Designer Children:

Products of Society's Desire for Perfection

It seems as though Darwin's theory of natural selection has become outdated. The combined genes of parents are no longer dictating the who and what of future children. As Ted Peters (1996) points out in the chapter from his book entitled, "How Many Ways Can We Make Babies?, reproduction is no longer restricted to sexual intercourse as the only method for conception. Recent technology is altering nature's selection process and allowing for the pre-selection and rejection of certain genes. Originally created to help infertile couples start a family, assisted reproductive technology (ART), which includes artificial insemination (AI), in vitro fertilization (IVF), and preimplantation genetic diagnosis (PGD), has pitted the concept of "survival of the fittest" against what is scientifically selectable. Genetically selected children, aptly named "designer children," are being created, no longer only for the infertile, but for those capable of natural conception as well. The scientific and technological breakthroughs in genetics, although at times beneficial, reveal the pressures to conform to society's norms.

Of the assisted reproductive technologies, "AI is the most widely used, leading in the United States to nearly 30,000 births with donor sperm (AID)- and 35,000 with the husband's own sperm (AIH) (Peters, 1996, p. 36). One form of AI is Intrauterine Insemination, or IUI. Huntington Reproductive Center (2007) describes the procedure as a relatively painless one in which: "a speculum is inserted into the woman's vagina and a catheter with a syringe containing the concentrated sperm is inserted through the cervix into the uterus [where] . . . [t]he sperm are injected and the catheter and the speculum are

removed". IUI can be used in cases of male and female infertility, but more so in cases of male infertility. Depending on the severity of the male infertility, the couple may choose to use donor sperm (Intrauterine Insemination, 2007, p.5

When selected as the method for artificial insemination, donor sperm can be a miracle to hopeful parents. The concern of bringing a child into this world through reproductive technology is not only relevant to the heterosexual couple, but also staggeringly important to lesbian and gay couples that wish to have a child of their own. The growth in acceptance of single parenthood has also increased the amount of single women seeking donor sperm as a means to produce children. Many factors must be considered in choosing donor sperm. Do we choose a donor that physically resembles one or both partners? Do we select for certain traits we would like to pass on ourselves? Do we choose for physical features and traits that correspond with the ideals of society? In the case of heterosexual couples, one main concern, as Huntington Reproductive Center (2007) notes, is that "[d]onor sperm is less expensive; however, the child will not have the genetic makeup of the father"(Intrauterine Insemination, 2007, p. 5). Guidelines for the selection of proper donor sperm were published in 1957 in *Artificial Insemination for the Human*, citing alongside similarity in physical features the demeanor of the husband (See Appendix A for an excerpt from Artificial Insemination for the Human). Not as stringent as in past years, the intent for many in recent years is to find a donor close to their partner's genetic makeup and conceive a child that is passable as one created naturally.

However, that is not always the case. The selection of donor sperm for use in AI can be chosen to enhance the physical, intellectual and social acceptability of the

conceived child. Today there are sperm banks that cater to the specified desires of hopeful parents. Some sites, such as geniusspermbank.com (n.d.), claim that their listed sperm banks "select sperm donors based mainly on achievements and genetic quality . . . and cater to clients who want to improve the intelligence of their child by selecting a sperm donor of superior intelligence and outstanding achievements". While many offer a variety of information on their donors such as race, profession, education, and even pictures, the decision of how to choose the genes of your child is a difficult one. In an article in The International Herald Tribune, the Fairfax sperm bank describes their number one requested donor as "very attractive, with hazel eyes and dark hair, and . . . is pursuing a Ph.D."(Kolata, 2007, p.2). The donor selecting process makes the selecting of traits favorable in society, especially those not inheritable from the mother-to-be, an easy and lucrative option.

