

Who's Rocking the Cradle? From Procreation to Production

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The rapid advances in reproductive technologies have created issues that challenge our sexual and family relationships, our human freedom and dignity, and our ethical and religious foundations. Reproductive technologies have changed child-bearing in profound ways. Increasingly the idea of procreation is being replaced with baby making as a production that we undertake with doctors and specialists (Howard, 2006). Whereas procreation places sexual intimacy between a man and a woman within a divine plan to produce and nurture unique human souls, the new technologies bypass sexual intercourse, creating new life through medical and commercial procedures which include egg and sperm banks, artificial insemination, in-vitro fertilization, surrogate mothers, and cloning .

Traditionally, deep emotional bonds have joined men and women in sexual bonds of love to give birth and form a family. Deep emotional ties bind parent to child and child to parent. Because children bring the joyous gifts of life and love, parents plan and anticipate the birth of their little ones with delight and anxious wonder. Increasingly, however, 'making babies' is taking a new direction with new meaning in ways that will strike at the core of humanity. Reproduction has become a scientific and commercial commodity. Making babies has developed into a commercial enterprise that by 2004 had become a nearly three billion dollar business (Spar, 2006:3). Expanding the market is of primary concern in business ventures.

Many ethical and legal questions are raised by the new reproductive technologies. How far should commerce and reproduction mix? Are the rights of children of the new biology being ignored? What is it doing to the way we think about ourselves, each other and our children (McNulty, Aug. 30 1987)?

Social movements which supported acceptance and encouragement of new sexual and family behaviors began in the 1960's within universities, the media, and even within some churches. These new behaviors played into the rapid commercialization of reproduction. Single parenting, divorce, planned parenthood, abortion, the normalization of homosexuality, the decline of legal and moral support for marriage, liberalized sexuality, and female postponement of child bearing for education and career were creating social support for the movement of society away from reproduction through procreation toward reproduction through scientific and commercial production.

POSTMODERN PROCREATION

In her article, *Postmodern Procreation: A Cultural Account of Assisted Reproduction*, Sarah Franklin outlined ambivalent feelings in regard to these changes in the norms of procreation. Science in service to the family in assisting infertile couples to share the joy of children is seen as honorable and welcome. However, we are torn between the potential benefits to relieve suffering and increase reproductive choice, on the one hand, and dangers to morality, humanity and society, on the other. We are intimidated by the inevitability of scientific progress and our inability to block its way.

Franklin is concerned that the field of reproductive technology and genetic engineering is expanding in ways that are “threatening new forms of reproductive control” (Franklin, 1995:324). Much of the anxiety that currently surrounds assisted reproduction lies in the fact that technology provides a different kind of grounding. Whereas natural reproduction denotes “an independent, law-governed, objective, factual reality... fixed, universal and absolute”, the foundation provided by technology is grounded in unbounded possibilities. The concern lies with who will control and shape these possibilities and for whose purposes. Whereas traditionally women and their male partners have controlled reproduction, the new forms of reproductive interventions place male-dominated scientific and corporate market systems of power and control not only at the site of delivery but also at the site of conception. Increasingly our lives fall under their control as “science fathers itself” (Franklin, 1995:334-335). As reproduction undergoes cultural re-definitions and reconstruction through technological modification,

monitoring, managing and marketing, it is being removed from the warm womb of motherhood to the cold, transparent, glass petri dish of the scientific 'father'.

Children have been seen as the natural product of the procreative act of their parents. However, assisted reproduction destabilizes the foundation. Our concepts of blood relatives and parents become challenged in ways that redefine the cultural definitions of relatives and kinship ties. As foundational groundings and boundaries are altered, our traditional beliefs about parenthood, procreation, kinship and personhood are brought into crisis.

What was once a private act of love, intimacy, and secrecy is now a public act, a commercial transaction, and a professionally managed procedure. In the context of assisted reproduction, successful conception and procreation have become achievements, realized through teamwork and the helping hand of technology (Franklin, 1995:335-336).

THE BRAVE NEW BIOTECH WORLD

In 1973, Bentley Glass, a professor of biology at the State University of New York at Stony Brook, outlined the growing capabilities of the field of genetics and expressed concern and caution about the growing field of biotechnology.

We are therefore entering a time when genetically selected plant and animal strains may be preserved indefinitely, for future use, by appropriate freezing of the reproductive cells or the young embryos...

