Seven healthy babies born at once are clearly a testament to the marvelous workings of nature, or God, depending on your point of view. But they are also a powerful demonstration of human ingenuity. The septuplets graphically demonstrate both the promise of modern fertility treatments and their peril.

– Time *magazine article on the McCaughey Septuplets, Monday, Dec. 01, 1997*

Introduction

The American Society of Reproductive Medicine was founded in 1944[1], but many of the advancements in fertility treatments and reproductive medicine have only just been made in the last three decades. Major milestones in the advancement of fertility treatments include FDA approval of the first ovulation-inducing drugs in 1967 and 1970[2] and the first "test-tube" baby (in the U.S.), born on December 28, 1981[3] These advancements represent two categories of fertility treatment, fertility drugs and ARTs (Assisted Reproductive Technologies). But, regardless of the category of fertility treatment, there are questions about the risk / benefit relationship of these treatments.

An important case in this area is multiple births. Multiple births continue to increase in the U.S., in some part as a result of Assisted Reproductive Technologies and advances in Reproductive Medicine[4]. While twins and triplets are increasingly considered "normal," higher order multiples also result from reproductive medicine in some cases. For example, the famous and highly covered McCaughey septuplets born in 1997 are the first known live septuplets and are the product of fertility treatments.

These extreme reproductive outcomes seem to raise a number of questions. Why, in the face of significant medical risks, do people continue to undertake higher order pregnancies and births? What societal and cultural forces impact these decisions? Why did science evolve to extremes that have such associated medical risks, especially in the context of the fabled, "first do no harm"? Despite the difficulties and risks for mother and child, reproductive science had continued to develop "treatments" that are more and more extreme but by no medical definition imperative. What is the imperative that drives us to these extremes?

I will look at the popular media coverage of the McCaughey septuplets and consider the rhetoric around reproductive medicine in light of a "successful" outcome. In addition, I will look at medical literature surrounding the trend in multiple births in Assisted Reproductive Technologies (ART) and Reproductive medicine. Finally, I will investigate the discussions of extremes and reproductive medicine in STS literature.

Methodology and Scope

It may not be possible to definitively answer a question such as what motivates people to take risk in a certain area. However, it is reasonable to draw conclusions and make suppositions based on analyzing primary sources covering the topic at hand. To address ART and fertility drugs in terms of risks and motivations, I will use as a case study the McCaughey septuplets who were born in November 1997. Because I am using this case study, I will focus my time frame around 1997. However, there are articles that are quite useful that range from around 1997 through the present that I will use in the paper. In addition, some statistics are not easy to present from 1997, specifically, so I will attempt to use statistics that are as close to that time period as possible and note where other time frames were necessary.

In this study, I look at articles from popular media, including newspapers, television, and magazines. However, because of the magnitude of the coverage of the McCaughey septuplets, and, I would argue, the resulting discussion of multiple births and fertility treatments, I do not include as broad a sampling of "popular" sources as I might. One limitation, for scoping purposes, was to draw most of the newspaper articles I studied from *The Washington Post*. Using primarily *The Washington Post* as a source of articles provides a recognized / reputable newspaper (acknowledging the problem of defining this characterization).

However, using *The Washington Post* has inevitable representational difficulties – in other words, not all popular culture is represented by these articles, and certainly not by the editorials and opinion pieces in the newspaper. However, limiting the scope of this paper primarily to *The Washington Post* gives the paper an achievability. In addition, this leaves open the option (or mandate) to pursue further research looking at a wider variety of popular culture and journalistic media to determine more universally representative trends.

There are some considerations of using popular media sources such as newspapers and magazines. This provides primary sources for the birth of the McCaughey septuplets. However, it brings up questions about the authority of some of the statements in these sources. The newspaper articles, for example, become secondary sources for statistics, while they provide ostensibly primary sources for societal rhetoric on a topic and for direct quotations.

What is the science?

This paper will focus on two groups of medical treatments for infertility, ovulation-inducing drugs, also known as "fertility drugs" and Assisted Reproductive Technology (ART), specifically In Vitro Fertilization (IVF). These two groups of treatment have been associated specifically with the increased rates of multiple births in the United States.[5]

Ovulation induction, according to the American Society for Reproductive Medicine (ASRM), is "The administration of hormone medications (ovulation drugs) that stimulate the ovaries to produce multiple eggs."[6] Fertililty drugs, when used alone, work by inducing ovulation in women who ovulate irregularly or not at all. When used in conjunction with ARTs, the goal is to generate multiple eggs that will be harvested for use in the ART treatment.

The definition of ART varies in scope depending on the source of the definition. For example, womenshealth.gov, "The Federal Government Source for Women's Health Information," lists a broad definition for ARTs as "technology that involves procedures that handle a woman's eggs and a man's sperm to help infertile couples conceive a child."[7] The Centers for Disease Control (CDC) also utilize a similar definition, "ART includes all fertility treatments in which both eggs and sperm are handled."[8] The American Society for Reproductive Medicine (ASRM) publishes a patient-targeted brochure regarding IVF and ARTs that defines ARTs as "all treatments which inlcude the handling of eggs and/or embryos. Some examples of ART are in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), pronuclear stage tubal transfer (PROST), tubal embryo transfer (TET), and zygote intrafallopian transfer (ZIFT)."[9] The World Medical Association (WMA) also describes ARTs in their "Statement on Assisted Reproductive Technologies."

> The term 'assisted reproductive technology' includes techniques such as in-vitro fertilisation (IVF) and intra-cytoplasmic sperm injection (ICSI). It can be defined as including all treatments that include medical and scientific manipulation of human gametes and embryos in order to produce a term pregnancy.[10]

IVF, the most common of the ARTs, involves a complex series of procedures, starting with fertility drugs to stimulate multiple eggs to grow in the ovaries. The physician monitors the development of the follicles in the ovary. A follicle is "a fluid-filled structure in the ovary containing an egg and the surrounding cells that produce hormones. As the follicle matures, the fluid can be visualized by ultrasound."11 When the follicles are ready, another drug is administered to finalize the maturation of the egg.12

After the eggs have matured, they are harvested. This is usually done by transvaginal ultrasound aspiration, in which the physician uses a vaginal ultrasound probe to locate the follicles and uses a long needle to remove the eggs from each follicle. The eggs are inspected and mature eggs are incubated to wait for fertilization.

Sperm collection is normally done via ejaculation, and the sperm is separated from the semen. It is interesting to note here that this is the entirety of the man's (or a man's) medical involvement in the IVF process. Certainly, a partner may be there for emotional support, but the medical procedures in IVF involve only the woman except for sperm collection.