The implications of selecting donor sperm are not only controversially significant for the enhancement of certain characteristics, but also for what is being selected against. Also reported in The International Herald Tribune, at the California Cryobank "[b]eing short is negotiable", meaning acceptable if paired with a Ph.D or other positive incentive, supporting the preference in society for the tall, dark, handsome, and educated man (Kolata, 2007, p.2). Our societies heightened emphasis on attractiveness and intelligence is promoting the selection of ideal sperm that is seemingly unattainable in the real world. As the account of the number one donor demonstrates, women are not choosing average males' sperm. This creates a standard for mate selection that many men are not able to live up to.

In vitro fertilization (IVF) consists of a more complicated procedure that fertilizes the egg outside the womb with partner or donor sperm. According to Crooks and Baur (2008), "mature eggs are removed from the woman's ovary and are fertilized in a laboratory dish . . . [a]fter 2 or 3 days several fertilized eggs of two to eight cells each are then introduced into the woman's uterus"(p. 298). Two other variant forms of IVF are zygote intrafallopian transfer (ZIFT) and gamete intrafallopian transfer (GIFT). As Crooks and Baur (2008) describe, the procedure of ZIFT "involve[s] transferring fertilized ova to a fallopian tube rather than to the uterus" and GIFT is when the sperm and ova are placed directly in the fallopian tube, where fertilization normally occurs"(pg. 298). In the procedures of IVF and ZIFT, in which the zygote is allowed to develop outside the woman's body, trained technicians are able to remove a cell and test it to determine the gender of the possible child.

Gender selection is made possible through the advancements in genetic screening technology such as, preimplantation genetic diagnosis (discussed in subsequent paragraphs) and MicroSort® technology. IVF plays a crucial role in sex selection because once the gender of the several possible zygotes is determined they can implant ones of a preferred gender. The Huntington Reproductive Center (2007), one provider of sex-selected fertilization, describes the process of their gender sorting technology, MicroSort®, as follows :

> The separation of male and female sperm is based on the measurable difference in the quantity of genetic material (DNA) they contain. The sperm absorbs a dye, which attaches temporarily to the DNA, or genetic material, inside the individual sperm. When exposed to laser light, the dye fluoresces. Since the X chromosome

> is larger than the Y, there is more DNA for the dye to attach to and, consequently, the sperm with the X chromosomes will fluoresce more brightly than those with Y chromosomes. The flow cytometer is able to pick up these differences in brightness and separate the sperm as they move through the machine one at a time.

This sperm sorting technique significantly improves gender specific pregnancies for both male and female selections (Microsort Technology, 2006, p.4).

Once a specific gendered embryo has been implanted, the repercussions of the procedure affect sex-ratios on a global scale. As Mary Anne Warren relates in her book, *Gendercide: The implications of sex selection* (1985), a preference for sons can be seen worldwide. Although Warren (1985) notes that it is more dominantly practiced in Third World nations, ". . . even in the United States and Western Europe there is still a pronounced tendency to prefer male children, particularly among men, and particularly with respect to the first born child"(pg. 13). Male children are through our society's patriarchal structure are able to pass down the family name and are valued for this characteristic. After having one child, the couple may also choose to have an embryo of the other sex implanted through IVF in order to reduce the possibility of same sex child to balance their family.

The advances in reproductive technologies are making gender selection even more efficient and easy for nations with well-established traditions for male preference. For example, Crooks and Baur (2008), in their book entitled *Our Sexuality*, point out that "[i]n India a woman can obtain an ultrasound for about $12 to determine the sex of the fetus, and if it is a girl have and abortion for about $35" (p. 295). China, one of the

leaders in male preference selection practices, has been fueled by the advances in prenatal screening and early abortion procedures. The traditional viewpoint of males as "integral to one's future financial and social wellbeing" coupled with the government's One-Child policy "puts immense pressure on Chinese parents to determine the sex of their child in the womb, and terminate the pregnancy if it is a girl" (Fragoso, 2007, para. 4). Prenatal ultrasounds are currently one main source of determining gender, which results in the selected abortions of female Chinese fetuses.

