

Ectogenesis: the Ethical Implications of a New Reproductive Technology

by

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B.A., University of Calgary, 2007

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Abstract

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Ectogenesis has been billed a revolutionary new advancement in technology that could have a profound impact in the area of human reproduction. My aim is to investigate the supposed benefits and objections to the development of human ectogenesis with a particular focus on potential consequences on the abortion debate and reproductive equality between men and women. I will conclude that arguments for human ectogenesis are not well supported and there fails to be a strong motivation to develop it further, other than as advancement to the area of providing better neonatal care for premature babies.

Table of Contents

Supervisory Committee	ii
Abstract	iii
Table of Contents	iv
Acknowledgements	vi
Introduction	1
Chapter 1: Current Research into Ectogenesis	2
1.1 Scientific Research into Ectogenesis	2
1.2 Ethical Arguments in Support of Ectogenesis	4
A) Medical Benefit	5
B) End of Surrogacy Contracts	5
C) Better Neonatal Care	10
D) Organ and Tissue Banks	11
1.3 Ectogenesis in a Canadian Context	13
1.4 Opposition to Ectogenesis	14
A) Human Testing	14
B) Unnatural	17
C) Slippery Slope	17
1.5 Conclusion	19
Chapter 2: Reproduction & Equality	20
2.1 Ectogenesis Provides Reproductive Equality Between Men and Women	20
Reproductive Equality Between Men and Women	20
Structural Inequalities	22
Is Ectogenesis Really the Solution?	26
Biological Differences	29
Women in Science and Medicine	32
2.2 Conclusion	33
Chapter 3: Abortion	35
3.1 Introduction	35
3.2 The Abortion Debate	35
A) The Pro-Life Argument	37
Criticisms of the Pro-Life Argument	40
B) The Moderate Argument	44
Criticisms of the Moderate View	46
C) The Pro-Choice Argument	49
Criticisms of the Pro-Choice Argument	51
3.3 Pregnant Women's Rights	52
Criticisms of Thomson's Argument	54
3.4 What Can Ectogenesis Bring to the Discussion?	57
Support for Ectogenesis from Both Ends of the Abortion Debate	57
3.5 Why Ectogenesis Will Not Resolve the Issue	58
3.6 Other Considerations	59
3.7 Conclusion	62
Chapter 4: Legal Aspects	63
4.1 Introduction	63

4.2 Current Laws in Canada and Internationally	63
4.3 Animal Research.....	65
4.4 Possible Legal Implications of Ectogenesis.....	68
4.5 Cost of the Technology.....	71
Conclusion	74
Bibliography	77

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Introduction

Ectogenesis refers to the technology or process that allows an ovum to be fertilized and develop to maturity outside a woman's body in an artificial womb.¹ The technology is beginning to emerge with successful experiments performed on animals, which suggests that human ectogenesis may soon be a possibility. This possibility raises many important ethical, legal and political issues that are complex and far-reaching. Any new technology, and in particular any new technology that involves human reproduction, should be examined as to its ethical defensibility before it is introduced into a social context.

In Chapter One, I will describe the technology itself and explain how it might be used. Also, I will examine a number of arguments in support of and against the development of human ectogenesis as argued by Peter Singer and Deanne Wells. I will consider what ectogenesis could mean in a Canadian context. In Chapter Two, I will analyze the argument that ectogenesis could be used to promote reproductive equality between men and women. I will criticise this argument as short sighted to the structural issues that women face. In Chapter Three, I will consider the argument that ectogenesis could spell the end of the abortion debate. I will argue that the abortion debate is more complex than the 'solution-by-ectogenesis' recognizes. Finally in Chapter Four, I will review international regulations and laws in Canada to see if ectogenesis can be a possibility. I will also analyze some potential legal implications that could arise if human ectogenesis were to be implemented.

¹ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 1).

Chapter 1: Current Research into Ectogenesis

1.1 Scientific Research into Ectogenesis

Steven Coleman explains that currently, research on human ectogenesis can possibly be done in two ways by dividing the investigation into two categories. The first category is indirect research aimed at increasing survival rates for premature babies by creating a womb-like environment for babies to continue to grow and develop. The second is direct research aimed at human infertility (for example) in cases where a mother cannot bring the fetus to term in her own womb.²

Since direct ectogenesis is not currently performed on humans, scientists have been testing on animals. The scientific advancements of ectogenic research on animals have improved, particularly in light of the recent developments by Dr. Hung-Ching Liu from Cornell University and Yoshinori Kuwabara from Juntendo University.³ In 1997, Dr. Kuwabara developed an artificial womb made from a plastic box filled with amniotic fluid which was used to bring several goat fetuses to term after they had been removed from the mother's womb.⁴ Although the baby goats suffered (and later died) from respiratory complications, the experiment was deemed a success since the respiratory issues could be potentially dealt with. More recently, Dr. Liu developed a procedure that would allow an egg to be fertilized through in-vitro fertilization and then implanted into an artificial uterus made out of human endometrial cells.⁵ Dr. Liu's experiments were

² Ibid. pp. 11-12.

³ Loc. cit.

⁴ Scott Gelfand "Introduction" in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, pp. 1-3).

