatment, but physical and psychological burdens persist. A number of complications are associated with superovulation by fertility drugs including ovarian hyperstimulation

⁵⁴ The live delivery rate reported by US Center for Disease Control. "CDC ART Success rates and fertility clinic reports 2009" pp. 24-25, and the SART 2009 report, https://www.sartcorsonline.com/rptCSR_PublicMultYear.aspx?ClinicPKID=0, reports an overall success rate of 37% (CDC 2009). If one counted only the cycles initiated that resulted in a *healthy* birth you would get a success rate of 30% (CDC 2009 report). These are the number of births, *not* the number of mothers who took home a healthy baby since almost one third of these were multiple births. Even these manipulations of the statistics do not yield an accurate measure since the reporting procedure is voluntary. Clinics that do not report their statistics are not so well established and are likely to have significantly lower success rates. The most recently reported overall British success rate is 24.1 % (HFEA 2008 report http://www.hfea.gov.uk/docs/2010-12-08_Fertility_Facts_and_Figures_2008_Publication_PDF.PDF), taking as the numerator the number of "live birth events (to compensate for multiple births) and taking the number of cycles initiated as the denominator. Perinatal death and morbidity is not factored into the British statistics. Since Britain imposes tighter constraints on clinics to report, their data are likely to provide a more accurate indication of success. Wagner and Stephenson use a different method to calculate success rates taking as the starting point all infertile people in the community and as the end point a wanted, healthy baby (1993,10,16). They estimate that the optimal number of healthy babies possible per stimulation cycle is 10%-12%. Their method takes into account the proportion of infertile people who are likely to choose social over medical options.

⁵⁵ HFEA Patient's guide 2010.

⁵⁷ For further analysis of multiple pregnancy, especially the data on twins versus triplets, see Laura Purdy, "Women's reproductive autonomy: Medicalization and beyond," *Journal of Medical Ethics*, (2006), Vol. 32, 287-291.

syndrome, cysts, coagulation abnormalities that may lead to thromboembolism, stroke or myocardial infarction, and ovarian cancer.⁵⁸ The incidence of ovarian cysts and ovarian cancer following fertility treatment is likely to be under-reported because there has been little follow-up of patients who undergo IVF. The few studies undertaken, however, do indicate that women who take the non-steroidal estrogen clomiphene for a year or more are at increased risk for ovarian tumors.⁵⁹ Some fear that other effects might only to show up in the children later in life as was the case with DES, which is chemically related to clomiphene.⁶⁰ A few clinics offer "natural cycle IVF" as an alternative to drug stimulated IVF. It is far less stressful and reduces risk. It may actually improve treatment-associated success rates since exposure to ovulation stimulating drugs negatively affects the uterine lining's receptivity to implantation.⁶¹ In 1990

⁵⁸ Myers ER, McCrory DC, Mills AA, et al. "Effectiveness of Assisted Reproductive Technology." Evidence Reports/Technology Assessments, No. 167. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 May. Pages 137-139, 142, and 143. Myers ER, McCrory DC, Mills AA, et al. "Effectiveness of Assisted Reproductive Technology." Evidence Reports/Technology Assessments, No. 167. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 May. Pages 137-139, 142, 143).

⁵⁹ The lack of follow up studies was noted by Holmes in 1988, but the situation has not changed markedly since. Considerable controversy surrounds the use of hyperovulatory drugs. Some of the most widely used drugs were originally approved for other, more life threatening, conditions such as testicular cancer and dysmenorrhea but have never been specifically authorized to induce hyperovulation. Clomiphene (see Canadian Report, 398 on ovulation induction administration) is an anti-estrogen that binds to estrogen receptors and is implicated in increased risk of ovarian cancer. Normally estrogen will cause a negative reaction diminishing FSH release so only one follicle will mature. Allowing more FSH into the circulation drives follicular growth. Since clomiphene has estrogen-like properties it may also have other effects (increasing the production of cervical mucus, for instance). Nonetheless, some physicians put patients on clomiphene long-term (1 year) before sending them to a fertility specialist, so they don't lose their referral base. Such long use could increase risk of ovarian cancer and is unnecessary since 98% of pregnancies on it occur in the first three cycles. Obviously, such drugs should only be administered after a judicious risk/benefit assessment has been made that takes account of the medical history of the particular patient. However, they are sometimes given even to women about to be sterilized to cause them to superovulate, so more ova can be retrieved for research use, and to women recruited for ovum "donation" (usually in exchange for cash). Some other hyperovulatory drugs, such as pergonal are less risky since they are cycled more quickly than clomiphene. See *Fertility and Sterility* 59:2, 1993 and "Ovarian tumors in a cohort of infertile women," M.A. Rossing, et al. in *New England Journal of Medicine* 331, 12, 994,771-776. LP: Disturbingly, there is evidence that patients are seriously misinformed about the potential consequences of treatment with such drugs; see Stewart, D., B. Rosen, J. Irvine, R. Ritvo, H. Shapiro, J. Murphy, J. Thomas, G. Robinson, J. Neuman, R. Deber (2001). The disconnect: Infertility patients' information and the role they wish to play in decision making. *Medscape General Medicine*, 3(4), PMID 11547268.