However, the implications of gender selection in the IVF process are serious when applied to a situation such as China's. Already, one estimate sites that "[w]orldwide, there are already 100 million girls 'missing' due to sex-selective abortion and female infanticide, according to the English medical journal The Lancet. Fifty million of these girls are thought to be from China (Fragoso, 2007, para. 5). If sex selection is made readily available through implantation of a certain gendered fetus, the results could be grave for the Chinese population. It is estimated that by 2012 the Chinese gender gap will have grown to an extent that "[o]ne in every five males reaching adulthood four years from now and wanting to find a spouse of the same age or younger will be destined for failure, according to the Contemporary Chinese Young Population Development Status Report"(Chen, 2008, para.3). Reports have indicated that the problem has reached a point of great concern, but despite the illegal status of reveal[ing] "a child's gender before birth, . . . in many "marketised" hospitals, doctors are willing to break the rules for payment"(Chen, 2008, para. 12). Although implantation of a fetus of the desired sex would reduce the amount of aborted female fetuses, China's population gap cannot afford the selection against so many women.

Yet another reproductive technology changing the arena of genetic selection is Preimplantation Genetic Diagnosis (PGD). PGD is a recent technology that is growing in its significance to future births. PGD tests the embryos that are to be used in IVF for sex linked diseases and genetic abnormalities including: Huntington disease, hemophilia A, sickle cell anemia, Down Syndrome, and cystic fibrosis (Huntington, 2007). The genetic screening techniques must be preformed in proper laboratories "familiar with DNA technologies such as fluorescence in-situ hybridization (FISH) for sex determination and screening for chromosomal abnormalities and performing the polymerase chain reaction (PCR) for single gene diseases"(PGD- The Process, 2007, p.4). As one source describes the process,

> PGD involves the removal of one or two cells on day three of the development of embryos conceived using in-vitro fertilization (IVF) techniques . . . On day three, the embryo is only six to 10 cells in all. The removed cell is then tested for the gene concerned. (Ho, 2006. p.3)

The obvious benefits of the ability to foresee possible disabling genetic diseases for parents are clouded in the danger of the technology being used to eliminate a child based on disorder. Genetic screening and intervention does have what John A. Robertson (1994) calls "therapeutic" means. He explains that "[t]herapeutic interventions are intended to treat a disease in the embryo or fetus which will affect the welfare of a subsequently born child"(p. 161). Because some diseases are genetically linked, pre-screening for these disorders will allow parents to assess the likely damages before birth and make a decision as to the future of the child. Huntington Reproductive Center (2007) reports that "PGD has resulted in hundreds of normal births from parents at risk for

transmitting genetic diseases"(PGD- The Process, para. 4). One description of the benefits of genetic screening voices the practicality and the preventative nature:

> Most couples who resort to PGD are generally those who have had children born with serious genetic maladies and/or one or more abortions to terminate subsequent pregnancies found to carry the same gene. With PGD, the embryo to be implanted in the mother's womb would have been pre-tested to ensure it is free from the particular genetic defect in question, so traumatic abortions can be avoided. That is a good thing, of course (Ho, 2006, p.10)

The potential for PGD to reduce, if not eliminate, the risk of passing on a genetic disorder to their offspring is intensely encouraging and significant for parents.

On the other hand, as one recent article reports, "PGD is expensive and unlikely to be widely used even in the US, much less the developing world"(Ho, 2006, p.9). Consequently, genetic disorders are likely to be discovered late in the pregnancy and abortion may commonly be considered as an option. However, aborting a child based on disability has serious implications. The desire for a healthy baby is shared by all parents, but it raises the question of denying a child its life out of care for its wellbeing or rejecting it because of its flawed condition. John A. Robertson in his book, *Children of Choice,* makes an argument against screening for genetic disorders:

> The very concept of selection of offspring characteristics or "quality control" reveals a major discomfort –the idea that children are objects or products chosen on the basis of their qualities. . . valued not for themselves but for the pleasure or satisfaction they will give parents. [. . .] Carried to an extreme, parents will discard less than "perfect" children and engineer embryos and fetuses for

> enhanced qualities. A worst case scenario envisages repressive political regimes using these techniques to create a government-controlled Brave New World of genetically engineered social classes. (p. 150)

His concern about children being discarded for being "less than perfect" brings up unpleasant memories of past historical events. One of the most powerful images of selection for a particular trait as the norm and acceptable in society is in the propagation of the Nazi Aryan race. The suggested ideal of the blonde, blue-eyed child as the "superior race" not only led to the intentional selection of these traits, but also gave rise to the degradation and persecution of the Jews.