Fertilization can be effected through introducing normal sperm to the mature eggs and allowing

fertilization to occur over a period of time (usually overnight), or it can be done through ICSI (Intracytoplasmic Sperm Injection), in which a single sperm is injected directly into each mature egg.13

Fertilization does not occur in all of the eggs, and fertilization is confirmed after a day by visually confirming the presence of two pronuclei, "the nucleus of a male or female gamete (egg or sperm) seen in the one-cell embryo."14

After fertilization, the embryo develops quickly. "Two days after the egg retrieval, the fertilized egg has divided to become a 2-to-4-cell embryo (Figure 6). By the third day, a normally developing embryo will contain approximately 6 to 10 cells. By the fifth day, a fluid cavity forms in the embryo, and the placenta and fetal tissues begin to separate. An embryo at this stage is called a *blastocyst*."[15] Embryos can be transferred to the uterus at any time after fertilization is verified, usually one to six days after egg retrieval. The last stage is that the embryo must implant into the lining of the uterus, and this usually happens between six and ten days after egg retrieval.[16]

The IVF process is clearly a complicated one, and the sheer number of steps involved create a logistical challenge and inform some of the cost involved in the procedure. In addition, the complicated nature of the process is behind some of the emotional toll that such fertility treatments take on individuals and couples. This process lends some foreshadowing for some of the drivers behind patients' and doctors' desires to increase success rates by transferring multiple embryos back to a woman to ensure that at least one will take.

Illustrations of the IVF Process

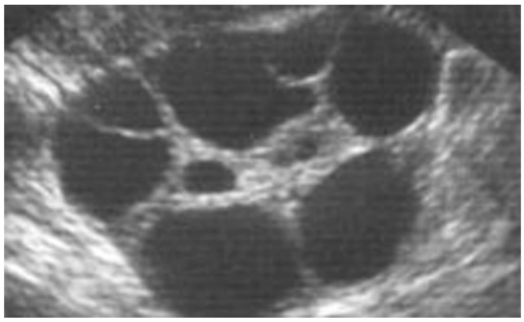

Figure 1: Ultrasound image of developing folicles in n ovary, indicating stimulation of egg production. (ASRM's Patient Guide, page 5.)

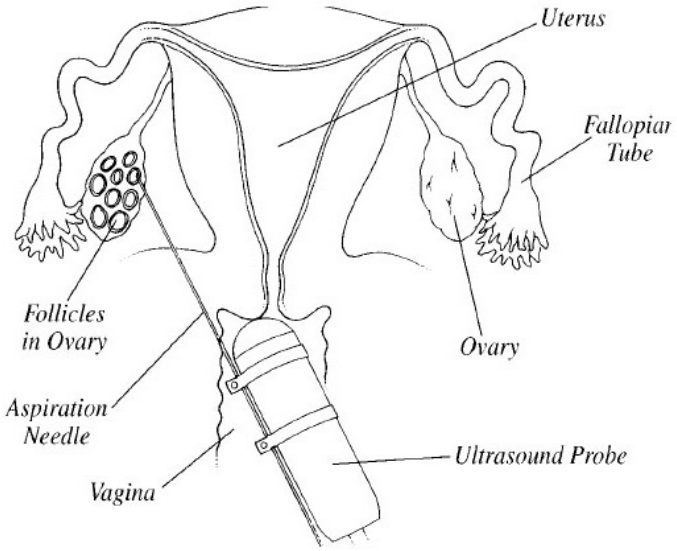

Figure 2: Harvesting eggs from the follicles using transvaginal ultrasound aspiration. (ASRM's Patient Guide, page 6.)

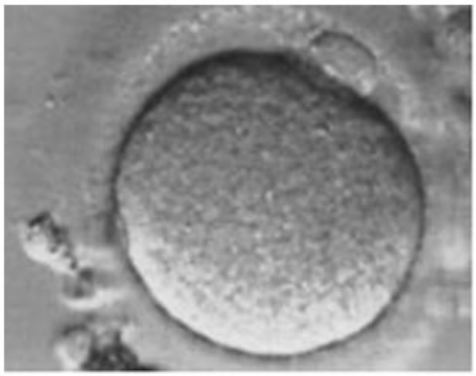

Figure 3: Identifying matire eggs from those harvested. This is the visual appearance of a mature egg. (ASRM's Patient Guide, page 7.)

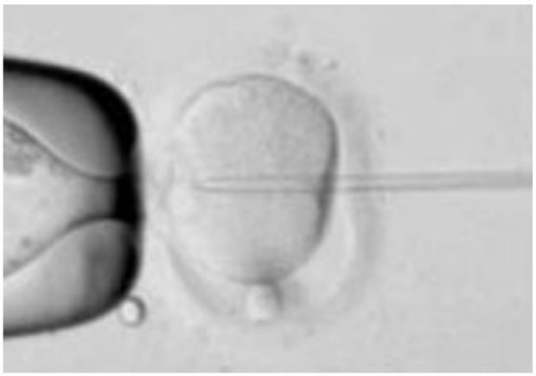

Figure 4: Fertilization, in this case utilizing Intracytoplasmic Sperm Injection, a tiny tube is inserted into the mature egg and a single sperm is inserted. (ASRM's Patient Guide, page 8.)

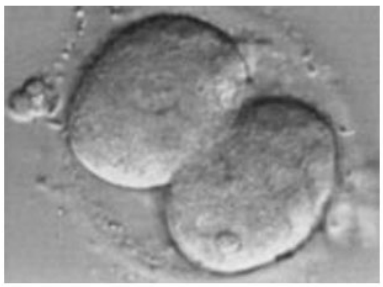

Figure 5: Visually inspecting for to pro-nuclei to verify fertilization. (ASRM's Patient Guide, page 8.)

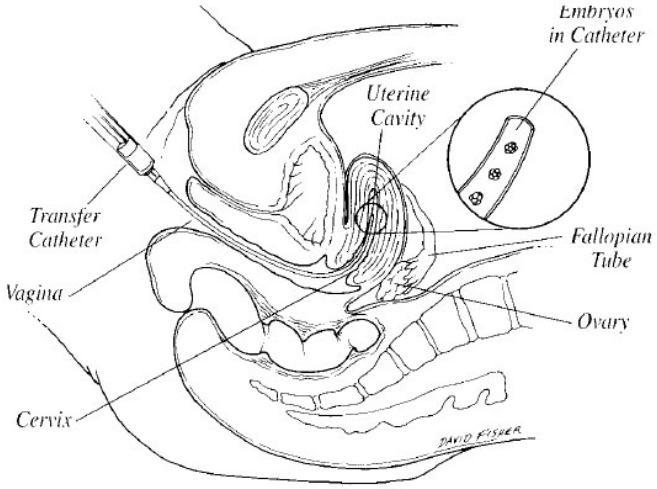

Figure 6: Transferring the embryos into the uterus. (ASRM's Patient Guide, page 10.)