⁶⁰ This drug (diethylstilbestrol, a synthetic estrogen) was widely prescribed to pregnant women prone to miscarriage from the early 1940s to 1971, often without their informed consent. Despite tremendous enthusiasm for such interventions, there was no evidence of their efficacy (Oakley, 1984, 193-94). Reports of fertility problems [LP: and unusual cancers] among their daughters are widespread. Their sons may also experience impaired fertility (see Mausher, Suheil, et. al. "Experience with diethylstilbestrol—exposed infertile women in a program of in vitro fertilization," *Fertility and Sterility*, 1984, 42, 1, 20-24.

⁶¹ See Joseph Schenker "Medically Assisted Conception: The State of the Art" in Stephenson and Wagner, 1993. For evaluation of the technique see Price, 1992. For a detailed description see R. Paulson et al: "In vitro fertilization in unstimulated cycles: A clinical trial using hCG for timing of follicular aspiration." *Obstetrics and Gynecology* 1990, 76,788.

Dr. Ian Cook at Jessop Women's Hospital in Sheffield, England, predicted that natural cycle IVF would become the protocol of choice for some infertility diagnoses. But it was slow to catch on, in part because accurate prediction of the time of ovulation requires expertise in endocrinology that exceeds the skills of many clinicians. Also, if things go wrong either at the retrieval or the fertilization stage there are no spare embryos to fall back on. All one's eggs are in the same basket!⁶²

Other complications occur where ova are retrieved by laparoscopy. It has required general anesthesia, which carries its own risk; newer retrieval methods avoid general anesthesia but may nonetheless cause bleeding, infection and injuries to blood vessels and viscera. Infection may also result from embryo transfer. Caesarian birth rates are exceptionally high. Multiple pregnancies are far riskier than singletons for both the woman and her fetuses. Burdens on the pregnant woman are great whether she undergoes multi-fetal reduction (a procedure that destroys one or more fetuses to improve others' chances of survival) or attempts to carry them all to term. A woman who had been hyperstimulated in Britain recently became pregnant with octuplets. Fetal reduction was offered, but she declined and soon thereafter spontaneously aborted all eight.⁶³ Another in the U.S. gave birth to all eight, profiting handsomely from media publicity—though her physician didn't fare as well, having eventually been reprimanded for violating professional standards.

Psychological stress and anxiety associated with fertility treatment are considerable whether pregnancy is achieved or not. Each stage of the procedure provokes distinctive anxieties--whether the couple will be selected for treatment, whether oocytes will be recovered, will fertilize and will implant. Sometimes couples drop out after only one failed IVF attempt due to intolerable anxiety. Some describe as "sordid and humiliating" a common diagnostic procedure which is seldom featured in popular accounts of infertility. Called the "post-coital test," it requires the couple to time sexual intercourse according to the physician's schedule and then rush to the clinic for vaginal examination so the fluids around the woman's cervix can be sucked out for laboratory analysis.⁶⁴ This test vividly illustrates the multiple ways infertile people are brought under the gaze of medical observation, transposing sexual activity from the sphere of intimacy to a wholly functional activity open to the scrutiny of third parties.

The woman undergoing treatment is likely to experience higher levels of stress than her male partner for several reasons: she is the sole or principal subject of bodily invasion, her daily activities are the most disrupted by drug regimens and clinic appointments, and social pressures to produce children fall most heavily on her.⁶⁵ Even in instances where there is no evidence that the woman, herself, has any

⁶² LP: Nonetheless, clinicians are now successfully experimenting with such less invasive protocols.

⁶³ This case is discussed in greater detail in Chapter 2 below. It is important to recognize the distinction between multifetal pregnancy reduction and selective reduction. In the former procedure the selection of which fetus(es) to reduce is determined by their physical accessibility and location in the uterus. In the latter the determining factors are specific characteristics of the fetus--whether it is affected with a genetic anomaly or does not happen to be the desired sex. Readers seeking details about clinical and ethical aspects of these procedures should consult Rorty in Donchin and Purdy 1999.

⁶⁴ Oei et al. "Effectiveness of the postcoital test: randomized controlled trial," *British Medical Journal*. 317(1998) p. 502.

⁶⁵ There have been many studies of treatment related stress. See, for instance: Van den Broek. "Predictors of psychological distress in patients stating IVF treatment *Human Reproduction*." Vol.25, No.6 (2010), 147—1480 Baor. "Mothers of IVF and spontaneously conceived twins." *Human Reproduction*, Vol.25, No.6 pp. 1490– 1496,

reproductive abnormality, she may be expected to undergo hormone stimulation and intravaginal or intra-abdominal procedures that expose her to multiple risks and may cause complications that compromise her future fertility. Unless her male partner's sperm analysis is abnormal, his routine is interrupted only by the need to produce the sperm sample.

Women with blocked fallopian tubes may know that they're infertile before attempting pregnancy, but most have no occasion to discover their infertility until attempting pregnancy. Yet clinics tend to address their consent forms solely to the "couple."⁶⁶ Even standard definitions of infertility are worded as though this incapacity affected only the heterosexual pair. The tendency to extend gender-neutral language to issues that are gender-specific effaces the agency of the individual who is actually assuming the risks.⁶⁷

Some of these problems could be addressed by providing adequate information and appropriate counseling. Others call for transformation of the culture of the clinic. But experience indicates that without regulation and oversight, many fertility clinics are unlikely to alter their practices. Experienced fertility counselors are rare. Also, those employed by the clinic supplying the treatment are for that very reason not in a position to provide advice that is fully responsive to the patient's concerns or to mediate effectively where clinician's and patient's interests conflict. The illusion that the couple undergo treatment collectively contributes to the appearance of normalcy favored by clinics eager to reassure customers that the desires motivating their treatment are entirely "natural."