The growth of the embryo in the glass and plastic vessels of the laboratory offers a great opportunity to study its development and to reject any embryos with abnormalities... Might it even be eugenically desirable, say, to have frozen stocks of the 'best human spermatozoa and ova available for general use, and not just in case of a nuclear war?...

However, one should be cautious about advocating every practice that is biologically feasible. At present we certainly do not know how to select the 'best' genetic strains of a human population. In our farm animals and cultivated plants, the 'best' is simply whatever suits the needs, or even whims, of man.

The best, in an evolutionary sense, is that which holds greatest promise of adaptation to whatever sorts of environment the future will bring...

Furthermore, high intelligence without accompanying idealism, morality, and fellow-responsibility would be positively dangerous. Can we breed such characteristics too? It is highly doubtful...

Finally, what we might sacrifice, were we to try today to breed a better

mankind, could be the very diversity among races and within populations that has been fully as important in the successful evolution of man as his superior intelligence...

The probability is that, while many will hang back, a few bold adventurers will of their own free choice proceed toward the human control of evolution. (Glass, 1974)

CRACKING THE CODE

In 1953 Francis Crick and James Watson built a model of deoxyribonucleic acid (DNA) that identified DNA as “the carrier of the genetic code and thus the key molecule of heredity, developmental biology and evolution” (Lemonick, 2003). Science, medicine and much of modern living was drastically changed by this discovery.

The biological revolution was further jump-started in early 2000 when the human genetic code was cracked by Francis Collins, director of the National Human Genome Research Institute, and J. Craig Venter, president of Celera Genomics. Collins and Venter were recognized by President Clinton as “the two most important players in the worldwide effort to spell out the 3 billion ‘letters’ of the human genome – the biochemical recipe, encoded in our DNA, for manufacturing and operating a complete human being.” (Lemonick, 2000) The new millenium moved us solidly into a brave new world

Eric Lander, head of the Whitehead - Massachusetts Institute of Technology Center for Genome Research, expressed concerns related to the breaking of the human genetic code that are not only scientific but also social and philosophical. While he notes that our human similarities outweigh our differences in that the DNA of any two humans is 99.9% identical, he cautions that our privacy will be jeopardized because there will be temptation to pry into other’s genomes. There will develop the tendency toward genetic determinism. “People love to oversimplify genetics... But the fact is, genes determine only so much.” Lander sees germ-line modification as the biggest concern. “The question of whether it’s right to modify the genetic code so that people pass on particular traits to their children... Once you start to see human beings as a product of manufacture, you cross a line and you may never be able to return” (Golden and Lemonick, 2000).

Lander also expresses concern that the Patent Office allows scientists to patent a discovered gene structure with only a fragmentary description of its composition, discouraging future research..

THE NEW BIO-INDUSTRIAL WORLD

As we moved into the Biotech Age, Jeremy Rifkin warned that the commerce in genetic materials is fashioning a bio-industrial world that “raises more troubling issues than any other economic revolution in history”. Rifkin contends that many molecular biologists see themselves as grand engineers, recombining genetic components into “compliant organisms for human service” (Rifkin, 1998).

In 1977 Rifkin, along with Ted Howard published: *Who Should Play God? The Artificial Creation of Life and What It Means for the Future of the Human Race* . They noted that well-credentialed and well-financed researchers propose the complete restructuring of human life in the construction of a genetic super race. Bentley Glass, former president of the American Academy for the Advancement of Science, is quoted as saying, “the right of parents to procreate must become a secondary consideration to the right of every child to be born with a sound physical and mental constitution, based on a sound genotype.” Joseph Fletcher, professor of medical ethics at the University of Virginia School of Medicine, believes that “laboratory reproduction is radically human compared to conception by ordinary heterosexual intercourse” because laboratory-created life is “willed, chosen, purposed, and controlled rather than emotionally or accidentally produced.” The day of complete test-tube life was foreseen by E.S.E. Hafez, who was chairman of the department of animal sciences at Washington State University. Hafez once was photographed for a national magazine holding a set of test tubes labeled “man”, “sheep”, and “swine”. The caption read, “the barnyard of the future- complete with farmer.” (Howard and Rifkin, 1977). Many scientists who advocate for genetic engineering have a financial stake in the commercial corporations that promote reproductive technologies, serving as advisors or sitting on boards of directors.

GROWING RATES OF INFERTILITY

A recent study involving 782 couples from across Europe found that human fertility declines earlier than previously believed - at 27 years for women and 35 years for men. For women, those younger than 27 had a 50 % chance of conceiving during a menstrual cycle while those over 35 had less than a 30% chance with rates dropping quickly after age 35 (Ross, 2002).