⁵ Ibid. p. 2.

halted after six days of gestation due to legal restrictions. However, it is nevertheless hypothetically plausible that if these fertilized eggs were to continue developing, they would reach maturity similar to the goat fetuses.

Experiments such as the ones described above point to the possibility of successful human ectogenesis where an egg is fertilized through in-vitro fertilization and then brought to term in an artificial uterus, or where a fetus is removed from the mother's womb and brought to term in an artificial one. While the technology has yet to be perfected for use on humans, the scientific community is optimistic that "complete artificial wombs using these techniques [will be created] in a few years."⁶ Despite the overwhelming optimism in the scientific community regarding the development of artificial wombs, extensive ethical discussions of what this technology could mean in a social context have yet to develop.

While the concept of ectogenesis may not be entirely new, the technology is now at a point where it has the potential to be realized. Coleman explains that direct research into artificial placenta's started in the 1950's and continued to the more recent procedures developed today.⁷ Irena Aristarkhova argues that the concept of gestating a fetus outside a body views women's bodies as simply incubators and would result in a "mother as machine" which devalues the role of women in pregnancy.⁸ Aristarkhova argues that women's bodies are viewed simply as "clever incubators" and that ectogenesis removes a

⁶ Loc. cit.

⁷ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 5).

⁸ Irena Aristarkhova, "Mother as Machine," in *Body and Society*, 11:43 (London: Sage Publications, 2005 pp.1-17). Also see: Roger Gosden, *Designing Babies: the Brave New World of Reproductive Technology*, (New York: Freeman and Co., 2000).

biological method to a non-biological method.⁹ She argues that ectogenesis allows essentially philosophers “*to give birth to themselves* or dissociate themselves from the maternal body” and she argues in favour of reclaiming the maternal body.¹⁰

This argument is simplistic because it reduces women to the sole biological ability to bear children. If women were simply defined by the ability to bear children, then the development of ectogenesis could be damaging in the way that Aristarkhova describes. However, it would be a mistake to take this line of argument because it misses the complexity of the role of “mother” in a social context and reduces women to one biological capability. Further, it leaves no room to define women who are infertile or chose not to have children. Attempting to reclaim the maternal body by defining women by their biological capacity overlooks the social development of parenthood and misses the complexity of what it means to be a woman, mother and a parent.

1.2 Ethical Arguments In Support of Ectogenesis

Undoubtedly, human ectogenesis can provide several benefits in the area of reproductive technology, and Peter Singer and Deane Wells outline several arguments in favour of the implementation of this technology on humans.¹¹ Outlined below, Singer and Wells make their case in support of human ectogenesis on the grounds that: A) it could offer options to those who cannot bring a child to term, B) it could provide an alternative to surrogacy, C) it could provide better neonatal care, D) it could be used for other aspects of biological needs other than to produce a baby, E) it could provide reproductive equality between men and women and F) it could spell the end of the abortion debate. I

⁹ Loc. cit.

¹⁰ Ibid. p. 2.

¹¹ Peter Singer and Deanne Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, pp. 9-16).

will consider A), B), C) and D) in more detail below and I will dedicate a chapter each to E) and F) which I feel require a more in-depth analysis.

Medical Benefit

A) As mentioned above, one benefit human ectogenesis could provide is for women with damaged uteri or those who have had a hysterectomy and cannot bring a fetus to term can nevertheless have a genetically related child using their own eggs, fertilized through in-vitro fertilization, and brought to term in an artificial womb.¹² Previously, the options for these women were to find a surrogate to have a genetically related child or to adopt a child that is not genetically related. While these methods would still be available, direct ectogenesis could provide an alternative method to having a genetically related child that would avoid the need for a surrogate.

End of Surrogacy Contracts

B) Another argument in favour of ectogenesis is that it would avoid many of the issues surrounding surrogate motherhood or “contract pregnancy”, as it is sometimes called. In what follows, I will outline the main arguments against contract pregnancy in order to provide a context where ectogenesis could be seen as a solution.

To provide some background, the four main bioethical concerns that are prevalent in the literature focus on i) concerns for the surrogate child’s psychological and social well being; ii) concerns regarding societal views on families; iii) concerns of potential

¹² Ibid. p. 11.

exploitation of the surrogate and iv) concerns that contract pregnancy is tantamount to baby selling.¹³

- i) Thus, Thomas Murray argues that contract pregnancy should be prohibited because we cannot know the damages or harms that the surrogate child might suffer from if they were to gain knowledge of the contract.¹⁴ Specifically, Murray maintains that the surrogate child might suffer psychological harm if they were to find out that they had been the product of a commercial transaction and that they were created (by the gestational mother) only to be given away to the commissioning couple and therefore, contract pregnancy ought to be prohibited.
- ii) Another reason to oppose contract pregnancy is because it might cause adverse effects on core family values or on societal views of the family. That is to say, Murray argues that “the values embedded in certain alternative reproductive practices form a constellation that aligns poorly with other values at the heart of family life.”¹⁵ He maintains that reproductive technologies would allow parents to essentially choose the type of child they want to raise mostly in terms of appearance and health but also in terms of temperament and personality, and argues that “the emphasis here on control and choice does not fit well with our understanding of families. Good families are

¹³ I will leave aside the evaluation of these arguments as to their strengths and weaknesses. I bring up the concerns with contract pregnancy mostly to provide the reader with some context in order to express how ectogenesis might be able to avoid these concerns completely.