Interviews with women who have been in treatment show that respect for patient decision-making authority seldom conforms to ethical standards of care that are the norm in many other areas of medical practice. Reports of misleading information, unwarranted bodily risk and unjustified expense are frequent. Studies occasionally report that women in IVF treatment are dissatisfied with opportunities to ask questions and discuss treatment.⁶⁸ Adequate counseling is especially important when hyperovulatory drugs are administered because they increase risks to both the carrying mother and her infant. This issue has recently attracted media attention. Vivid metaphors are invoked characterizing "the battle for maternal resources" that begins early in the intrauterine life of twins or triplets. Though some countries are increasingly limiting the number of embryos that can be transferred, in the U.S. clinics have free reign. The ethical guidelines of the American Society for Reproductive Medicine recommend only that individual clinics anticipate pregnancy outcome to avoid quadruplet pregnancies. Those clinics whose higher-order pregnancy rates are greater than two standard deviations from the mean rate of all reporting

2010; Ebbesen. "Stressful life events are associated with a poor IVF outcome." *Human Reproduction*, Vol.24, No.9 (2009), 2173– 2182,)

⁶⁶ Among exceptions are the Code of Practice of the British Human Fertilization and Embryology Authority (Eighth revision, 2011) which includes consent forms specific to the individual and the form used by the Reproductive Health Institute of Northern California which not only includes a place for each of the pair to sign, but has a line for a witness too. Following the scandal about stolen embryos at the University of California Irvine clinic, the Northern California people bragged that their form would prevent such deceptive practices.

⁶⁷ Fasouliotis, Sozos, J. and Joseph G Schenker. "Social aspects in assisted reproduction." *European Society of Reproduction and Embryology*, 5, no.1 (1999,), 26-39.

⁶⁸ (Peterson, M.M. "ART and equity of access issues." *Journal of Medical Ethics*, 31(2005) p.280–228).

clinics for two consecutive years will be audited (ASRM 2007).⁶⁹ In such circumstances decisions about how many embryos to transfer to the woman in IVF treatment tend to be the sole prerogative of the clinician. The patient may never have been informed of the risk of multiple pregnancy until confronted with the offer of fetal reduction.

Reassessing the Clinical Approach to Infertility

Surely society's economic resources could be used more effectively if the individualistic clinical approach to infertility that postponed intervention until the harm has already been done were replaced by a preventive public health strategy that sought out the causes of infertility. Unfortunately, little has changed since the Warnock Committee reported in 1984 that they found it extremely difficult to locate any information about investigations into the circumstances that cause infertility and the means available to control it. In the face of what many allege is a problem of immense proportions, only a medicalized solution is offered. Little systematic effort has been made to gather reliable information about the effectiveness of IVF and related procedures (Wagner 1989, 1993, Jaffe 1991, Laborie 1993). Several studies have found little or no correlation between medical treatment for infertility and subsequent pregnancy.⁷⁰ Until studies demonstrate that the healthy baby rate for treated women is higher than for those in the control group, fertility clinic claims that they enable infertile women to have babies remain unsubstantiated. Medical intervention may decrease the time it takes to become pregnant, but except for women with blocked fallopian tubes, it appears that few women are likely to achieve pregnancy who would not eventually become pregnant anyway.⁷¹ Moreover, until the therapeutic efficacy of treatment procedures is determined, they are, in effect, experimental interventions which elude the systematic screening and monitoring provided by proper experimental protocols. Neither the likelihood of a successful outcome nor the risk to pregnant women and fetuses is known.

⁶⁹ See "Twins or more" by Howard W. Jones, Jr. in *Fertility and Sterility* 63, 4, 1995, 701-702. This issue also includes other articles that consider this problem. Incidentally, one of Jones' concerns about the ASRM policy is that legal liability falls to each clinic individually. See also Svendsen et al "The Incidence of Multiple Gestations After In Vitro Fertilization is Dependent on the Number of Embryos Transferred and Maternal Age" in *Fertility and Sterility* 65, 3, 1996, 561-565. Replace with current data!

⁷⁰ Of course, many know women who have dropped out of treatment programs and later become pregnant. For studies of this phenomenon see Richard Lilford and Maureen Dalton "Effectiveness of treatment for infertility" in *British Medical Journal* 295,6591,1987,156; Price 1990, 142; and Wagner and St. Clair (1989) and the correspondence that follows their article in the same journal. Françoise Laborie reports an Australian study (*Annals of the New York Academy of Science*, 1988, 541, 7-21) and notes that between 1980 and 1988 one hospital recorded more treatment-independent pregnancies than pregnancies after IVF treatment. In a more recent study (J.A. Collins et al, "The Prognosis for Live Birth Among Untreated Infertile Couples" in *Fertility and Sterility* 64,1,1995.22-28) the authors reported that the cumulative rate of conceptions leading to live birth of 198 couples with infertility of over one year's duration was 14.3% over 12 months. This is comparable to the success rate for one treatment cycle of IVF. Of course, some women—particularly those beyond their years of peak fertility—might still prefer to utilize these services in the hope of speeding up the process.