In the 1970's, feminist movements encouraged women to postpone childbearing for education and career development. The passing of Roe vs. Wade in 1973 made it possible for women to make the choice to prevent early pregnancies. It was generally assumed that when the choice was made to bear children, it would be as easily accomplished as in the earlier years. Women were being told they could wait until they were in their 30's, 40's or later to have babies. Women experience grief, shock and anger when they discover, after waiting until their mid thirties to try for a child, that it may be too late.

There are dangers involved in waiting to bear children. The risks of miscarriage, ectopic pregnancy, and fetal risk of chromosomal abnormality are more than double at age 35 compared to pregnancies in the early 20's. In her book, *Creating a Life: Professional Women and the Quest for Children*, Sylvia Ann Hewlett noted that many women who adopted a 'male model' career focus ran into an epidemic of childlessness. Her research showed that 42% of women in corporate America were still childless after 40 (Gibbs, 2002:48).

THE DEVELOPING WORLD OF REPRODUCTIVE TECHNOLOGY

Artificial Insemination

The first reported case of artificial insemination (AI) by donor took place in 1884 when a Philadelphia medical school professor inseminated a patient, conspiring with her husband to keep the donor, a good looking student, a secret. Physicians kept the

procedure of artificial insemination tightly controlled, restricting it to married couples (Stryker, 1993). The first commercial sperm bank opened in 1970 in Minnesota. The market was small at first, composed almost entirely of women whose husbands experienced infertility. In 1979 fewer than 10 percent of doctors would provide sperm to unmarried women.

Initially the banks used sperm from friends and family but soon donors were solicited through advertising, paying them a nominal fee. Most sperm donors were medical students who were paid \$50 a donation. With no legal regulations, AI practitioners placed few, if any, limits on how many times sperm donors could contribute. In the early years of the program there was little screening of the donors nor were records maintained (Andrews, 1999:80-82). One donor who contributed samples twice a week could have fathered about 170 children a year. The concern developed that children fathered by the same donor could meet and fall in love without realizing their kinship. One physician donated so many times when he was a student at Georgetown he advised his children not to marry anyone from the District of Columbia (Stryker,1993).

By 1980 there were seventeen frozen sperm banks in the U.S.. Twenty-thousand babies were born that year from frozen sperm at a cost of about \$66 per specimen. Growing social support for single parenting encouraged the commercial market for sperm. In 1982 heterosexual single women and lesbians were able to take advantage of donor sperm for pregnancies when the Sperm Bank of California was created to cater to their interest (Andrews, 1999:86-87). By 1999 there were over one hundred sperm banks across the country. (Spar, 2006:36-37.)

A disturbing case of deception was revealed in March of 1992 when Dr. Cecil Jacobson was convicted for lying to patients he treated for infertility. He had used his own sperm to father as many as 75 children, telling the patients that the sperm was that of a tall, blond, blue-eyed, when Jacobson was short and squat. Dr. Jacobson contended that he had done nothing wrong, saying that it was common practice for doctors to use their own sperm (Scripps Howard Service, 1992).

Problems Arise From Anonymity

In the rush to develop new reproductive technologies, the rights of the produced children were ignored. Legal complications emerged as the right to privacy of the sperm donor collided with the right of the sperm child to know his or her family, medical and genetic background. Donors were promised anonymity to protect their privacy. Dr. Antonio Scommegna at Michael Reese Hospital in Chicago said, “All our donors are identified by code: we change the code, and later we throw everything away so there is no way to identify them. We promised them that...The legal people have been so very inventive... What if they started suing the father (donor) for child support, or for tuition to send the kid to Harvard in 20 years.” (McNulty, Aug. 31. 1987). The receiver of the sperm also generally insisted on anonymity.

However, there were those who wanted more disclosure of information about the background, medical history, and family history of the donors. They contended that the children of sperm donors have a need for a biological identity, for roots and for medical information related to their father. Efforts developed to keep two levels of records; one set containing the genetic and medical history, the other containing the identity of the donor. Suzanne Ariel, who was conceived through artificial insemination, disputed the lack of information. She contended that children conceived through artificial insemination were entitled to both levels of information. Ariel said, “It’s important socially, medically and psychologically...Some people may want to be anonymous, but nobody has the right to trade away my paternal heritage” (McNulty, Aug, 31, 1987).

By 1987 about 20% of the donors agreed to provide their personal history and even their identity when the child turned 18 (McNulty, August 31, 1987).