¹⁴ Thomas Murray, “Families, The Marketplace, and Values: New Ways of Making Babies,” in *Biomedical Ethics*, 5th Edition, Thomas Mappes and David Degrazia ed., (New York: McGraw-Hill, 2001, pp. 546-553).

¹⁵ *Ibid.* p. 546.

characterized more by acceptance than control.”¹⁶ He argues that there is a sense of duty involved in a family that is a result of un-chosen circumstance; that is, in the sense that we do not choose our parents and they cannot choose (for the most part) us.¹⁷

- iii) Another concern with contract pregnancy is that it has the potential to be used by those in positions of power in society to control or exploit women. The argument is that since surrogacy is not publicly funded, it remains up to the commissioning couple and the surrogate to arrange a contract. The concern is that it could be used by commissioning couples who can afford a surrogate to exploit poor, uneducated women who have few options available to them.¹⁸
- iv) The final concern is that contract pregnancy is tantamount to selling babies. Children, and human beings in general, are thought to have intrinsic value which would make it wrong to sell or put a price on human lives. Many authors use parallels to slavery as an example of the wrongness of selling human beings. Thus, Murray argues that “paying individuals for their biological products makes them vendors, not donors. And it places the interactions between the parties squarely on the marketplace.”¹⁹ His worry is that by allowing contract pregnancy, children will be a commodity on the marketplace and this is wrong (partly because it will destabilize core family

¹⁶Loc. cit.

¹⁷ By extension, there is a fear of the commodification of children and women’s labour (specifically as argued by Elizabeth Anderson) which I will discuss in subsection (iv)

¹⁸ For instance, see: Christine Overall, *Ethics and Human Reproduction A Feminist Analysis* (Boston: Allen & Unwin Inc. 1987).; Susan Dodds and Karen Jones, “A Response to Purdy,” in *Bioethics, An Anthology*, Helga Kuhse and Peter Singer ed (Massachusetts: Blackwell Publishing Ltd., 2004).; Susan Sherwin, *No Longer Patient* (Philadelphia: Temple University Press, 1992).

¹⁹Thomas Murray, “Families The Marketplace, and Values: New Ways of Making Babies,” in *Biomedical Ethics*, 5th Edition, Thomas Mappes and David Degrazia ed., (New York: McGraw-Hill, 2001, p. 548).

values). While others disagree with Murray's emphasis on family values, many agree that making children/human beings a commodity on the market place is wrong.

Similarly, Elizabeth Anderson argues that contract pregnancy should be prohibited because it treats children and women as commodities. She understands commodification in the following way: "a practice treats something as a commodity if its production, distribution, and enjoyment is governed by one or more norms distinctive to the market."²⁰ Anderson argues that the interaction and contract between the commissioning couple and the surrogate have distinct characteristics that are regarded as marketplace interactions. Anderson argues that contract pregnancy allows parental rights to be treated as alienable property rights in the marketplace that "are allocated at the will of the parents."²¹ What contracts are selling is parental rights to the child and this (for Anderson) is what baby selling entails. Her argument focuses on the details in the contract that make it appear that what is being bought and sold is precisely children rather than a service.

Given this opposition to contract pregnancy, it is not difficult to understand how ectogenesis could be seen to provide a solution to problematic surrogacy contracts. Despite being highly speculative and unfounded, the first two concerns can at the very least be reduced (if not entirely eradicated) with ectogenesis since there would be no contract by which the resulting child could be psychologically harmed by.

²⁰ Elizabeth Anderson, "Why Commercial Surrogate Motherhood Unethically Commodifies Women and Children: Reply to McLachlan and Swales," in *Health Care Analysis*, 19-26 (Netherlands: Kluwer Academic Publishers, 2000). <http://www-personal.umich.edu/~eandersn/surreply.pdf>

²¹ Loc. cit.

Of course that would leave Murray's argument based on the sense of duty parents have to their children as a result of the un-chosen circumstances. However, this argument is weak. Murray believes that if we do choose a certain relationship, this ability to choose would undermine our obligation to the other person, presumably because the relationship is seen as a matter of choice, not duty. According to Murray's argument, relationships based on chosen circumstances do not require the same degree of obligation one owes to relationships based on un-chosen circumstances. However, it is not necessarily true that if parents should have a choice or control over what kinds of characteristics, or appearance their child has, that their sense of duty, obligation or love to that child is any less committed.

Not only does his argument fail to show how choice threatens obligation, but Murray also disregards accepted examples which further weaken his argument. Murray readily admits that we choose our spouses voluntarily; however, he is not concerned with choice in this case undermining obligation. His primary concern is that it is wrong to choose in regards to children. However, this concern is out of step with otherwise accepted practices in contemporary society. Adoption is widely considered an acceptable practice, yet it can easily be argued that the adoptive parents choose what child they want to adopt. From this particular example, it is not clear that having a choice threatens our sense of duty and obligation.