Multiple Births

For this paper, the vehicle I use for looking at extremes in reproductive medicine is multiple births. Multiple births or multiple pregnancies are usually defined intuitively as more than one fetus or baby born as a result of a single pregnancy.

Multiple pregnancies have inherent risks that continue into the childhoods of the children born of such pregnancies. The primary risk for the pregnancy and birth is prematurity and low birth weight. The CDC published a report outlining the impact of ART and ovulation-induction fertility treatments on the occurrence of multiple births (triplets and higher-order) from 1980 to 1997.

A contributing factor to spontaneous multiple pregnancies, those pregnancies that result in multiple fetuses without the use of fertility treatments, is the age of the mother at conception. With the average maternal age in the United States increasing, spontaneous multiple pregnancies have increased as well. The CDC reported "a 10% increase in spontaneously occurring triplet and higher-order multiple births from 29 per 100,000 live-born infants in 1971 to 32 per 100,000 live-born infants in 1997."[17]

However, the increases in multiple births change drastically after the introduction of ARTs:

> The ratio of triplet and higher-order multiple births for all age groups increased from 29 in 1971 to 37 in 1980; this trend began after the Food and Drug Administration approved two ovulation-inducing drugs, one in 1967 and another in 1970. Following the introduction of ART approximately in 1980, the ratio more than quadrupled to 174 in 1997... Among mothers aged <20 years, the ratio increased from 15 to 21; among mothers aged 35--39 years, the ratio increased from 48 to 403.[18]

The CDC Report goes on to explain that during the period from the 1930s to the 1960s, the ratio of multiple births of 3 or more remained constant, but starting in the 1970s, the ratio began to increase and continued to do so in later decades. The report finds the introduction of fertility drugs (1967 and 1970) and ARTs, starting with IVF, in 1981 (in the U.S.), to be the cause of this increase.[19]

An article in the journal *Obstetrics and Gynecology* calls out the potential link between a "societal trend toward delayed childbearing and increasing use of ART" and multiple pregnancies. Seconding the position of the CDC report that older women already have a higher likelihood of spontaneous multiple pregnancies, the article also points out that age also increases the risk of infertility and thus a higher use of fertility treatments. The article goes on to point out that:

> With ART, twinning rates are 22 times higher than what is seen in the general population, and triplets and higher order multiples are 50 times the natural rate of 0.18%. Nationally, it has been estimated that more than 40% of the triplet and higher-order births in 1997 were the result of ART and another 40% due to use of ovulation-inducing drugs.[20]

I have drawn statistics from public health journals, medical journals, and newspaper articles, and while the exact numbers may vary slightly, the consensus is clear: multiple births come with geratly increased risk of pre-term births, low birth weights, birth defects, lasting health issues, and death. In addition, the risks for the mother are increased as well. Complications at birth include:

> ...prematurity and resulting long-term complications, low birth weight and resulting

> complications, congenital abnormalities, and respiratory distress syndrome. Infant mortality is 15 times higher for higher-order multiples than for singletons. Among the potential medical complications for the mother are hypertension, anemia, postpartum hemorrhage, and depression.[21]

Seventy percent of all deaths within the first month of life are preterm newborns. Preterm babies are also at higher risk for health and developmental problems.[22]

In additional reports on reproductive technologies, the CDC reports more detailed statistics on the severity of pre-term birth:

> The average birth weight of a triplet newborn is only half that of a single birth and the period of gestation is, on average, 7 weeks shorter. For 1995, 92 percent of triplets were born preterm compared with just over 10 percent of births in single deliveries. Moreover, triplets are 12 times more likely to die within the first year of life.[23]

The Washington Post has carried many articles with commentary on the hazards of multiple births. Some of the risks cited for triplets in the *Post* include higher risk for "eye and lung problems as well as neurological and behavioral disorders,"[24] and "neurological defects."[25] The newspaper articles also cite more dire consequences in higher-order pregnancies. For example, "In a much publicized case in 1996, a British woman who was pregnant with octuplets insisted on giving birth to all of them. None of them made it."[26]

Other articles in the Post quote medical professionals and scholars proclaiming the risks of multiple births. In one article, the Director of the University of Pennsylvania's Center for Bioethics, Arthur Caplan, is quoted as saying the odds are nearly 100% that the highest-order pregnancies will have deleterious effects. The article quotes Caplan as saying:

> "Multiple pregnancies are huge risks for mothers, and they are titanic risks for babies. The number of babies that have all done well in six- and seven-birth situations to my knowledge is zero. There have always been developmental disabilities [or deaths]. When I hear people say the septuplets are fine, I'm astounded because that would be a first."[27]

In the same article, Mark I. Evans, chief of Obstetrics and Gynecology at the Medical College of Pennsylvania / Hahnemann University in Philadelphia, is cited as an expert on multiple births. He is quoted in the article as saying that, his view of the outcome of a septuplet pregnancy was in line with Caplan's – one or more babies suffered ill effects, including permanent health issues or death. He is quoted as saying, "Since there has never been a [completely] successful septuplet pregnancy, I believe a lot of couples who think about keeping such a pregnancy are not very realistic."[28]

In addition to discussing the problems for the babies, there are health problems for the mothers as a result of multiple births. For example, a *Washington Post* article by Lisa Barrett Mann explains a mother who had had triplets and two of the three babies had been allowed to come home. At that time, the mother:

> ...awoke just after midnight, unable to breathe. She was rushed to the hospital with blood pressure of 230/140... The problem: heart failure, brought on by peripartum cardiomyopathy, a rare disorder in which the heart muscle becomes weakened and can't pump blood efficiently. Multiple pregnancy is a risk factor for the life-threatening disorder, which can occur any time between the last month of pregnancy and five months after delivery.[29]

The statistics are startling, but the fact that the statistics are reported in mass media outlets like *The Washington Post* begins to raise the question of whether the patients undergoing these fertility treatments know about the risks. How well informed are the patients about the risk to themselves and their potential children?

Informed Consent

There is a belief among editorialists and ethicists quoted that the "...media absolutely fail to convey the risks, the dangers, the grim history about what's happened in these situations."[30] While the citations here contain significant statistics and risks, other, more "popular" media may not. And, even if print media does cover the risks, the question remains -- how many potential patients are reading those risks and taking them seriously?

The article in the journal *Obstetrics and Gynecology* highlights the lack of knowledge or willingness to ignore facts in patients. "We have found that over 20% of infertile patients surveyed actually desired multiples (predominantly twins) over a singleton gestation as an outcome from treatment."[31] The article goes on.

> Importantly, a lack of knowledge of the health consequences and risks of twins gestations was also associated with the desire for multiple gestations. Perhaps by educating our patients about the risks, the desire for multiple gestations might be lessened.[32]

However, one doctor is quoted as saying, "The moment my patients come to my office, I scare them to death... It's not candy. These are dangerous drugs."[33] And yet, that doctor, herself, has a patient with a seven-fetus pregnancy. It seems that there is a significant disconnect about the level of information that patients receive.