To accommodate this growing concern for increased information about donors companies developed elaborate catalogs of donors, complete with picture. Cryobank in Century City, California provided 24 pages of information about each donor and offered an audiotape for an additional \$20. Dr. Cappy Rothman, the sperm bank’s director said, “You will know more about the donor than you do about your husband.” Cryobank’s Web sites also listed donors and their characteristics. (Kolata, 1998). Women could peruse the sites on their lunch hour to consider a father for their child.

Problems develop when the medical histories supplied by donors are not complete or accurate. Cheyenne, an 8 year old girl, who had been conceived with sperm from a man known only to the mother as 3066, is an example of such a problem. Her mother noticed that she was very sensitive to sound and walked on her toes. After checking on the Donor Sibling Registry Web site, her mother located six other children around the country who were fathered by 3066. Of these children, two have autism and two show signs of a sensory disorder associated with autism. On his medical record, Donor 3066 reported only that his paternal grandmother had high blood pressure. Cappy Rothman, medical director of the California Cryobank said “3066 has been put on restricted status – meaning women still can use his sperm, but are warned that problems could arise...” Rothman said, “the sperm bank tests for major infectious illnesses such as hepatitis and HIV, but not more exotic medical conditions, and it’s not required by law to do so. The sperm bank relies on donors to fill out medical histories extending back three generations” (Nguyen, 2006).

In-Vitro Fertilization (IVF) and Assisted Reproductive Technologies

The growth in infertility and the search for children created interest in the growing field of assisted reproductive technologies (ART). ART includes in-vitro fertilization and other procedures in which both eggs and sperm are handled in the laboratory. The public became aware of the advances being made in assisted reproductive technologies when Louise Brown, the first child born from in vitro fertilization, arrived on July 25, 1978 in Oldham, England. Her birth set off an explosion of criticism and commercial activity. Louise was the genetic offspring of John and Lesley Brown, Otherwise capable of conceiving, Mrs. Brown suffered a malfunction of the fallopian tubes. The doctors responsible for Louise’s birth, Patrick Steptoe and Robert Edwards, were determined to fertilize the mother’s egg outside her body. They transferred the fertilized egg to her uterus where the successful pregnancy developed. Steptoe and Edwards had been working for a decade on the procedure, performing at least eighty in vitro procedures before achieving this successful breakthrough. (Spar, 2006:25).

Before the 1980's only sperm gametes were used in cases of fertility treatment, but in the mid-1980's a technique was developed in Australia that enabled specialists to remove eggs from a female donor, fertilize them, and transfer the embryos to another woman. (Becker, 2000:133).

In 1982, Yale In Vitro Fertilization Program (IVF) was offered at Yale Medical School, followed by a program at Columbia in 1983. By the spring of 1983 in vitro fertilization was responsible for about one hundred and fifty babies. As commercial clinics multiplied, the IVF trade became a thriving business which supplied services for the thousands of couples seeking help with fertility problems. Between 1995 and 1998 the number of fertility clinics rose from 281 to 360, and the number of in vitro procedures increased from 59,000 to 81,000.(Spar, 2006:28-29).

Egg donation is more expensive than sperm donation. While sperm donors receive \$50 - \$75, egg donors are paid \$2,500- \$5,000 because of the medications that must be taken, the longer time involvement and invasive procedures needed to extract the egg. (Becker,2000:152). Egg donors must inject themselves daily for four weeks with large doses of hormones to encourage their ovaries to produce numerous oocytes, while undergoing regular ultrasound and blood tests to monitor the developing oocytes (Travis, 1997).

In vitro fertilization involves removing mature eggs from a woman, combining eggs and sperm in a laboratory petri dish, and then transferring several embryos back into her uterus. Because several treatment cycles are often necessary before a pregnancy occurs 20 or 30 embryos may be created and frozen from the eggs extracted . Lori Andrews, an advisor on genetic and reproductive technology to health organizations and governments, cautioned that "Once the embryo was isolated in the petri dish, it could be used to create a child for the progenitors, it could be donated to another couple, it could be genetically manipulated, or it could be used for other research purposes." (Andrews, 1999:29).