In the case of ectogenesis, where the ability to choose remains inherent in the ability to select gametes or in selecting only particular fertilized zygotes that meet the parent's requirements and expectations, these arguments do not show that the obligation that parents normally have towards their children is undermined by how the children

were brought into being. This, of course, does not invalidate the argument that the resulting child may suffer psychological damage as a result of knowing they were gestated outside a woman's body. However, this argument is speculative and until there is sound evidence to support it, it will be difficult to use this line of argument to justify prohibiting ectogenesis.²²

The last two stronger arguments against surrogacy can be completely avoided with the use of ectogenesis. Since ectogenesis provides an alternative to the use of a surrogate, there is no direct or necessary risk of exploitation of the surrogate, or commodification of the resulting child. So, from this perspective, Singer and Wells conclude that ectogenesis can be viewed as a practical alternative to problematic surrogacy contracts.

Better Neonatal Care

C) Another benefit of developing human ectogenesis would be to increase the chances of saving the lives of extremely premature babies. Premature babies are at a heightened risk of death due to their inability to obtain proper nutrition through normal feeding, control waste products, hydrate their body due to their immature skin, resist infection, control body temperature, regulate their respiratory system, etc.²³ Due to their early delivery, premature babies have not had adequate time to develop physically in order to survive

²² To clarify, I want to argue that it is speculative to argue that the child would suffer psychological harm from knowing of the procedure. I am, of course, assuming that by the stage where direct ectogenesis is performed on humans, that every aspect of pregnancy can be replicated and the fetus will not be intentionally placed in any harm through the use of this procedure. I understand that there are arguments that suggest that there is mother-fetus bonding during pregnancy which would not be able to be replicated with ectogenesis. However, again, I am assuming that whatever chemical or hormonal bonding that occurs between the mother and the fetus can be replicated. Also, there are other cases (such as with surrogacy) where the fetus does not share a bond with the contractual mother.

²³ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, pp. 7 – 9).

outside the womb without medical intervention. Currently, some of the technologies available to premature babies include feeding through intravenous drips, cribs that control humidity and temperature, ventilators to assist with breathing, etc.²⁴ Basically, these technologies are attempting to replicate the mother's womb to recreate an environment that would allow the baby to develop normally to term.

Singer and Wells detail a case in 1981 where a 470g premature baby (Kim Bland) was kept alive through the use of the best neonatal technology that was available at the time.²⁵ At the time, Kim was the “smallest baby to have survived at the Queen Victoria Medical Centre and one of the smallest anywhere in the world.”²⁶ Singer and Wells note that it is becoming increasingly possible to save the lives of extreme premature babies. With the development of ectogenesis, it would be possible that premature babies will face even less risk associated with being born early since an artificial womb would resemble a woman's womb more closely than the technology that is currently available. In terms of providing life saving technology for premature babies, it is not difficult to support the development of ectogenesis.

Organ and Tissue Banks

D) The final argument that I will review in this chapter is the argument that ectogenesis could provide a tissue and organ bank for others.

Organs such as eyes, hearts and livers are transplanted from a donor to a recipient for various reasons. One problem with such transplants is that there is a risk of rejection from the donor to the recipient. There is a risk that the body of the recipient will attack

²⁴ Loc. cit.

²⁵ Peter Singer and Deane Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, p. 10).

²⁶ Loc. cit.

the transplant as if it were a foreign protein.²⁷ There are drugs that can reduce the risk of rejection but the drugs themselves can have negative side effects.²⁸ Another problem is with the scarcity of tissue and organ donation.

According to Singer and Wells, ectogenesis would help to alleviate this shortage. Specifically, they argue that through ectogenesis, much needed, scarce tissue and organs can be harvested by keeping embryos alive.²⁹ Embryos could be grown for a specific purpose depending on what is required. Singer and Wells also note that there is less chance of rejection if the transplant comes from an embryo rather than an adult.³⁰ Receiving a tissue or organ transplant would undoubtedly enhance and save the lives of many people who require these procedures. Singer and Wells argue that ethical issues associated with using fetuses in this way would be met by ensuring that a fetus would not be allowed to develop to a point where it could survive on its own since the intent of the procedure would be to harvest the organs and not to bring a fetus to term. They argue, therefore, that we ought to allow human ectogenesis in the hopes that it leads to the betterment of others through the use of organ and tissue banks.

However, arguing in favour of ectogenesis on the grounds that the ectogenic fetus can be used as a tissue bank is slightly problematic. One major issue is that fetal organs would be limited to who can receive them because they cannot be used in adult transplants. Fetal tissues functions differently from adult tissue because they have not developed enough to work properly in an adult body. Also, it seems that there are better options for organ banks that could be developed before ectogenesis. For instance, instead

²⁷ Ibid. p.14.

²⁸ Loc. cit.

²⁹ Ibid. p. 15.

³⁰ Loc. cit.

of developing ectogenesis for these purposes, we can continue research into developing the possibility of cloning organs from one's own cells.³¹ This way, only the desired organ can be grown and harvested rather than developing a complete fetus in order to harvest its tissue and organs (which would be of limited use anyways.)