The World Medical Association, in its "Statement on Assisted Reproductive Technologies" claims that the validity of consent for reproductive medical procedures "is dependent upon the adequacy of the information offered to the patient and their freedom to make a decision, including freedom from coercion or other pressures to decide in a particular way." The Statement also says:

> Obtaining informed consent from those considering undertaking treatment must include consideration of the alternatives, including accepting childlessness or pursuing adoption, the risks associated with the various techniques, and the possibility of failure.[34]

A Note About Selective Reduction

The article, "Too Much to Carry? Women Pregnant With Multiple Fetuses Face One of the Toughest Choices Imaginable: Risk the Health of All, or Take the Lives of Some," in *The Washington Post Magazine*

discusses in great detail the practice of selective reduction. Selective reduction is the term used to describe the intentional termination of one or more fetuses in a multiple pregnancy with the stated objective of improving the odds of the remaining fetuses. The practice opens up a number of ethical issues, and is usually employed as a result of the use of IVF or fertility drugs.[35]

> "This is a very sensitive topic," says David Grainger, president of the Society for Assisted Reproductive Technology, the membership group for IVF clinics. It's sensitive, personally, for patients, but also politically, for doctors.[36]

Selective reduction comes with the stigma of anti-abortion rhetoric, and although the article gives significantly more voice to the doctors who perform the procedure and the patients who have the procedure, the graphic description of the termination of one or more of the fetuses in a multiple pregnancy makes it easy to see why it has this association.

In addition to questions about the goals of the procedure, there are other ethical questions that come up, such as the way a fetus is selected to be terminated. Testing technology is employed in which fetuses are tested for genetic disorders and then any that test positive move to the top of the list for termination. While some view testing for genetic disorders to be acceptable, the tests also reveal the sex of the fetuses, and when all other factors are equal in the decision of which fetuses to reduce, sex can be used as a factor.[37]

It is important to state here that selective reduction is related to multiple births, and is an option open to patients once pregnancy is achieved to mitigate some of the risk of higher-order multiples. However, selective reduction is a topic full of ethics questions and debate, and because the focus of this paper is the motivation for patients to undergo fertility treatments and take huge risks to *achieve pregnancy*, and *not* what those patients choose to do once they are pregnant, I will intentionally not address selective reduction any further here.

The McCaughey Septuplets

Bobbi and Kenny McCaughey caught the attention of the country and of the world by successfully carrying a multiple pregnancy of seven fetuses, giving birth on November 19, 1997[38] to seven living babies all of whom survived -- a first in the world. Bobbi and Kenny McCaughey's basic biography is available in practically any news outlet around the time of the incredible publicity accompanying the birth of the septuplets. Kenny was a billing clerk at a car dealership and Bobbi was a seamstress, working out of their house. They lived in a small town in Iowa called Carlisle.[39]

In the case of the McCaughey septuplets, ovulation-inducing drugs were used to stimulate ovulation in Bobbi. The McCaugheys already had one daughter, Mikayla, who was also conceived using fertility drugs. An article in the *Hastings Center Report* outlines the fertility treatments that Bobbi received with Mikayla, a

singleton, and the subsequent septuplets. The article explains that with Mikayla, Bobbi took one fertility drug (which is unnamed), but that after a year, she was prescribed a stronger fertility drug, Metrodin. This drug was successful, producing a singleton pregnancy and the birth of the McCaughey's first daughter Mikayla. However, when the McCaugheys sought to have a second child, they apparently asked to directly be prescribed Metrodin to avoid the wait that they had had with Mikayla. The outcome of this round of Metrodin was a pregnancy on the first cycle with seven fetuses.[40]

Dr. Katherine Hauser was the McCaughey's Reproductive Endocrinologist treating them for infertility in Des Moines, Iowa. The *Time* Magazine article about the McCaugheys claims that Hauser warned the McCaugheys "that a side effect of fertility drugs can be multiple births; in about 20% of cases, a woman who conceives on Metrodin has twins or triplets or, in rare cases, quads or quints."[41]

What is Extreme?

While it seems to me that most people would have no problem accepting a declaration that the birth of septuplets, like those of the McCaugheys in 1997, is an extreme result of fertility treatments, there is a difficult task of explaining where the step was taken that crossed the line into extreme. Christine Gudorf, author of an article in the Park Ridge Center's *Bulletin*, walks through the McCaughey case and claims that there is no clear point at which the line was crossed.

> I will not deny the troubling aspects of this birth. But it is difficult to find a point at which the McCaugheys contravened a moral consensus. They had one child, and they wanted a second. Even in view of the world's — and the U.S.'s — overpopulation, there is currently no serious proposal by any group to limit American families to one child, though there may eventually be. Furthermore, there is no consensus against the use of fertility drugs. Fertility drugs have become standard treatment for infertile women. As for selective abortion, there remains a significant minority in the nation who think that all abortion should be legally banned as murder. There is certainly no consensus on abortion as morally obligatory in any circumstance. Unless the McCaugheys knew how many ova had been or were about to be released when they decided to have intercourse, they are no more morally culpable for the huge medical bills the septuplets and mother incurred than any couple who encounters complications in childbirth. The McCaugheys' insurer is paying all claims, and Bobbi had a tubal ligation immediately after the delivery of the last child. They seem to fulfill the ordinary requirements of responsible parenthood.[42]

There is a key part of Gudorf's assertion, however, that bears further discussion. "Unless the McCaugheys knew how many ova had been or were about to be released..." Even in popular literature (versus medical literature), there is a common assertion that physicians are morally obligated (or should be) to track the production of eggs in patients taking fertility drugs outside of ART treatments and "cancel the cycle" (inform the patients not to engage in intercourse) if too many eggs have been produced.

For example, in a *Washington Post* article about the risks of multiple births, Zev Rosenwaks, a doctor at

Cornell University Medical Center and “one of the country's leading experts on infertility” is quoted as saying, “With good monitoring and blood tests one can diminish this.” The article paraphrases Dr. Rosenwaks, continuing, “Drugs are given in stages and if too many eggs are released, for example, the treatment cycle can be canceled or interrupted. If the patient releases multiple eggs,treatment can then shift to in-vitro fertilization, and the number of embryos transferred back into the patient is limited."[43]

The rhetoric seems to be there for multiple births, particularly in the McCaughey's case, to be considered extreme. For example *The Washington Post* quotes Rev. Robert Friday, “a moral theologian at Catholic University” as using the term “extreme” in his discussion of the McCaughey septuplets. "You're really giving consent to some extreme risks to new lives who don't have any voice in the matter. It's not something which nature did, it's something that we did, and I think that it's a concern. You begin to ask the question whether or not this kind of thing with the potential for multiple births really counts as responsible parenting."[44]

The Oxford English Dictionary, includes several definitions for the word “extreme” that capture my intention for hypothesizing that some areas and treatments in Reproductive Medicine are extreme, including “Going to great lengths; opposed to *moderate*. Going to the utmost extent; exceeding the limits of moderation.”[45] So with this / these definition(s), how would we define “extreme medicine?” Certainly, I feel comfortable claiming that mortgaging houses and using up savings for IVF cycles is “going to great lengths,” and I would consider proceeding with a treatment that had a significant risk of a pregnancy of three or more fetuses to be “exceeding the limits of moderation.” But I am not sure that there is a bright line that can be drawn about what is and is not extreme in reproductive medicine. Like Christine Gudorf's paragraph above, one can make a rational article that Bobbi McCaughey took no steps that were “opposed to moderate.”