⁷¹ LP: This claim might not hold true for women over forty who are increasingly using donor eggs, with considerable success.

Costs for medical intervention are substantial whether reimbursed by health care insurance or paid directly by recipients. Charges for each stimulation cycle range from \$7000 to \$11,000; the average cost for IVF is \$30,000 per delivery.⁷² To keep patients in treatment, some clinics are now offering consumer rebates! However, first they screen participants and offer their money-back plan (which tends to exceed the normal cost and require advance payment for several treatment cycles) only to the patients considered most likely to succeed. Lab work, drugs and other costs not included in the clinic's base fees are not eligible for refunds.⁷³ Expenditure on drugs alone for just one cycle of IVF has been estimated at \$1600.⁷⁴ Costs have been calculated in a number of ways. In 1989 the US Office of Technology Assessment estimated that Americans were spending a billion dollars a year to combat infertility (U.S. Congress, 1989, 155). The current aggregate figure would be far higher. But none of these figures includes indirect costs associated with the increased caesarean section rate following treatment or care of low birth weight infants.⁷⁵ If you calculate in costs to society instead of considering only direct costs borne by individual consumers, the expenditure increases from \$66,667 for successful delivery after one cycle to \$114,286 by the sixth cycle. Individual satisfaction is very difficult to quantify and, arguably, individuals should not be prevented from spending their personal resources in any way they choose so long as they stay within the law. But some direct costs and most indirect costs are borne by insurance and the costs are spread, either over the entire society (where insurance is public) or over the group covered (in private plans). So these statistics raise troubling questions about fallout from the fertility industry.

Indigent women are effectively excluded from infertility treatment in the U.S., for no state provides publicly funded coverage for even the most basic infertility work-up, let alone a full cycle of IVF treatment. Though estimates put infertility rates among African American women at one and a half to two times white ones, they may actually be considerably higher since married black women are far less likely to be counted in infertility statistics. Very few can afford to utilize reproductive services and private insurance seldom comes with their jobs. In any case, the fertility of all poor women is more likely to be compromised by nutritional deficiencies, exposure to hazardous work situations, and damaging medical and environmental conditions. The rate of pelvic inflammatory disease among nonwhite women (a common side effect of untreated gonorrhea, chlamydia bacteria, and IUD use) is estimated to be twice the rate among whites.⁷⁶

⁷² Wall Street Journal 11/15/07, D4. LP: Probably considerably higher in many cases now, in 2015.

⁷³ Details about this scheme are reported in New York Times 8/25/96, Sect.3, p.1.

⁷⁴ New York Times 4/19/92. As use of the internet increases, infertile women have begun to share information and spread the word about sources from which hyperovulatory drugs can be purchased by mail order. Pergonal, for instance, would cost \$150 for a single injection in a physician's office but ten vials can be bought by mail for \$120. Many thanks to my astute student, Shelley Stratman for this information.

⁷⁵ The Neumann article op.cit. is interested in quantifying the benefits to be gained by allocating funds for IVF treatment. So they factor in indirect costs including the maintenance of the low birth weight infants, the probability of whose existence is increased by the use of hyperovulatory drugs leading to multiple birth and severe prematurity. The cost of "saving" an infant weighing 750 grams averages about \$65,600. "Cost of Hospitalization for Preterm and Low Birth Weight Infants in the United States." *Pediatrics* 120 (2007) e5.

⁷⁶ For a fuller account of the infertility problems of African American women, see Laurie Nsiah-Jefferson and Elaine J. Hall "Reproductive technology: Perspectives and implications for low-income women and women of color" in Ratcliff 1989, 93-117 and Jefferson "Reproductive genetic services for low income women and women of

From the perspective of the individual patient, inequities in access to infertility treatment are, arguably, unjust. But, considering the lack of reliable data confirming the safety and efficacy of medical interventions, it's not so obvious that those who lack access to infertility treatment are denied an actual *benefit*. Far more obviously unjust are the structural inequities that compromise the reproductive health of nonwhite and poor women. Such inequities generate further moral problems relating to the eugenic implications of selective access, their effect on birth statistics,⁷⁷ and the maldistribution of available resources. From a public health approach which seeks the best mix of curative and preventive health services, the correction of individual inequities would not be the first priority. More vital are programs that prevent sexually transmitted diseases, disseminate health information, and check infectious disease. Adoption of such measures would control the incidence of infertility in the population far more cost effectively than individual interventions at the point of service delivery (Wagner and Stephenson, 1993).