Frozen eggs

While frozen cattle sperm has been stored in sperm banks since the 1950's and human sperm since the 1980's, freezing eggs has not been as successful. Mature eggs are

usually ruined if they are frozen. Although instances of successful pregnancy through the use of frozen eggs had been reported around the globe since the mid 1980's, the technology for egg freezing was unreliable. While fertilized eggs, or embryos, have been able to be frozen, eggs banks have not been available. (New York Times Service, 1997; Travis, 1997; Spar, 2006:60). However in the 1990's improved techniques were developed, making it possible for Reproductive Biology Associates to offer egg freezing to young women about to undergo chemotherapy. Interest in egg freezing quickly spread beyond medical necessity. Young women saw egg freezing as a way to delay childbearing and a way to beat the biological clock that threatened women in their mid-thirties.. By 2002 the technology had matured to the extent that Egg Bank USA, in Milwaukee, charged \$7,000 to remove ten to fifteen eggs from a young woman and store them for later use. The CHA Fertility Center in Los Angeles announced a similar service. In 2004, a Harvard Business School Student, Christina Jones, joined the egg market opening her firm, Extend Fertility, offering full-service egg retrieval and storage for \$15,000 plus annual storage fees. (Spar, 2006:61).

Legal and ethical problems related to frozen gametes

The freezing of sperm, eggs, and embryos offered the opportunity to place reproductive tissue in storage for use at a later time. The growing market in frozen sperm, egg and embryo raised many legal quandaries. When individuals freeze their sperm or eggs for future use ethical and legal questions develop about use of the gametes when an individual dies, when a couple divorces, or when embryos remain unused after a fertility treatment. The laws of inheritance become confused when a wife uses frozen embryos or sperm to create future children after the death of her husband. In preparing wills new laws must designate whether a child procreated by artificial means after death will be considered an heir (Rodriguez, 1994). In 1992, "The Tennessee Supreme Court upheld a divorced man's right to refuse to become a father by way of using seven embryos he and his ex-wife conceived in a test tube" (Associated Press, 1992).

In 2002, a survey by the Society for Assisted Reproductive Technology showed that there were approximately 400,000 embryos left over from IVF treatments that remained

frozen in IVF clinics across the country (Langdon, 2005). It creates an emotional impact on some parents who believe that the fertilized embryo is fully human when they realize, after giving birth, that they have frozen embryos remaining. Senator Arlen Specter addressed this concern when he slipped an amendment into the funding bill for the U.S. Department of Health and Human Services in the summer of 2001, setting aside \$1 million to promote 'embryo adoption'. In November 2002 a small adoption program called Snowflakes received \$500,000 in federal funds to create public awareness of embryo adoption (Spar, 2006:88). The attraction of this type of adoption is that the parents could learn about the genetic parents and the mother-to-be could carry the child herself. Ron Stoddard, founder of the Snowflakes Embryo Adoption Program advises adopting parents to "Be sure to get something in writing from the genetic parents to transfer the embryos, sort of like 'transferring title'" (Neven,1999).

Health Concerns for IVF Mothers and Babies

Lenient laws and commercial incentives created a rush by physicians to develop reproductive technologies, often without appropriate caution.. Marketing strategies too often were attempts to sell a product rather than to provide a service. One woman explained, "He gave me a tour of the clinic and set me up to get started for IVF all in one hour...That will be \$75 for today's tests and \$3,000 for the down payment for the IVF... I felt like I was at a used car dealership." (Becker:130-131). Infertility treatments are experimental, but patients are often not informed that the procedures are not 'normal' and 'may not work'(Becker, 2000:123)..

The use of assisted reproductive technology treatments includes increased health risks for both mothers and infants. Serious complications, including blood clots and kidney damage, can result when the woman's ovaries are tricked into producing a number of eggs at one time. In vitro fertilization treatments place several fertilized eggs into the woman's womb with the possibility of multiple gestations. Multiple fetuses, usually twins, result in about 20% to 35% of IVF pregnancies. Developing in a crowded uterus can create the risk for developmental problems, including mental retardation, paralysis and blindness. One study found that children born through IVF were twice as

likely to suffer birth defects such as cleft palate, a hole in the heart or kidney problems. (Gorman, 2002:52). Additional health risks associated with multiple births include pregnancy complications, premature delivery, and low birth weight infants. In 2003, ART infants with low birth weight ranged from 9% for single births to 94% among deliveries of 3 or more infants. ART infants born premature ranged from 15% for single deliveries to 97% among deliveries of 3 or more infants (Wright, et. al, 2006).

Surrogacy

As in other aspects of reproductive technologies, embryo transfer and surrogate motherhood raise many ethical and legal questions. When a wife is unable to carry a pregnancy to term, a couple may contact a surrogate who will carry a fertilized embryo, supplied by the couple, in her womb and deliver a baby for them. In surrogate motherhood the surrogate supplies the ova. These contractual arrangements intend that the baby will belong to the couple arranging for the transaction. By 2001, some 2,000 cases of surrogacy were occurring each year with the surrogate receiving \$10,000 or more for the delivery.