1.3 Ectogenesis in a Canadian Context

However one may stand on the preceding issues, human ectogenesis faces problems when considered from a legal perspective. In contemporary Canadian society, there are laws that would prohibit the use of direct ectogenesis on humans. In particular, section 5, 1 (d) of the *Assisted Human Reproduction Act* clearly states that “no person shall knowingly maintain an embryo outside the body of a female person after the fourteenth day of its development following fertilization or creation, excluding any time during which its development has been suspended.”³²

However, this prohibition is not absolute and universal. While the Act specifically prohibits direct ectogenesis where an egg is fertilized through IVF and then implanted into an artificial womb, it does not prohibit the use of ectogenesis on premature babies. Ectogenesis may be indirectly researched and permitted as advancing technology for the benefit of premature babies which is not restricted under the *Assisted Human Reproduction Act*. There is support from the scientific community that the direction of ectogenesis research will be in this way: “[A]rtificial womb seems the next logical step in a process that has increasingly removed reproduction from traditional maternity and

³¹ I realize there are legal restrictions in Canada that prohibit cloning. I bring up this possibility to argue that there may be better routes that can be developed to address the problem of a lack of organs than with ectogenesis.

³² *Assisted Human Reproduction Act*, S.C 2004, c. 2. <http://www.canlii.org/ca/sta/a-13.4/>

made of it a laboratory process.”³³ So despite restrictions under the *Assisted Human Reproduction Act*, indirect research remains a possibility in a Canadian context.

1.4 Opposition to Ectogenesis

Above, I outlined some of the supposed benefits of ectogenesis suggested by Singer and Wells. In their article, Singer and Wells also review potential arguments against ectogenesis and criticize them to conclude that arguments against ectogenesis are unjustified. They feel that there really are no strong arguments for prohibiting ectogenesis. They pay special attention to arguments based on A) the lack of appropriate human testing, on the claim that B) ectogenesis would be unnatural, and the argument that C) ectogenesis would lead to an ethically unacceptable slippery slope. I will review their analysis below.

Human Testing

A) Singer and Wells explain that the strongest argument to prohibit human ectogenesis is that the technology has not yet been tested on humans and so any possible side effects cannot be known until there is human testing. Given our lack of complete understanding of pregnancy, there could be something that a human body can provide for the child that an artificial womb may not.³⁴ This allegedly provides good reason to oppose ectogenesis since experimentation could lead to negative outcomes for the child and it is wrong to harm others.³⁵ On this account, ectogenesis should be prohibited.³⁶

³³ Scott Gelfand “Introduction” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John R. Shook eds. (Amsterdam: Rodopi, 2006, p.1).

³⁴ Peter Singer and Deane Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John R. Shook eds. (Amsterdam: Rodopi, 2006, p. 16).

³⁵ Loc. cit.

³⁶ This argument is an extension of the precautionary principle which will be discussed below.

However, Singer and Wells counter this argument by pointing out that it is possible that the technology can be advanced to a state where it is safe to test on humans, similar to testing that was done in support of IVF or other reproductive technologies. The continual research on ectogenesis through animals can serve as an essential link to potential human ectogenesis in the future. This argument to oppose ectogenesis, therefore, is extremely restrictive and would not allow a number of potentially beneficial technologies to develop. Like with any new drug or technology, it can be carefully studied and vigorously tested on animals to understand the effects and potential harms. Then, once it is deemed safe, it can be introduced among a human population.

Moreover, while it is true that the effects of certain drugs and technologies on humans can never be known until they are studied in trials, this is not a strong reason to oppose such advancements. Restricting the introduction of potentially lifesaving technologies and drugs because the effects can never be fully known until they are tested on humans is difficult to argue since there may be benefits from the drugs and technologies. While every measure ought to be taken to protect humans from drugs and technologies that have not been rigorously tested, or are in some way unsafe, it would be dangerous to prevent the use of these potentially beneficial advancements. Ectogenesis could be tested and perfected on animal models to the point where it could be deemed safe to allow it to be introduced on a human population where it could provide a benefit for those who would use it.

The precautionary principle maintains that if there is any potential of risk to the public or the environment and without scientific evidence, the burden of proof is on those who wish to exercise the potentially risky action to demonstrate its safety. In other words,

the precautionary principle argues for the “shifting the burden of proof in regulatory decisions from demonstration of harm to demonstration of safety of substances and practices.”³⁷ In regards to many new and novel biomedical technologies, this might grind any advancement to a halt. If we are to adhere strictly to this principle, there is no feasible way to use new technology and could prove its safety without at some point using it on humans. Therefore, while it is important to recognize the intent of the precautionary principle – to ensure the safety of the public and the environment – it would require too heavy of a burden of proof on new technologies.

Also, ectogenesis has the added benefit that it could be gradually introduced with the development towards better neonatal care for premature babies. This would allow rigorous testing of the technology and would provide a gradually increasing amount of knowledge about the effects of ectogenesis.

Further, with regards to potential problems with the technology, any such claim is mere speculation until the technology is introduced into a human population. James Rachels argues that not only is it speculative to try to discern what harms may result from a given technology, but also that ethicists have consistently been wrong in their predictions in this regard.³⁸ For instance, in reference to the first baby born by in vitro fertilization in 1978, Rachels states that “this important event prompted alarmed and highly critical responses from physicians, theologians, and philosophers that are embarrassing to look back upon today... [The comments] remind us of a whole series of exaggerated statements and predications: terrible consequences were sure to follow for

³⁷ Stanford Encyclopedia of Philosophy, “The Social Dimensions of Scientific Knowledge,” <http://plato.stanford.edu/entries/scientific-knowledge-social/> (accessed June 2010).