The World Health Organization (WHO) 2003 consultation on the place of IVF in infertility care produced one of the first reports that sought to place IVF within a context of the totality of health services. Included in their deliberations was a mix of participants; not only clinicians and medical researchers but social scientists, epidemiologists, patients, and potential patients. Their report stressed an approach to ethical issues that would take into account all who are affected by services that seek to alleviate problems associated with infertility.⁷⁸ Such an alternative approach would also be more responsive to the health needs of those who do not perceive themselves as infertile because they never tried to become pregnant, as well as those whose families and friends' interests are bound up with the infertility problems of those they care about.⁷⁹

To appreciate the merits of the WHO approach, it is important to recognize the respects in which infertility is unlike most other sorts of physical incapacities. The chair of RESOLVE has claimed that "infertility is an illness no different than diabetes, kidney failure, or coronary artery disease" (U.S. House 1992, 31), but in the absence of *desire* for a child, no one would even count it as a misfortune. Apart from surgery to open obstructed fallopian tubes, medical treatment does not restore bodily functioning. Infertility does bear a superficial resemblance to certain other physical impairments for which cures are uncommon, e.g., short-sightedness, loss of limb, diabetes and dental disease, but unlike them, social remedies may meet the need as satisfactorily as medical interventions. Situating infertility problems within the context of disease medicalizes it, stimulating the search for medical treatments, putting decision-making inappropriately in medical hands, and obscuring alternatives.

color" in Rothenberg and Thomson 1994, 234-259; and Parham et al. "Racial disparities affecting the reproductive health of African American women." *Medical Clinics of North America*.2005).

⁷⁷ This is a particularly glaring problem in countries such as Israel that provide generous funding for IVF treatment but restrict access in a way that favors women of European descent. Israel has the highest IVF rate in the world. See Kraft, Dina. "Where families are prized, help is free." *New York Times*, July 17 2011, A5.

⁷⁸ WHO. "Assisted reproduction in developing countries—Facing up to the issues." *Progress: In Reproductive Health Research*, 63 (2003), p.2.

⁷⁹ Silva, Idos S. "Ovulation stimulation drugs and cancer risks: A long-term follow up of a British cohort." *British Journal of Cancer*, 100, no. 11(2009) p.1824-1831).

Disease is a slippery concept that may refer to a specific entity that has been identified, a functional deficiency or just a variation from the norm. It bears remembering that during the nineteenth century medical authorities commonly took masturbation to be a disease, too. Many men (including some physicians) had their testicles surgically cut out, believing that they would thereby be cured of this loathsome disease. Some subsequently reported success!⁸⁰ It was recently fashionable in medical and pharmaceutical circles to regard menopause as a disease too—on the basis of completely inadequate scientific information—thereby stigmatizing all postmenopausal women who did not use hormone replacement therapy. And new diseases are continually being “discovered,” such as “female sexual dysfunction,” presumably treatable with drugs previously advertised only to men with erectile dysfunction.⁸¹ Another is “metabolic syndrome” which purportedly ails 75 million Americans who are categorized as obese.⁸² The World Health Organization’s disease classification site is continually listing new diseases. The tendency to favor medically intensive remedies for the many sources of human unhappiness is good for both medicine and industry, particularly the pharmaceutical business which is continually seeking new markets for its products.⁸³ But there are often other alternatives open to troubled people. Thus those who desire children but cannot readily become pregnant may try donor insemination (which need not require medical mediation) or adoption or join a self-help group or treat themselves to an extended holiday.⁸⁴

In sum, a combination of several factors contribute to the current demand for IVF and related techniques: the lack of alternatives, failure to address the causes of infertility, media overstatement, exaggerated reports of IVF success rates, and newly evolving techniques that necessitate IVF, such as ICSI and PGD. Persistent gender-specific expectations promoting the ideology that the desire for a child is biologically given also play a significant role in drawing women into fertility clinics in the hope that they will ultimately bear a child of "their own."

The Pronatalist Imperative

Fertility researcher Gary Hodgen's case for social support and public funding aptly illustrates how the fertility industry has exploited opportunities for expansion by appealing to women's traditional social role as childbearers. In testimony to a U.S. congressional committee he stated:

⁸⁰ For an account of this practice see Engelhardt in Caplan *et al* 1981.

⁸¹“Hormones for men,” and “The marketing of disease: Female sexual dysfunction” *BMJ* 2005; 330:192-194, see also *New Yorker* 7/29/02.

⁸² “The Thin Pill” available at <http://wired.com/archive>.

⁸³ LP: However, in some cases this is a valid move, leading to appropriate treatment for causes of genuine suffering or helpful preventive measures.

⁸⁴ Some prefer to situate infertility problems within the class of disabilities (see, for instance, Barbara Katz Rothman (1989) or the Warnock Report (1984) which refers to infertility as a malfunction of the human body). Disability language summons up a broader range of possible solutions than disease language though not so broad as the language of desire that I discuss in a subsequent chapter. LP: notice, however, that self-help solutions may well preclude desirable screening for infection, etc.

The nascent technologies that derive from IVF/embryo transfer research are essential brain food for our brightest, most innovative young academicians....There is need to recognize that infertility is a disease, that it denies to millions of our citizens the dignity of one of life's most fulfilling experiences: the adamant desire to bear a child (Hodgen, 1985).

Hodgen resigned from The National Institutes of Health when the U.S. government withdrew funding for embryo research and became scientific director at a medical school facility that derives much of its research funding from the treatment of infertile patients. Like Hodgen, many fertility specialists finance their own research projects by recruiting affluent infertile patients on whom they depend to subsidize reproductive research and provide embryos needed for experimentation. Hodgen's justification of fertility research and development might better be read, then, as an unwitting declaration of the essential conditions for a successful commercial venture: the conflicting *aims* of reproductive research and therapy, the need for adequate numbers of infertile patients to support research programs, and unquestioned reliance on a biologically deterministic ideology to undergird the claim that these "therapies" are enabling women to fulfill their "biological destiny." I will now examine these conditions in more detail.