In a society that demands perfection, have we gone to far in demanding that our children be born perfect? The concept of eugenics, that was once practiced in the U.S., reveals that society's perception of perfection and normalcy shapes people's actions. Peters (1996) highlights an American eugenics movement that aimed to stop felons from having children by means of forced sterilization. It was believed that children of convicted felons would also become felons due to some genetic link between parent and child and perpetuate delinquency. "By encouraging the proper people to breed and by discouraging the wrong people from making babies, eugenicists sought to prepare the way for future generations of superior people"(p. 85). Although reproductive technology and the increased achievements in the field of genetics are helping to target and aid in relieving various disorders, they are also creating a platform from which a new form of eugenics can build. Discrimination against what is considered favorable by society is not only likely, but can already be seen today. As Peters (1996) shares, "[i]t would not be too unrealistic to imagine the following scenario occurring a decade from now: A published

list of genetic predispositions that, if found in a fetus, would mandate an abortion under penalty of loss of coverage" (p. 91). The shifts in both directions, towards the perfect designer child and away from the unfit, show technology's influence on procreative decisions.

One is lead to believe that reproductive freedom protects the choices that individuals make regarding their procreation. Robertson (1994) states that the "decision to procreate depends on ability to have healthy children"(p. 33). In this case, those unfortunate enough to be at risk for passing genetic disorders to their children would elect to utilize a method such as PGD along side IVF to ensure their baby's health. Although some would use genetic screening technology to identify and prepare for life with a child with disabling disorder, for many the choice that technology provides results in actions to avoid negative outcomes. As Peters (1996) clarifies, "choice at the level of reproductive technology means selecting the healthy baby and discarding the unhealthy one"(p.34). This example of selection in terms of advantageousness is applicable to society as a whole. According to Beck-Gernsheim (1995), "Gradually people are starting to regard being handicapped as not a burden imposed by fate but as *an event that can and should be avoided*" (p. 95). As the use of reproductive technology increases, procreative freedom alongside society's view of how our children should be will have a tremendous impact on the selective decisions made.

Why is it that as a society we want to conform to the norm? Daily, people are buying designer clothes, following the latest diet trend, and living out stereotypical gender roles, all in adherence to society's accepted norms and standards of what is desirable. In our individualistic society in particular, competition drives the preference

for certain traits. With technology, traits that were once valued as gifts of nature for the social advantage they provided, such as good looks, intelligence, and even health, can be manufactured and imitated by those lacking the genetic predisposition. However, in creating a "designer" baby, for whom you have intentionally selected its appearance, sex, or status of health, you lose the diversity and variation that nature intended. The value of individual differences has been cast aside in the pursuit of conforming to an ideal for which there is no constant universal model. As time goes on, standards and norms will shift steering the aspiration of achieving perfection into areas of engineering, such as the targeting of genes for alcoholism, sexual orientation, and depression, for which evidence already suggests the possibility (Robertson, 1994, p. 150). The seemingly endless quest leads us to question, will society ever learn that perfection is never attainable?

(3078 words)

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Appendix A

"The donor must be an honourable, upright person of good repute, as similar as possible in character to the 'prospective father'. For, if this character should be dominant n the child, the husband will feel flattered if his son or daughter resembles him in this and it will be easier for him to forget that he is not the child's biological father. . . . It stands to reason that one would not choose a tall, ginger-headed donor as 'deputy' for a coal-black, stubby, thick-set husband. One should therefore look out for habit, colour of the hair, colour of the eyes, stature, facial expression, complexion. . . . For a Jewish couple the donor should be a Jew of the same nationality as the husband's; so, for an American Jew the donor should not be a German Jew." (Schellen, 1957, p. 159-162)