³⁸ James Rachels, “When Philosophers Shoot From the Hip,” in *Bioethics, An Anthology*, Helga Kuhse and Peter Singer ed., (Massachusetts: Blackwell Publishing Ltd., 2004, pp. 573-575).

the parents, the child and society. But today [the child born from in vitro fertilization] is a happy, rambunctious child, and so are many like her.”³⁹ Rachels argues that it is often meaningless to frame arguments based on potential harm.⁴⁰

Unnatural

B) Another reason that Singer and Wells mention that one might use to oppose ectogenesis is that it is unnatural compared to pregnancies that occur inside a woman’s body.⁴¹ In this line of argument, normal pregnancies are supported over ectogenesis because there is little medical involvement in a process that has been deemed ‘natural.’

This argument, however, as Singer and Wells point out, is premised on questionable grounds. There is no reason to support the argument that ‘natural’ is inherently a good thing and ‘unnatural’ is inherently a bad thing. For instance, malaria and brain tumours are naturally occurring diseases and yet we would not argue that they are ‘good’ or that we should not treat them. Singer and Wells conclude that opposing ectogenesis based on the unnaturalness argument is insufficient.

Slippery Slope

C) Singer and Wells further consider the possibility that opposition to ectogenesis may be based on the fear that it can be the start of a slippery slope that leads to farming humans in laboratories.⁴² There may be a fear – so they argue – that human life would be devalued if it was to become mechanized and humans were to be ‘farmed’ in a way

³⁹ Ibid. p.575.

⁴⁰ I am not arguing that potential consequences should not be considered, only that they should not be the determining argument for or against developing technologies.

⁴¹ Peter Singer and Deane Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John R. Shook eds. (Amsterdam: Rodopi, 2006, p. 17).

⁴² Ibid. p.18.

similar to commercial animal farming. Human life would then lose its inherent value because it will become dispensable – to be created and destroyed at will.

However, as Singer and Wells correctly point out, this argument assumes that the ability to choose and the ability to control human life will lead to disastrous outcomes. However, if human ectogenesis were to be implemented, one could ensure that there would be legal guidelines and restrictions on what could be done with this technology. With the proper guidelines and regulations in place, one could avoid ‘sliding down the slope’ and ensure that the technology was not misused. These guidelines could be modified and reassessed with the evolution of the technology in a human setting. In other words, rather than prohibiting ectogenesis outright, proper guidelines could be put in place with the option to change or modify them as needed.⁴³ Therefore, the opposition to ectogenesis on the grounds that it is the start of a slippery slope is not a persuasive argument. Ectogenesis could be regulated like other reproductive technologies.⁴⁴

There is also no reason to suppose that choice and control undermines human life. Although ectogenesis would provide more control and choice over the process of reproduction, this would not show that human life would therefore be devalued or that it would undermine the worth of human life. There are readily accepted examples where choice and control does not result in a decrease in the value of life. Adoption is here a primary example. With adoption, potential parents have choices regarding the child they wish to adopt in terms of the age of the child, the background of the child, the country

⁴³ I will not go into detail as to exactly what kinds of guidelines and regulations might be required since it is beyond the scope of my thesis.

⁴⁴ I would like to emphasize my suggestion at this point is not as simple as it first appears because I think it is important to recognize the way that law and medicine can be gendered. So, to have legal regulations that would be beneficial to women, we need to take into consideration the fact that the legal system may be entrenched in patriarchy and this issue too would need to be addressed.

they wish to adopt from, etc. Despite these choices, there is no reason to suppose that the child's life or the parent's sense of duty would be any less than if they were to have a genetically related child without these explicit choices. Similarly, with ectogenesis, simply because there is choice and control does not show that human life is in any way devalued.

1.5 Conclusion:

In this chapter, I have considered some arguments against the development and use of ectogenesis for human reproduction and have argued that they are either based on unproven assumptions or are based on premises that contradict what is currently considered ethically acceptable practice. I have also considered some arguments in favour of ectogenesis – specifically those advanced by Singer and Wells, who are its major proponents. I will explore the potential weaknesses of two of their arguments – reproductive equality between men and women and the solution to the abortion debate – in the following chapters. In my criticism of these two arguments in support of ectogenesis, I will also consider possible objections to the criticisms I have raised in this chapter and re-evaluate my position in light of these objections.

Chapter 2: Reproduction & Equality

2.1 Ectogenesis Provides Reproductive Equality between Men and Women

Another argument in support of ectogenesis holds that the technology can provide equality between men and women by eliminating women's sole responsibility for carrying a fetus to term. In particular, Shulamith Firestone proposes that ectogenesis as a powerful tool in fighting against women's oppression and the structural inequality that women face.⁴⁵

However, Firestone's thesis is problematic. In this chapter, I will challenge Firestone's proposal and I will suggest that her argument that ectogenesis can help women does more to harm women than to help them.