Venture capital enterprises regard IVF as a sound financial investment.⁸⁵ Commercial fertility clinics compete with research institutions for patients, often reaping handsome profits for venture capitalists. The director of the IVF program at a prominent American university publicly warned his colleagues over a decade ago of the threat to future research if private business ventures succeeded in attracting patients away from research institutions (deCherney 1983). But free-standing fertility clinics have continued to proliferate in the U.S. in settings that do not offer even the minimal scrutiny provided by an Institutional Review Board at a research facility. In response to women's allegedly "adamant desire to bear a child," clinics have devised even more inventive ways of exaggerating their statistics. Some that operate in multiple locations cite data from a long established facility to attract customers to a newly opened one. IVF Australia, which developed from the venture capital group at Monash University that

⁸⁵ One venture capital enterprise which has received considerable publicity attempted to secure patents both on the catheter used for SET and on the process itself. They then proceeded to set up a nationwide chain of fertility clinics to provide these services to a potential market of 50,000 women at a projected fee of \$10,000 per patient. Though success of the technique at the time was no greater than IVF, promoters of the venture set up a computerized donor bank and went about aggressively seeking fertile women to serve as ovum donors for a modest fee, little more than sperm donors are paid. However, unlike sperm donation, the retrieval of ova involves an invasive and time-consuming procedure which is not without risk. In Britain, this technique was considered by the Warnock Committee and rejected because the risk to donors was deemed unjustifiable. In defending the SET enterprise before a U.S. Congressional subcommittee (1985), John Buster, principal investigator on the original research team, claimed that he was forced into this financing scheme by the failure of the U.S. Government to subsidize infertility research.

Critics point out that such ventures bring monopoly pricing of a medical benefit; set up a conflict of interest between physician and patient; block checks by other investigators that would insure safety and efficacy without introducing any alternative means of quality control; and point out that virtually any measure instituted to monitor enforcement of the patent law is likely to infringe patient privacy. Medical interest in maximizing profit stands in direct conflict with the patient's interest in receiving a safe, efficacious service. (For further information on SET schemes see George Annas in the *Hastings Center Report*, 14(5)1984, 25-26 and Fern Schumer Chapman in *Fortune Magazine* 9/17/84, 33-35).

funded Robert Edwards' IVF research in the early 1970s, now manages fertility programs in several U.S. cities. In one of the first federal efforts to intervene, the U.S. Federal Trade Commission cited them for deceptive advertising. But without more systematic and comprehensive oversight, women who use fertility services have little protection from exploitation by overzealous researchers and profit-seeking commercial entrepreneurs.

Creating a Social Climate for Infertility Intervention

Why this rapid proliferation of fertility clinics and apparent public approval of new reproductive techniques? The factors discussed here certainly play a large part: media dramatization of medical successes, the characterization of infertility as a disease requiring medical management, the emergence of highly trained expert elite, and the involvement of powerful commercial interests. But even taken together they do not suffice to explain why these techniques should have emerged just now. For, as I have noted, IVF research fell off in the '50s and early '60s, particularly in the U.S., and for many years it was unwelcome in the medical community, which tended to view laboratory fertilization as immoral.

Possibly, the proliferation of new reproductive techniques is not so much the *cause* of social transformations as responses to other changes in the organization of reproduction. Recent social shifts increasing women's range of choices are still very fragile, and women's identities and perceived social worth are still closely tied to their childbearing and rearing role. So fertility technologies, themselves, may be only a secondary threat to women's interests that is far less critical than social conditions that fostered their development. And their future potential to drastically alter society may, as Norma Wikler predicts, owe its origin to the events which prompted society to re-fashion its potential for using the technologies (1986, 1056). So to understand the displacements of prior social practices that paved the way for rapid proliferation of new fertility interventions, the techniques need to be located within the broader social context that shaped their application. This can be done by showing, (1) continuities with older techniques and (2) discontinuities due to intervening social transformations.

Parallels between the emergence of new conceptive technologies and contraceptive techniques are revealing. Linda Gordon's careful study of the development of contraceptives shows how social institutions and cultural values shaped these technologies and intersected changing relations between the sexes and the shifting economic organization of society.⁸⁶ She points out how prior social programs, such as the population control movement, worked as catalysts linking the birth control movement to market forces, population policies, and sexual relations. Analogous social forces propelled the adoption of new reproductive techniques: changing population policies, pronatalist social attitudes, and opportunistic commodification.

Michelle Stanworth (1987) points out that many reproductive techniques widely publicized as technological breakthroughs are, in fact, new versions of older methods. For instance, artificial insemination broke the continuity between sexual activity and procreation a century ago and could easily have come into common use long before the development of such sophisticated techniques as IVF (since the only technological apparatus needed is readily available in most kitchens). But it did not. To explain

⁸⁶ Linda Gordon, *The Moral Property of Women: A History of Birth Control in America*, Grossman Publishers, 1976).

the recent surge of interest in this long available "low-tech" procedure, then, one needs to take into account the new social uses to which artificial insemination has been put.