One consideration that appears in articles and editorials is the question of whether infertility is a disease, and further, what, exactly, fertility treatments are treating. The World Medical Association makes a case for fertility treatments being medical based on the psychological issues that can come as a result of infertility:

> Assisted conception differs from the treatment of illness in that the inability to become a parent without medical intervention is not always regarded as an illness. While it may have profound psychosocial, and thus medical, consequences, it is not in itself life limiting. It is, however, a significant cause of major psychological illness and its treatment is clearly medical.[46]

In an opinion article in *The Washington Post*, Dr. James Holman raises difficult questions about whether infertility is a disease and thus should be covered by insurance benefits, and if not, whether pregnancy should be considered elective and not be covered.

> ...a disease is defined as a condition that impairs normal physiologic functioning. Nothing is more physiologic than human reproduction. Our species doesn't exist without it. And if having children is elective, why cover maternity benefits? For that matter, is pregnancy a disease? Is it

fair for infertile couples to pay insurance premiums for maternity benefits they can never use?[47]

There is a fine balancing act. It is true that if we consider a disease the inability of a person or their body to function properly or "normally," then infertility must be considered a disease. However, there is nothing physically life-threatening about not having a pregnancy or bearing a child.

There is a colloquial belief that physicians work under the tenet "First do no harm," *primum non nocere.*[48] There are circumstances in which this tenet is violated, but these circumstances typically require a level of what I would consider "desperation" – typically life and death situations. Cancer treatments are a good example of a place where the tenet of first do no harm is not central. An introductory overview of internal medicine, *Harrison's Principles of Internal Medicine*, states, "The goal of cancer treatment is first to eradicate the cancer... The dictum *primum non nocere* is not necessarily the guiding principle of cancer therapy. When cure of cancer is possible, cancer treatments may be undertaken despite the certainty of severe and perhaps life-threatening toxicities. Every cancer treatment has the potential to cause harm, and treatment may be given that produces toxicity with no benefit."[49]

The final sentence, "Every cancer treatment has the potential to cause harm, and treatment may be given that produces toxicity with no benefit," seems to be in line with many fertility treatments which have side effects from mild to life-threatening, but no guarantee of efficacy. However, in the case of fertility treatments, there is no life-or-death situation that justifies violating the *primum non nocere* tenet. The goal is not to save a life, but to create a new one.

The World Medical Association provides the following statement regarding a physician's ethical responsibility to the unborn child of a fertility patient.

> Physicians involved in providing assisted reproductive technologies should always consider their ethical responsibilities towards any child who may be born as a result of the treatment. If there is evidence that a future child would be exposed to serious harm, treatment should not be provided.[50]

It may not be possible to draw a bright line for what is and is not an extreme medical procedure, but the popular media displays a rhetoric that acknowledges the extreme outcomes in multiple pregnancy. In addition, the medical community, as represented by medical associations and organizations, has published guidelines for limiting the extremity of reproductive procedures. Actors in fertility treatments (both doctors and patients) seem to treat infertility in a similar paradigm to treating cancer, violating the tenet of *primum non nocere*. While infertility isn't life-threatening, it may be identity-threatening and significantly psychologically damaging, which may begin to explain the extreme approach.

Meta-Extreme: The Media Circus

While discussing “extreme” in terms of medical treatment and risks, it seems that there is an obvious example of another type of extreme in the McCaughey's case – the media circus surrounding the birth of their children. Countless articles appeared about the ethics of such fertility treatments and about informed consent. Many stories were written or aired that touted the babies as miracles, while many others sought to expose the risks with multiple births and fertility treatments in general. There were even many articles in the popular media that discussed the other articles about the septuplets in the popular media. The coverage of the McCaugheys and their babies was extraordinary, in and of itself.

A search in the LexisNexis Academic database with a keyword of “McCaughey Septuplets” and constraining the sources to “Newspaper Stories, Combined Papers” returns 1,098 hits. Naturally, not all of these articles give more than passing reference to the McCaughey Septuplets, but this also leaves out what I typify as more “popular” media outlets, versus more “journalistic” or “academic” media outlets. These 1,098 hits appear in over 120 distinct publications from all corners of the world.

The media frenzy included television appearances, press conferences, magazine covers, along with the newspaper articles that the LexisNexis search turned up. An example of the out-of-the-ordinary coverage that the septuplets received is a “time capsule” where members of the general public could send in letters of “advice” for the septuplets on their sixteenth birthday. The time capsule was discussed in the *St. Louis Post-Dispatch.*

> It seems likely that the McCaughey septuplets will need some life guidance by the time they're teens. You could weigh in with advice for them to read 16 years from now. Write a letter to each child, or a letter to all of them. Mail letters by March 31, 1998, to The McCaughey Septuplets; c/o The Original Time Capsule Company; 5999 Memory Lane, Greenfield, Ind. 46140. The responses will be sealed in a time capsule and opened on Nov. 19, 2013, their 16th birthday.[51]

In addition to human interest stories, the birth of the septuplets generated a number of editorials that raised issues about a range of aspects of multiple births, including fertility treatments and their ethics. Some people reacted quite harshly, as with Barbara Luke, a perinatal epidemiologist at the University of Michigan: "It is an injustice to children to be born in litters."[52] Others voiced concerns about the overwhelming media coverage of multiple births and the normalizing effects that such coverage has on the public. For example, the same *Time Magazine* article mentions, “Fertility experts are worried that all the attention being paid to the birth of seven healthy septuplets against monumental odds will convince others that such births are safer and less tragic than they so often turn out to be.”[53]

On the topic of media coverage of the septuplets and the negative impact, an editorial in the *St. Louis Post-Dispatch* (when the septuplets were about eighteen months old) highlights an opinion of what is left out of popular media coverage:

> No one wishes the McCaughey septuplets and their exhausted parents anything but health and happiness. But such multiple-birth pregnancies are a failure of the fertility industry, posing grave risks to the health of the mother and her offspring, as responsible doctors acknowledge... What we don't see is little Alexis vomiting. She isn't getting enough food through her feeding tube. She can't eat normally, because of her severe gastric reflux. Her brother, Nathan, is growing abnormally slowly. Doctors suspect the two 17-month-old McCaughey toddlers may have cerebral palsy. Other common hazards in multiple births include lung, heart and kidney problems. Multiple-birth babies are far more susceptible to these health threats because they cannot be carried to term. Their tiny organs are not fully developed when the newborns are prematurely forced to face the world... The sobering news about the septuplets underscores the need for better regulation of the virtually unregulated, multibillion-dollar fertility industry.[54]

The media coverage of the septuplets and their stardom continued well after the septuplets were born and successfully left the hospital. The seven children, often appearing with their older sister, make annual appearances on *Dateline* so that the nation and the world can track their progress. The first interview on *Dateline* was made November 25, 1997, only six days after the birth of the babies. Ann Curry, a journalist for *Dateline*, continues to visit with and interview the family for the NBC television show each year. Last year, the septuplets turned ten, and the *Dateline* interviews with them aired on December 12, 2007. Part of that interview discussed the fact that the family's fame has not evaporated in the ten years ensuing. Ann Curry explains during the story that the family was not just on vacation in Spain, but that “the president of Mallorca had invited the family to visit -- all expenses paid to boost tourism.”[55]

Interestingly, a question posed to theologian Rev. Robert Friday by a journalist of whether the septuplets were a miracle evoked not only an answer to that question, but also commentary on the motivation behind the coverage of the septuplets.

> "We throw 'miracle' around. You had the technology that brought about the pregnancy, and you had 40 to 50 skilled professionals who saw it through. That's human expertise, that's not a miracle”...Yet Friday thinks those seven children were born into a country hungry for the mysteries of faith. "Everything gets so cut and dried. Somehow, we've demythologized everything and taken the mystery out of life. If nothing else, we like to use the language of mystery."[56]

What Drives The Parents?

There are some themes that can be identified for what drives patients and doctors to such extremes that derive specifically from reproductive medicine being situated so squarely in culture, and in this case, American culture. Two of these are economics and desperation.

A squarely cultural reason for the extremes in reproductive medicine is economics. Infertility treatments are very expensive, and a survey of the popular and journalistic media regarding what drives multiple births reveals economics as a key factor.

> Patients are partially responsible for the problem. Fertility treatments are difficult and expensive, so many women getting IVF--in which embryos are grown in laboratory dishes and then transferred to a woman's uterus--insist upon having four, five or more embryos transferred to increase the odds that at least one or two will survive. Too often, a greater than expected number of them become babies.[57]

A separate, but equally compelling economic argument is that doctors want their success rates to be as high as possible. Federal regulation requires that fertility clinics provide "success rates" for IVF procedures, so consumers can use these success rates to shop for a clinic. The CDC is tasked with implementing the Fertility Clinic Success Rate and Certification Act of 1992 (Pub. L. 102-493, 42 U.S.C. 263a-1 et seq.).[58]

> Doctors are also to blame [for multiple births], experts said, because they want their success rates to remain competitive. A cautious doctor who places only two IVF embryos in a woman's womb or counsels a woman to cancel a cycle because of ovarian overstimulation risks coming up empty-handed.[59]

However, the success rates are often misleading, because the consumers don't know what practices led to the success rates (such as riskier procedures or tighter screening – turning patients away who aren't likely to have success.) In addition, some clinics will direct all patients to IVF, despite the possibility of lower-tech solutions working, because this shortens time frames and increases success rates.

The psychological stakes that the WMA mentions are high in fertility treatments, and in fact play a large role in the drive to have children. In numerous articles in popular and journalistic media, authors, patients, and doctors all attest to the "desperation" of patients to get pregnant and have a child. A *Washington Post* article which discusses the lack of regulation over testing and research of new reproductive medical protocols quotes an NIH official regarding the population of patients seeking fertility treatment.

> "It's an extremely vulnerable patient group," said Gary Ellis, director of the office for Protection From Research Risks at the National Institutes of Health. "Desperation reigns."[60]

Another *Washington Post* article quotes Gianpiero Palermo, who pioneered the reproductive technology of intracytoplasmic sperm injection (ICSI) in Brussels and is now at the Cornell University Medical School in New York, discussing the desperation in his patients. "These people come in and they beg you to help them have a baby."[61]

Specifically with respect to multiple births, one method of prevention of multiple births is to simply limit the number of embryos implanted during an IVF procedure. However, even here, patient "desperation" is cited as driving doctors to exceed recommendations for such limitations. One article discusses a conference held jointly by the Geneva-Based Bertarelli Foundation and the National Institutes of Health. The author discussed this issue with Geraldine Ferraro, a member of the Bertarelli Foundation's Board.

> The anguish surrounding multiple births surfaced in a conversation she had with a young woman

> who'd had a failed implant. The young woman begged her doctor to implant four eggs the next time, instead of three. He agreed on the condition that if all four were successfully implanted, she would agree to a reduction of one. This is a far different situation than aborting an unwanted pregnancy, Ferraro notes. These babies were very much wanted. "In this instance, you've got women who've spent a lot of time and money," Ferraro says, "and there's a lot of emotion tied up in this pregnancy."[62]

Judy Mann, the author of the article, goes on to state in her conclusion: “Couples who have had children easily can't possibly understand the devastating sense of loss felt by couples diagnosed as infertile.”[63]

It seems that the desperation for children extends also to a desperation for pregnancy. Even though egg and sperm donation are common parts of IVF, depending on the medical issues at hand, many parents see this as preferable to adoption. In an article in *The Washington Post Magazine*, Suz Redfearn discusses her own struggles to have a child, including egg donation and IVF, and as she considers adoption, she expresses the desire to *be pregnant*.

> Adoption was not something I'd wanted to do. In fact, for years, I was wholly unable to picture it. One day, you are most decidedly not a parent, and then the next day you are? How was I supposed to wrap my head around that? Plus, something deep within me wanted to be pregnant -- needed to be pregnant. Badly. Just once. I could see adopting later. But not now.[64]

In another of her articles, Suz Redfearn highlights the struggle weighing the risk and the desire for bearing a child.

> Part of me said, 'Gosh, do I want to bring a baby into the world that has some damage because of this process?' And part of me said, 'I want to have a child with my husband, and I'm not going to forgo that because of something that may or may not happen.'[65]

Finally, in a book review in *The Washington Post*, Anne Glusker reviews a book that tells a personal story of fertility, *Waiting for Daisy: A Tale of Two Continents, Three Religions, Five Infertility Doctors, an Oscar, an Atomic Bomb, a Romantic Night, and One Woman's Quest to Become a Mother*, By Peggy Orenstein. Glusker cites a passage from the reviewed book that humorously shows the “slippery slope” nature of fertility treatments.