Reproductive Equality between Men and Women

A) Firestone argues that inequality between men and women in Western society rests solely on the biological fact that women bear children and men do not.⁴⁶ Firestone argues "nature produced the fundamental inequality – half the human race must bear and rear children of all of them – which was later consolidated, institutionalized, in the interests of men."⁴⁷ Her argument that women are biologically disadvantaged stems from the idea that when women do have children in our society, it affects other aspect of their lives differently and disadvantageously when compared to men. Having and rearing a child, as a woman, adversely affects other aspects of women's lives such as her role in the family and her position in the workplace. Firestone's solution to this problem is to take the

⁴⁵ Shulamith Firestone, *The Dialectic of Sex*, (New York: William Morrow and Company Inc., 1970).

⁴⁶ Ibid. p. 232.

⁴⁷ Loc. cit.

biological fact that women bear children and replace it with the mechanized process of ectogenesis. In other words, Firestone argues that what is required to gain reproductive autonomy is the development of human ectogenesis: “The freeing of women from the tyranny of their reproductive biology by every means available, and the diffusion of the childbearing and childrearing role to the society as a whole, men as well as women.”⁴⁸ She also mentions that to free women from the sole childbearing and childrearing responsibility, there ought to be better access and safer contraceptives, improved daycares, access to abortions, etc. However, she argues that these suggestions do not reach the root cause of the problem that women are biologically able to carry children, so her ultimate proposal is the implementation of human ectogenesis.⁴⁹ Firestone further argues that research into ectogenesis has been hampered by male dominated sciences and medicine in the same way that research into male contraceptives has been stalled due to the reluctance for men to accept the risks and responsibilities associated with contraceptives.⁵⁰ She argues that research into ectogenesis has not been carried out as a viable alternative with women’s interests for reproductive autonomy. Rather, research has been aimed at survival rates for premature babies.⁵¹

Underlying Firestone’s argument is the idea that women face discrimination in other areas of life due the structure of society and that this discrimination is due to the fact that women bear children and are often the primary caregivers of children. She argues that we need to look to the actual causes of society in order to understand the ways in which women are oppressed.

⁴⁸ Ibid. p. 233.

⁴⁹ Ibid. pp. 233 – 237.

⁵⁰ Peter Singer and Deane Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John R. Shook eds. (Amsterdam: Rodopi, 2006, p.14).

⁵¹ Loc. cit.

Structural Inequalities

B) The fundamental difference between Firestone's argument and the one I find more compelling is the role that social structure plays within the two arguments. Firestone wants to address issues of oppression from within the current social structure. She wants to start within the current framework by diminishing biological differences between men and women which, she hopes, will lead to changes to the structure itself. Firestone is attempting to identify the cause of inequality based on biological differences in order to eradicate the source to promote gender equality in general.

However, against this it may be argued that if changes are made to the social structure itself, the issue of the origin of inequality will become irrelevant. As will be discussed in further detail in subsequent sections, a more compelling argument can be made which takes the social structure as the fundamental cause of oppression rather than biological differences because explanations based on biological differences can justify very little, especially in today's society.⁵² Outlined below are some of the structural ways women are oppressed.

For instance, women face structural oppression when familial demands and the structure of the workplace intersect. The structure of the workplace is hierarchical where there are a few in the uppermost positions who have power and control over many others who work below them. As will be discussed further, women face difficulties reaching the uppermost positions due to their role as primary caregivers to young children.⁵³ Further, many women encounter a "glass ceiling" - which is an invisible barrier that prevents

⁵² For instance, while it may be true that men have, on average, more muscle mass than women, this does not justify discrimination in the workplace. When men and women are competing for the top positions in the workplace, men are at an advantage because the ideal employee has been defined by masculine standards.

⁵³ Jennifer M. Saul, *Feminism Issues and Arguments*, (New York: Oxford University Press, 2003, pp. 5-30).

women and other minorities from moving into top corporate positions.⁵⁴ Many feminists have also recognized that “the best paid and most secure jobs have requirements that are difficult to meet for anyone who is the primary caregiver for small children....women are, statistically, far more likely than men to be primary childcare providers.”⁵⁵ It is imperative to recognize that there are aspects of women’s lives and social institutions that are oppressive to women, even if they have equal rights to compete with men.

Similarly, Barbara Hilkert Andolsen argues that sex segregation in the work place can further oppress women.⁵⁶ She notes that women are often concentrated in poor paying, service type jobs and face difficulties when they try to move out of those positions due to structural, social and familial inequalities. She argues that not only is there a disparity between the types of jobs available to men and women, there is a growing disparity between the types of jobs available to women of colour. She states “growing wage inequalities *among women in different occupational groups* needs to be examined as a justice issue.”⁵⁷ She notes that it is important to dismantle unjust structural inequalities that keep women in a disadvantaged position compared to men, and that further perpetuate inequalities between women.⁵⁸ To quote Andolsen, “justice for women requires more than equal access to the wage labor force as it is presently structures. Justice requires a fundamental restructuring of the so called “workplace”...”⁵⁹

⁵⁴ Adie Nelson and Barrie W. Robinson, *Gender in Canada*, Second Edition (Scarborough, Ont.: Prentice Hall, 1999, p. 234).

⁵⁵ Jennifer M. Saul, *Feminism Issues and Arguments*, (New York: Oxford University Press, 2003, p.8).