Turning to childbirth technologies, (with the exception of electronic techniques for monitoring fetal heart-rate and movement) most are merely newer extensions of old methods. Indeed, even some of the most morally troubling aspects of new reproductive options--the tendency to view children as "products"--are not new issues but have been with us since reliable fertility control methods became available to the middle classes.⁸⁷

The most obvious social change intervening during the hiatus between the initial development of IVF and the resumption of active research in the '60s was the "sexual revolution" which brought profound changes in moral attitudes about sexuality, sexual activity outside institutionalized marriage, power relations between individual men and women, women's social role and status, and family structures and functions. Together with the development of the oral contraceptive pill and eventual legalization of abortion, these changing patterns of social relationship have all contributed to a social climate receptive to the new techniques. As a consequence of increased use of contraception and abortion, fewer "desirable" babies are available for adoption. Relaxation of the traditional social stigma that has marked single parenthood has reduced their numbers still further. And the emerging judicial practice of ordering the return of previously adopted children to their biological parents further deters potential parents from pursuing adoption.⁸⁸

Of course, neither the sexual revolution itself nor the technological and social changes with which it was intertwined fulfilled its promise of liberation. Instead, power relations between men and women have been reconfigured in more complex ways than could ever have been anticipated. Though many men feel threatened by the erosion of patriarchal authority over domestic arrangements, women have discovered that the new sexual permissiveness, so widely hailed as liberatory and emancipating, may actually increase their vulnerability to unwelcome sexual demands. In *The Hearts of Men* (1984) Barbara Ehrenreich documents the erosion of men's sense of family responsibility and the consequent social and economic costs to the women and children who could formerly rely on their support. She argues persuasively that recent decline in traditional structures of family authority is not, as many charge, the *result* of such social transformations as the "sexual revolution" and the women's movement, but changing family structures led to feminist activism. Causal priorities, she argues, have been inverted: men first began to leave the family and then, in reaction, women who had remained at home realized that they could no longer rely on their men for economic support. So they went out to work where they discovered

⁸⁷ Chesler (1992, p. 83) discusses the increasingly widespread (though often unreliable) practice of birth control throughout the nineteenth century and the cultural shift from the child's value as a producer of labor and lineage for his parents, to the mother's responsibility for the enrichment of the child. Her account, however, suggests no obvious causal relationship between these developments.

⁸⁸ For instance, in the 1993 Baby Clausen case a biological mother who had signed adoption papers at birth was later reconciled with the biological father who had never been told about his paternity until after the adoption. Ultimately, the adoptive parents who had reared the child for the initial two years of her life were forced to turn her over to the biological parents.

the gross inequities between the compensation and working conditions of men and women.⁸⁹ Awareness of these realities fueled the women's movement. It is noteworthy that many of the women who are the subjects of Ehrenreich's analysis are in their childbearing years. But the workplace structures they encountered when they poured into the labor market were designed principally to fit men's traditional life experiences. More upwardly mobile women have been deterred from becoming pregnant until their careers are secure. By then advanced childbearing age and exposure to environmental and iatrogenic factors that affect fertility have taken their toll. So the probability of achieving a quick pregnancy diminishes.⁹⁰ A recent survey by the Fertility Society of Australia reported that just 27 percent of Australian women have their first child before the age of thirty compared to 92 percent thirty years ago. The women surveyed reported that factors leading them to delay childbearing included their desire for a stable relationship and financial security. They ranked their career as the 13th out of 14 factors that would influence their decision to have children. One in three women in their thirties had no children because they had no partner (Bionews 380, 10/16/06). Data are similar in the US. Though women of all education levels figure their earning power will flatten out after they have children, the longer they wait, the higher the level it flattens out at. For the less educated there's less incentive to wait because the lost income is less.⁹¹

The media's tendency to present these issues as *individual* problems calling for individual solutions obscures the extent to which social class and prevailing workplace arrangements militate against harmonizing work and family life for women. Pressures on women to use fertility clinics may be propelled in part by male dominated interests that would welcome their withdrawal from the workforce. Fertility services are used principally by the same groups of educated middle class women who have risen in recent years to positions in the labor force never previously held by women. Pressuring them to fulfill the traditional mothering role reduces competition for coveted positions.⁹² So the conjunction between women's pursuit of professional careers and the proliferation of fertility clinics may be more than just a chance coincidence. However, the dominant strategy reproductive researchers and their supporters use to increase a market for these techniques obscures social factors that stimulate the resurgence of traditional feminine expectations. Consequently, women induced to defer pregnancy until their careers are secure or leave the workforce to care for young children tend to personalize their quandary. They are encouraged to think that social conditions have not constricted their options, but their own free choice.

Public Debates

⁸⁹ LP: However, some argue that one major factor leading to women's turn to the workplace was to maintain families' standards of living after the disappearance of the family wage. See Stephanie Coontz (1992) *The Way We Never Were: American Families and the Nostalgia Trap*, Basic Books.

⁹⁰ See Griffiths A. et al. "A cost-effectiveness analysis of in-vitro fertilization by maternal age and number of treatment attempts." *Human Reproduction*, 25, no. 4(2010) 924-31.

⁹¹ Christ, NY Times 1/21/07, section 4,1 citing Topher Jenck and Steven P. Martin from the Consensus Bureau's June 2006 Current Population Survey. LP: Recent studies show that women's careers suffer, but men's benefit, by having a child.