> Clomid was my gateway drug; the one you take because, Why not -- everyone's doing it. Just five tiny pills. They'll give you a boost, maybe get you where you need to go. It's true, some women can stop there. For others, Clomid becomes infertility's version of Reefer Madness. First you smoke a little grass, then you're selling your body on a street corner for crack. First you pop a little Clomid, suddenly you're taking out a second mortgage for another round of in vitro fertilization (IVF). You've become hope's bitch, willing to destroy your career, your marriage, your self-respect for another taste of its seductive high. (Orenstein quoted in Glusker)[66]

The articles cited here build a case for the mood of desperation among fertility patients. While the reasons for the desperation may be unclear and, in fact, diverse, the rhetoric is undeniable.

Desperation and Normality

In a scholarly article discussing "Normality" and "Risk" in Genetic Testing, Anne Waldschmidt discusses a possible driver of desperation – seeking to be "Normal." Waldschmidt's article is specifically on genetic diagnostics and counseling, but this excerpt explains the desire to be normal in terms of many different outlets.

> Normality-- that seems to be the central buzz word of our time. Don't all of us want to be as normal as possible? Is there anyone who wants to be ostracized or considered deviant? Like ideals of health, the concept of normality has gained such great suggestive power, especially in the course of the last century, that one can hardly avoid its influence. In the government of deviance, normality has become the decisive point of orientation. Professional discourses and social policies, rehabilitation programs and therapeutic practices, all with the aim of making normality possible for their clients and recipients, revolve around this central notion.[67]

In the spirit of this drive for "normality," then, what could be more normal than restoring a woman's or a couple's ability to procreate? From this perspective, fertility treatments become a way to correct "deviance." Rayna Rapp also addresses normality in her discussion of reproductive technologies from a feminist perspective.

> ...indeed, the struggles for recognition and acceptance played out in these ethnographic accounts suggest that reproductive normalization is an achievement that is hard-won, often closed to some constituencies through mechanisms of state and market, cultural branding, and ritualized fears.[68]

Rapp goes on to provide the hopeful statement that perhaps, "ironically and dialectically, experiences with nonnormative, pathologized reproduction can also provide the material for self-reflection and mobilization of new social and political identities."[69]

What Drives the Doctors?

Fertility Clinics' success rates with ARTs and the resulting economic gains and losses are often cited as a reason that doctors choose to transfer more embryos during IVF. However, there are more social influences on the science as well.

Several articles in *The Washington Post* bring up interesting questions that would require further research (and perhaps ethnographic methods) to fully answer.

One of these questions is whether doctors individualize blame in the case of negative outcomes in order to avoid having to reconsider the medical procedures or protocols themselves. For examples, in a 2001 article in *The Washington Post*, Mutahar Fauzia, an OB/GYN who had a patient under her care become pregnant with seven fetuses expresses her concern over her own career.

> Since she began treating infertile patients in 1996, Fauzia had never choreographed even twins,

> she said. "I have been in private practice for only 2 1/2 years, and here I am ending up with septuplets, and what is the world going to say?" she said. "If something happens to her, I will have no future."[70]

While Fauzia here describes herself as having been in practice for 2 ½ years, the article describes her background which includes “residencies in internal medicine and OB-GYN in New York. She was a fellow in reproductive endocrinology (infertility treatment) at Johns Hopkins University in Baltimore from 1996 to 1998, then was an instructor in the program until 2000.”[71]

Many doctors are quoted as stating that multiple births are not acceptable, using commensurate language, such as "Another tragedy," "We all cringe when it happens,” "A failure," and "It's a failure of medical therapy. That's really the way we look at it."[72]

In the article about Dr. Fauzia and her patients, Robert W. Rebar, the medical director of the American Society of Reproductive Medicine who denounces the pregnancy as “a terrible outcome,” but goes on to say that it “...is impossible for infertility specialists to predict which patients might require more aggressive medication to stimulate the production of eggs.”[73]

So, if the protocol itself has inherent limitations, and Dr. Fauzia “may... have been a victim of bad luck” because “It is an unfortunate outcome that may be unavoidable in a very small number of cases”[74], then why is the protocol still used and not modified? The doctor is held accountable, and fears for her career, but never in this article do any of the “medical experts” question the fertility treatment itself – only the practitioner.
In fact, the combination of suggested practices for reducing the number of embryos transferred in IVF along with “specialists in... IVF... becoming more successful in achieving the birth of a healthy child while using fewer embryos,” has resulted in decreases in the number of multiple births resulting from IVF in recent years. However:

> Physicians have less control when they prescribe drugs to stimulate the ovaries to produce a bounty of eggs that can be fertilized through insemination or intercourse. In fact, the main cause of the recent explosion in extreme multiple births has been the use fertility drugs.[75]

The doctors seem to hold sacred the protocols at the expense of individual doctors. In fact, there is an interesting power dynamic here, in that the control over the situation shifts to the desperate and non-objective patient. Once the drugs have been administered, the doctor relies on the patient to come in to have the development of eggs checked, and if the cycle is “canceled” the doctor relies on the patient to abstain from intercourse or take suitable contraceptive precautions. Even given the inherent power shift in the use of this protocol, doctors do not question its use but rather the ability of a practitioner to influence the behavior of their patients.

Interestingly, Dr. Fauzia also gives us some insight into another question that needs to be considered – in

reproductive medicine, does research drive practice or does the practice drive research? In the case of higher-order multiple births, the highest numbers of fetuses have been wholly preventable. The highest number of fetuses in a "spontaneous multiple pregnancy" is five, and that is exceptionally rare. Eliminating the fertility drug protocols would eliminate six-, seven-, and eight-fetus pregnancies, and reduce the numbers of spontaneous multiples to tiny levels. (The rate of multiples three and higher before 1970 was reported as 30 in 100,000 by the CDC.[76] Another question, then, is does a specific protocol's existence give it legitimacy?

However, in discussing the management of the septuplets that she helped to bring into the world, Dr. Fauzia does not talk about eliminating the protocol that "failed" by producing such an extreme outcome. Rather, she explains that much knowledge is lacking in the management of these failed outcomes, namely higher-order multiples, and that she can now contribute to filling the gap.

> Fauzia thinks she has much to contribute to medical knowledge. She plans to write at least one scientific book and perhaps a popular volume about the septuplets. "I was fortunate to have a good outcome," she said. "I should share with the whole world how conservative management does help. Right now, there are no guidelines for handling a pregnancy like this one."[77]

There appears to be a push and pull between patients and doctors for what drives research on in newer and more cutting edge reproductive medical practices.

> Fertility doctors say they are just trying to give women the best odds of getting pregnant. Patients want nothing less than the latest technology, they say, even if it is still experimental...[78]

And patient desperation seems to drive patients to be participants in research that pushes the cycle forward.