Surrogacy is fraught with controversy. Dr. Jay Katz, a professor of law, Medicine and psychiatry at Yale University contends that “commercial child bearing exploits women physically, emotionally and economically..They’re soliciting women throughout the country, almost exclusively women who are poor.” Andrew Kimbrell, general counsel for the National Coalition Against Surrogacy noted “ Women originally are seduced by the money and the idea of doing good for somebody. Then they find that they become bonded to the child, and the maternal bond is much more important than economic bonds” (Carroll,1991).

An early legal challenge to this practice occurred in 1985 when a twenty-six year old woman named Mary Beth Whitehead carried a child as a surrogate for Bill and Betsy Stern, a professional couple. Whitehead was the biological mother of the child. Four days after giving birth, however, Whitehead disappeared with the child, saying, “I signed on an egg. I didn’t sign on a baby girl” (Spar, 2006:70). Eventually Bill Stern won

custody of the baby, after the New Jersey court concluded that it was in the best interests of the child.

A variety of other social and legal concerns and challenges have developed from surrogacy. In 1990, a surrogate mother in California sued for parental rights and a say in the child's upbringing although she was not genetically related to the boy (The Associated Press, 1990). Helen Beasley, a 26 year old from Shrewsbury, England, who was carrying twins, refused to go through with the selective reduction to terminate one of the fetuses as was outlined in the contract (Taylor, 2001). In 2001, supermodel Cheryl Tiegs had strong feelings of jealousy after contracting with a surrogate to carry twins who had been produced in-vitro using her eggs and the sperm of her husband, Rod Stryker. Cheryl found it difficult to bond with her children. She had a hard time with the knowledge that another woman was carrying her children. The emotional difficulty led to a divorce between her and Stryker (Hollywood divorce shocker, 2001)

Designer Eggs and Concerns about the new Eugenics

Web sites and genetic institutes now offer “designer eggs” and couples offer gifts to those who are potential donors for desired ‘eggs’. The *American Way* magazine, which is the complimentary magazine supplied on American Airline flights, recently ran a half page ad by the Genetics & IVF Institute advertising, ”Donor Egg – immediate availability... We offer approximately 100 fully-prescreened donors immediately available for matching by our patients including Doctoral Donors in advanced degree programs, and numerous other egg donor with special accomplishments...” (American Way, 2006:)

Pre-implantation genetic diagnosis allows screening for a variety of specific disorders, desired characteristics and even sex selection. As consumers select donor gametes from pre-selected designer eggs and sperms, concerns of a “new eugenics” is created. Questions are raised about the creation of a new elite, pre-selected for looks, intelligence, and physical abilities, who are born into the upper class. The ramifications for genetic discrimination and widening the gap between the rich and poor become obvious (Becker, 2000:155).

When donor gametes become commercial commodities, questions are raised about who is buying and who is selling. In-vitro fertilization treatments are expensive for the buyer, running at \$10,000 or more per cycle. Because infertility treatments are usually not included in insurance coverage, their use is generally limited to those well off enough to pay the high prices for treatments., often an older two career couple who have waited to have children and can afford to pay the high price. Questions of exploitation arise when the eggs are harvested from younger, low income women. Ethical dilemmas are raised in asking disenfranchised women to sell their eggs, their potential children, for the well being of upper class couples (Becker, 2000: 125,152-153).

As genetic testing on embryos before implantation became possible, embryos can now be chosen, rejected, or enhanced based on a number of characteristics, including sex, intelligence, physical abilities, and potential genetic diseases. The new gene insertion techniques allow parents to create “better children” by inserting desirable genes (Andrews, 1999:131). A shift is developing in the way society thinks about those with disabilities. When tests show something is wrong with an unborn child, physicians are increasingly encouraging the pregnant women to abort. The unborn child is being treated as a piece of property as our culture moves toward the idea that the best way to “eliminate certain illnesses is simply to eliminate people who are ill before they have a chance to be born” (Dalfonzo, 2005).

Cloning

In 1996 the Scottish scientist, Dr. Ian Wilmut successfully cloned Dolly the sheep. By removing the nucleus of an unfertilized egg and replacing it with the nucleus of any adult cell or an embryonic cell, cloning produces an exact duplicate of an organism. The result is an identical, but younger, twin of the donor from whom the genetic material was obtained. By 2003 scientists had cloned more than a dozen mammal species, including rabbits, cats, pigs, goats, horses and cows. A calf has been cloned from a slaughtered cow and a sheep from a carcass found in a pasture (Ritter, 2003)..