⁹² LP: In some respects, this all feels like a replay of the *Feminine Mystique* so well described by Betty Friedan.

Tensions about the potential of new reproductive techniques, then, seem to be based more on their capacity to crystallize contemporary controversies about sexuality, parenthood, reproduction and the family than on the fact of technological development itself. Analyses of reaction in countries where there has been public debate about the new techniques tend to support this interpretation. Polarization of debate around dominant viewpoints sounds more like a reiteration of preexisting conflict among opposing ideologies than a fresh debate on new ground. Several distinctive perspectives have dominated. Medical researchers and their backers seek funding and support to expand knowledge about reproductive processes both for its own sake and for the new technological applications they anticipate. The discourse of scientists such as Hodgen is sprinkled with allusions to the secrets of embryonic development waiting to be unlocked and the cures of deadly diseases awaiting discovery once embryo research reveals the processes of cellular differentiation. Others stress technological applications, improvement of IVF techniques, development of contraceptive vaccines, and control of genetic anomalies so children need not be born with genetic disorders.

Medical researchers' brief for unfettered development of new birth techniques is supported by practitioners and scholars who resist any attempt to regulate markets. Libertarians who give primacy to reproductive freedom and some utilitarians who stress the future good of those most directly affected tend to be sympathetic to the proliferation of new reproductive techniques. The latter group is likely to argue that the frontiers of knowledge should be pushed forward first, and concern about undesirable consequences can wait until the need for regulatory intervention becomes evident.

Most conspicuous among opposing forces are conservatives who emphasize the importance of intergenerational ties and the sanctity of fetal life. They voice fears that proliferation of these technological innovations will undermine traditional family values and circumvent "nature's way of doing things." Regretting the erosion of traditional structures of family authority, many conservatives cling to the hope that by blocking reproductive innovations they can somehow restore the central position of fathers in domestic life. While supporters of the new techniques attribute them to the unremitting struggle of dedicated researchers laboring in isolation from surrounding social forces, their opponents view them as a revolutionary threat to stable social arrangements. Between these poles are representatives of government who aim to appease both factions but often recognize that unless some regulation is imposed, more protracted and irreconcilable legal disputes will likely follow.

Over the past dozen years there has been intense debate within feminism about reproductive medicine, but feminist voices are rarely discernible in public debate. Insofar as women's interests are represented at all, they tend to be forced into a framework already structured by the polarities embedded in the dominant discourses.⁹³ For example, some have proposed in public debate that the application of the new technologies would enhance women's liberties by making pregnancy and gestation optional choices, thereby circumventing tensions between maternal and fetal interests. If a woman did not want to carry a pregnancy to term she could abort the fetus without causing its death. It could then be transferred to a laboratory incubator to be tended by technicians until it reaches viability.⁹⁴ Though a few feminists

⁹³ In Basen et al Christine Massey notes that the hearings held by the Canadian Royal Commission on New Reproductive Technologies were characterized by the Toronto press as a debate between "feminists" and the "infertile" (1993, 246).

⁹⁴ See, for instance, such philosophical works as Glover (1984) and Singer and Wells (1984). Christine Overall (1987) also considers this mode of gestation but her overriding point is that one may have a right to abortion but does not have the right to insure the death of the fetus. Their views are taken up in another context in Chapter 3.

did support laboratory gestation in the early '70s, they soon recognized that such revolutionary changes in reproductive practices could not possibly serve women's interests until political structures were radically transformed. Within the present political context which absolutizes fetal interests so they take priority over the interests of pregnant women, few women are likely to view this option as liberatory. Moreover, it is important to recognize the seductive allure of such enticements. For such arrangements are unlikely to be feasible even if an individual woman concurs. First, very few abortions are performed after the first trimester, and those that are tend to be done for therapeutic or eugenic reasons that many consider less morally objectionable than abortion when the woman does not want to have a child at the present time. Second, other resource priorities are likely to outweigh the interest in preserving the life of such a fetus. Lastly, the interests of the formerly pregnant woman are not wholly exhausted by the termination of her pregnancy.⁹⁵ Taking both sets of considerations into account, many feminists fear that new conceptive techniques are liable to extend the burdens a masculinist society already imposes on women. For without adequate safeguards these technologies are more likely to have a reactionary effect, exacerbating the prevailing imbalance of power between men and women and intensifying the exploitation of women's sexual and procreative capacities.

In short, the most vocal groups in public debates about reproductive technologies are enthusiastic researchers, ideological conservatives, and the media spectacles that promulgate their points of view. All tend to stress the revolutionary character of these techniques, but their discourses sound refrains from older social controversies. Some scholars have warned against oversimplifying issues by conflating new and old problems; but few recognize a connection between popular rhetoric and underlying anxieties about surrounding social upheavals and changing attitudes toward traditional social practices. To illustrate the social tensions at the source of controversy about reproductive innovations and the polarities that so often dominate moral and social debate about them, I will discuss successive efforts to regulate the technologies in the U.S. and then examine deliberations about their regulation in other countries, particularly Great Britain.

⁹⁵ For further elaboration on these points see Callahan "Ensuring a stillborn: The Ethics of lethal injection in late abortion" in Callahan (ed.) 1995, pp. 266-283.