> "When we started getting some [embryos from frozen eggs] that lived, we approached a patient... We told her, we don't know if this will work. We won't charge you, but if we make an embryo with one of these thawed eggs and your husband's sperm, would you take it?" The woman, who like many fertility patients could barely afford her treatments, said yes. Last year, she became the first in this country to give birth to a baby from a frozen egg.[79]

From a cultural perspective, it seems to be the desperation to have a child that is driving medical research in the field of reproductive medicine. For some, that is the desperation to have a pregnancy; for some, it is the desperation to have a genetically related child (in the case of surrogacy). However, the increases in multiple births seem to be driven partly from an economic perspective, and partly because of the physical and emotional difficulty of some of the fertility treatments available. These aspects combine to push doctors and prospective parents into incredibly risky procedures in order to create a new life.

The Feminist perspective

It is important to not only acknowledge, but also describe, the feminist perspective of fertility drugs and ARTs and the influence of this perspective. However, this could be the topic of an entire paper, or perhaps a book, in and of itself. To try to address this topic but not exceed the scope of this paper, I am considering the feminist perspective on fertility treatments, and ovulation-inducing drugs and ARTs specifically, and its evolution over time. Charis Thompson, in her book *Making Parents: The Ontological Choreography of Reproductive Technologies*, discusses Feminist Theory and Reproductive Technologies by tracing feminist opinions on fertility over that evolution, and I use her outline as a basis for my discussion and a means to limit my scope.

Thompson discusses the paradoxes inherent in discussions of infertility for feminists. On one side, "involuntary childlessness" is recognized as a particular problem for women, and many feminists have considered it a "serious feminist issue."[80] On the other side, feminists are "interested in disrupting the gender-role expectations and essentialist connections between motherhood and women's identity that greatly intensify infertile women's suffering."[81] It is difficult, for a feminist framework that is trying to break the gender-role expectations, to support technologies that allow women to "reinscribe themselves into that logic."[82]

The early feminist perspectives on reproductive technologies grew out of the movements to de-medicalize pregnancy and the view that medicine was providing a path for "patriarchal control of women's bodies."[83] In answer to the promise of a technological solution to involuntary childlessness, these feminists answered that while the technologies sometime (but not a high percentage of the time) yielded a child, they "did not cure infertility; they alleviated the condition of involuntary childlessness."[84] In addition, Thompson highlights that while increased reproductive choice might have offset the issues with patriarchal control, stratification issues kept the reproductive technologies from being available and successful enough to offer such increased reproductive choice.[85]

In addition, many feminist scholars looked at the motivations for having a child as socially driven and patriarchal. These feminists sometimes asked "women who were dealing with infertility to give up their individual desire to bear children in the name of the general goals of feminism."[86]

Starting in the early 1990s, a shift in the feminist perspective started, characterized by "a whole genre of feminist writing [that] valorized womanhood itself and often equated it with motherhood or expressed it using maternalist metaphors."[87] This trend led to the argument that fertility treatments returned "agency to infertile women" and that earlier feminist arguments about fertility treatments being a "patriarchal mandate" negated the "authenticity of maternal instinct."[88]

Thompson argues that the shift in the early 1990s was away from "moral certainty" that marked earlier feminist work and toward a "moral ambivalence" that followed. "A new generation of feminist scholars documented the pathologization and technologization of reproduction, but as much to examine the active role of technology in determining the semiotics of reproduction as to denounce the adverse effects of technology for women."[89] The later feminist perspective "showed that exploring the experience of infertility and reproductive technologies revealed as much about how society is stratified as it does about what it is like to be infertile 'from the inside' because the two depend on each other."[90]

Continuing in the evolution, later feminist writings continued to explore "mothering," but neither "valorizing" it nor demonizing it as earlier feminists had. Rather, the focus became on studying "ways that women and men work with and against mothering stereotypes."[91]

Rayna Rapp, in an article published in 2001, discusses stratification, and provides an example of the newest feminist perspective outlined by Thompson. Rapp writes about "stratified reproduction":

> ...the hierarchical organization of reproductive health, fecundity, birth experiences, and child rearing that supports and rewards the maternity of some women, while despising or outlawing the mother-work of others... The idea of stratified reproduction helps us to make sense of how the technologies of biomedicine in fields as diverse as fertility treatment and neonatalogy, mental health, interventions into addiction, epidemiology, and gerontology both accompany and partially produce late modern pathologizations of personhood, gender, and kinship.[92]

Providing some insight into motivations from a feminist perspective, Donna Haraway describes the image of a fetus as having power because it symbolizes to us "the immediately natural and embodied, over and against the constructed and disembodied."[93] In addition, Haraway discusses the driving force behind science and its goal-oriented nature, which can potentially explain putting achieving a goal above weighing the risks.

> From the point of view of feminist science studies, freedom projects are what make technical projects make sense - with all the specificity, ambiguity, complexity and contradiction inherent in technoscience. Science projects are civics projects; they remake citizens. Technoscientific liberty is the goal. Keep your eyes on the prize.[94]

Haraway goes on to discuss further the draw of procreation and of the interplay of technology and reproduction. "It does not seem too much to claim that the biomedical, public fetus - given flesh by the high technology of visualization - is a sacred-secular incarnation, the material realization of the promise of life itself."[95] Finally, Haraway discusses "feminist inquiry into how the genetic relationship displaces other discourses of connection to a child in legal, biotechnical, familial and entertainment worlds."[96]

Conclusion

There are numerous risks that are well documented in multiple pregnancies and births resulting from

fertility drugs and ARTs. However, both patients and doctors continue to pursue these medical practices. There are probably as many motivations for forging ahead as there are risks to doing so, but some common themes have been uncovered through an analysis of coverage of reproductive medicine and the specific case of the McCaughey septuplets born in November of 1997.

While there is not one clear-cut answer to what drives patients and doctors to pursue treatments with known risks, this paper sought to discuss rhetoric and discourse in primary sources surrounding multiple births and the McCaughey septuplets to discover possible trends and motivations.

The rhetoric in the primary sources highlighted motivations including economic considerations as well as psychological and social drivers that cause a sense of desperation to have children. I argue that there is a clear rhetoric of desperation throughout the sources, and that a driver of this desperation is the idea of seeking to be "normal." In addition, feminist perspectives, while they have changed over time, can provide additional insight into the motivations for pursuit of risky treatments, including the power of the image of the fetus and the gender-roles associated with motherhood.

There are many aspects of this topic that came up during research but had to be left out because they were not within the scope for the paper. Overall, the rhetoric around reproductive medicine could be the core of a great deal of research. Of specific interest to me is the feminist perspective on reproductive medicine and the evolution of this perspective over time. While I tried to at least briefly mention many of these topics here, there is a wealth of additional research left undone.

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