The temptation of cloning lies in its potential for curing human diseases such as Alzheimer’s and Parkinson’s disease and the like. Scientists at Advanced Cell

Technology in Worcester, Mass took a skin cell from a cow, cloned it, implanted the embryo in another cow, and then used cloned tissue to create near identical replacement parts for the original animal. Would fetal farming bring in a brave new world where human life is created to be destroyed for cures? (Krauthammer, 2002).

Doug Hunt of the International Center for Technology Assessment said that issues related to therapeutic and reproductive cloning “raise serious questions about how we see ourselves as human beings and how we relate to ourselves. Are we going to turn ourselves into objects that can be replicated and duplicated?” (Bragg, 2002). Would it be acceptable to clone a person 10 or 100 times? Cloning would confound every human relationship. A man could hire a surrogate to carry his cloned child without a partner. If a woman gives birth to her own clone is it her daughter or her sister? How would the uniqueness of the cloned child be affected? (Gibbs, 2001).

Lisa Cahill, a Roman Catholic moral theologian, argued that “the child who is truly the child of a single parent is a genuine revolution in human history, and his or her advent should be viewed with immense caution”. She argued that the kinship network is important to social cooperation and the development of a sense of self. Cloning humans would not only liberate people from male-female relationships but would also “allow for the emancipation of human reproduction from any relationship” (National Bioethics Advisory Commission, 1998).

In the Muslim world, clerics also saw cloning as disrupting natural law and creating a chaotic future for humanity. Ali Abu el Hassan, a cleric from Egypt’s al Azhar University, said, “Science must be regulated by firm laws to preserve humanity and its dignity Ayed bin Ahmad al-Qurani, a Saudi Arabian cleric supported cloning of plants and animals which could serve humanity, but contended that “Human cloning is wrong because it will cause an imbalance in the human nature God has created” and could replace marriage for the sake of reproduction through one gender without the need for the other. (Winfield,2002).

GOVERNMENT RESPONSE TO REPRODUCTIVE TECHNOLOGIES

After the first test-tube baby was born in Oldham, England in 1978 most countries established regulations governing assisted reproductive technology and in-vitro fertilization stating who can undergo the procedures, how it should be performed, and what happens to unused embryos (Langdon, 2005). The British decided favorably in support of in vitro fertilization, including the freezing and donation of embryos, as a treatment for fertility. The Human Fertilisation and Embryology Authority was created to regulate fertility research and services. The United States was still in political upheaval from the 1973 Roe vs. Wade decision. In 1976 Joseph Califano, President's Carter's secretary of health and human services established a commission and launched a round of hearings. In March 1979 the commission reported favorably on IVF, recommending that the government end its moratorium on fetal research. However, it was a political hot potato that no one would touch. IVF research did not receive funding from the United States. (Spar, 2006:27-28). Although the United States keeps statistics on IVF success rates, it has no law governing IVF other than general medical licensure and health requirements (Langdon, 2005).

Payment for egg and sperm donations are barred or restricted in most countries, including England and Australia (Kotata, 1998:7A). The United States is the only country in the western world that allows egg donors to be paid (Becker, 2000: 153). Because of the lenient laws in the United States in regard to sperm and egg donors, the U.S has become a center for infertile couples from around the world

Since 1981, when the first U.S. infant was conceived using assisted reproductive technologies, the number of medical centers providing ART treatments have increased rapidly. Because of the need for oversight and awareness concerning the rapidly developing procedures related to ART, Congress passed the Fertility Clinic Success Rate and Certification Act (FCSRCA) in 1992 requiring each medical center in the United States that performs ART to annually report data to the Center for Disease Control (CDC) on every ART procedure being used by the center. Data collection was begun in 1996.

In 1998, approximately 0.7 of all live babies born in the United States were the result of ART procedures (Center for Disease Control, 2000). By 2003, ART procedures

accounted for 1% of the live births in the U.S. and 18% of the multiple births (Wright, et al.,2006). In 2003, CDC received reports on 122,872 procedures which resulted in 35,785 live-births deliveries and 48,756 infants. Multiple birth deliveries were involved in 51% of the ART infant births (Wright et al., 2006).

SUMMARY OF CONCERNS

Many voices are being raised about medical, social and legal problems that are and will continue to ensue as we move into the biotech age (Andrews, 1999; Becker, 2000; Spar, 2006). Some feminists are concerned that decisions about conception and childbearing are being removed from women and given to medical, legal and commercial authorities (Steinmetz and Stein, 1990). In discussing surrogacy, Priscilla Alexander of the National Organization of Women contends that the brokers should be tightly regulated because they are in a sense pimps making money off of women. Janice Raymond, a University of Massachusetts professor and member of the Feminist International Network Against the New Reproductive Technologies, contends that “It is effectively creating a whole new traffic in women” (McNulty, August 30, 1987).

In the United States for many years we have ceded control over our personal and public decision making to experts. Wesley J. Smith waves a flag of concern about the direction in which these ‘experts’ are leading us, particularly in the areas of health and reproduction. “Decision making has been quietly co-opted by ‘bioethics,’ a genre of philosophical discourse practiced by an elite group of academics, philosophers, lawyers, and physicians, many of whom are openly hostile to the sanctity of life and the Hippocratic traditions that most people still take for granted” (Smith, 2000).

In her book, *A Jealous God: Science’s Crusade against Religion*, Pamela R. Winnick contends that current debates about science are not really about science at all but rather are being dominated by an ideology known as philosophical scientism. Whereas science is an objective search for information and facts through the means of hypothesis testing, scientism has the end of proselytizing for the subjective belief that progress will be brought about through materialistic utilitarianism. This philosophy has been advanced by the Biological Science Curriculum Study (BSCS) which formed in the

1960's after the launching of Sputnik to promote evolution as "biology's path to prominence and recognition." Winnick explores "how, beginning in the 1960's the materialistic values of scientism were insinuated into the life-sciences curricula" (Smith, 2006). Led by eugenicist Bentley Glass, the BSCS berated the Judeo-Christian worldview that places humankind on a pedestal above other creatures and outlined 'responsible parenthood' as the "responsibility to have as few children as possible – or better yet, none at all." Winnick warns, "If man is no more than a creature of instinct, he is malleable to state-control: he can be trained and bred like any other species" (Smith, 2006)

In March of 2004, The President's Council on Bioethics proposed measures that the federal government and professional societies should adopt immediately. They call for information gathering, monitoring, and reporting of the uses and effects of assisted reproductive technologies (ART) and increased consumer protection . Although there were differences in the council about some ethical questions, especially about the moral standing of the human embryo, there was agreement on the need for increased oversight and monitoring of ART practices in regard to concern for human freedom and dignity.

The Council recommended a federally funded longitudinal study of the impact of ART's on:

1. the health and development of children born with their aid,
2. the health and well-being of women who use these services, and
3. the effects on children born with the aid of preimplantation genetic diagnosis and gamete sorting.

The Council also sought publication of all reported adverse health effects, publication of the average cost to patients of a successful assisted pregnancy, and informed decision making through publication of easy-to-read consent forms that include information on the possible risks to mother and child (The President's Council on Bioethics, 2004).

The President's Council on Bioethics cautioned that some ART practices and techniques raise new and distinctive challenges for human procreation. They believe that Congress should establish a "Reproduction and Responsibility Act" to erect boundaries against questionable practices. They recommend that Congress should:

- *. prohibit the transfer, for any purpose, of any human embryo into the body of any member of a nonhuman species;
- *. prohibit the production of a hybrid human-animal embryo by fertilization of human egg by animal sperm or of animal egg by human sperm,
- *. prohibit the transfer of a human embryo (produced ex vivo) to a woman's uterus for any purpose other than to attempt to produce a live-born child...A woman and her uterus should not be regarded or used... as an incubator for growing research materials,
- * prohibit attempts to conceive a child by any means other than the union of egg and sperm,
- * prohibit attempts to conceive a child by using gametes obtained from a human fetus or derived from human embryonic stem cells.
- * prohibit attempts to conceive a child by fusing blastomeres from two or more embryos,
- * prohibit the use of human embryos in research beyond a designated stage in their development (between 10 and 14 days after fertilization), and
- * prohibit the buying and selling of human embryos.

(The President's Council on Bioethics, 2004:9-11).

Dr. Leon Kass, the former chair of The President's Council on Bioethics, contends that everybody's life is affected by these technologies and it is essential that we become knowledgeable and our representatives become thoughtful if we are to govern ourselves in this area (Langdon, 2006). He says, "There is a need for boundaries and oversight in areas of deep public disagreement" (Kass, 2004). Kass calls for a biology "that does full justice to the meaning of our peculiarly human union of soul and body..." (Howard, 2006)

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