⁵⁶ Barbara Hilkert Andolsen, “Work,” in *A Companion To Feminist Philosophy*, Alison M. Jaggar & Iris Marion Young eds. (Massachusetts: Blackwell, 2000, p. 455).

⁵⁷ Loc. cit.

⁵⁸ Loc. cit.

⁵⁹ Loc. cit.

Further, in *Justice, Gender and the Family*, Susan Moller Okin argues that “the family is the linchpin of gender...family life as typically practiced in our society is not just, either to women or children. Moreover, it is not conducive to the rearing of citizens with a strong sense of justice.”⁶⁰ Okin recognizes the importance of the structure of the family in relation to women’s oppression. She argues that the “attainment of such a social world [one where men and women participate in more or less equal numbers in every sphere of life] requires major changes in a multitude of institutions and social settings outside the home, as well as within it.”⁶¹

Clearly, Okin recognizes that ending oppression will require a multi-pronged solution. As an answer to ending oppression in the lives of women and children, she suggests enforcing policies such as “adequate public support for children whose fathers cannot contribute [and] subsidized high quality daycare.”⁶² Firestone, however, would argue that Okin’s suggestions are not enough and what is required to eradicate oppression is to completely sever the ability for women to be the ones responsible for carrying a fetus to term.⁶³

Other liberal solutions to ending women’s oppression may include giving equal opportunity in the workplace and in the education system, mandating pay equity, increasing maternity and paternity leave and fighting for formal equality between the sexes, etc. However, socialist feminists have argued that although these solutions are important to eradicating women’s oppression, they are not *all* that is required to reach the root of the problem. There needs to be more than just simply legal rights. Social

⁶⁰ Susan Moller Okin, *Justice, Gender, and the Family*, (New York: Basic Books, 1989, p. 170).

⁶¹ Ibid. p.172.

⁶² Ibid. p. 186. This is mainly with regards to US and Canadian context

⁶³ Shulamith Firestone, *The Dialectic of Sex*, (New York: William Morrow and Company Inc., 1970, p. 232).

structures such as the structure of the workplace can be oppressive and simply granting legal stipulations will not change the hierarchical, patriarchal structure of work. As Susan Sherwin explains, “liberal feminism places too much emphasis on the individual and relies too heavily on legal and political differentials. It does not provide sufficient scope to correct the ways in which groups, rather than individuals, are victims of oppression.”⁶⁴ Liberal feminism cannot address perpetuation of gender inequality through free choice and speech such as socialization of gender roles (for example, gender roles that encourage women to be primary care givers). When Sherwin’s argument against the liberal focus on individuals is applied to reproductive autonomy, it can be argued that reproductive autonomy should not be viewed as individuals making individual choices but it is important to recognize the external ways in which individual choices can be affected by structural inequalities.

As Jennifer Saul argues, “women, in general, undertake by far the greater proportion of household labor.”⁶⁵ Due to the household responsibilities and women’s role as primary caregivers, many women are forced into poor paying, unstable, part time jobs mostly in the service industry. Further, women often take time off from paid labour due to familial responsibilities. However, “in many jobs, both blue collar and white collar advancement depends on seniority and interruptions in one’s work eliminate whatever seniority one might have had.”⁶⁶ Saul continues, “Women, then, earn less than men

⁶⁴ Susan Sherwin, *No Longer Patient*, (Philadelphia: Temple University Press, 1992, p. 29).

⁶⁵ Jennifer M. Saul, *Feminism Issues and Arguments*, (New York: Oxford University Press, 2003, p. 8).

⁶⁶ *Ibid.* p. 10.

because they are unable to fill better paid jobs, because they work part time rather than full time, and because they cannot gain the seniority needed for promotion.”⁶⁷

Is Ectogenesis Really the Solution?

C) Outlined above is the underlying foundation on which Firestone relies to support ectogenesis. Her recommendation then is to eradicate what she sees as the root cause of inequality by extending the ability to have children to both men and women through ectogenesis.

This suggestion however is short sighted and does not address the issue of entrenched oppression. It is due to structural inequalities that women face oppression and not the biological fact that women have the ability to bear children. It can be argued that *anyone* who is the primary caregiver of children will face difficulties when familial demands and the structure of the workplace intersect.⁶⁸ Firestone’s argument assumes that the reason why women are more likely to be primary caregivers (and hence face structural difficulties) is due to their ability to bear children. However, there is no reason to suppose that eradicating this biological difference between men and women will lead to changes in the oppressive structure of society. Even if ectogenesis removes the ability to bear children inside a human body, raising the child would still be problematic, especially with a workplace that is not family friendly. Furthermore, it is not clear how ectogenesis will lead to equality in the workplace when women often work while pregnant, leave the workforce shortly before giving birth and remain out of the workforce in order to raise children. Ectogenesis does not address these concerns as it seems more

⁶⁷ Loc. cit.

⁶⁸ It happens that women, more often than men, are primary caregivers. The reasons this may be so will be explained in subsequent sections of this section.

likely that women *raising* children and not simply women *having* children are where problems arise.

To be fair to Firestone's argument, she argues in favour of changing oppressive social structures along with the use of human ectogenesis. She argues that the focus on simply fighting for changes to the social structure does not accomplish enough and that these types of arguments are simply 'band-aid' solutions to the real problem which stems from the biological fact of women's ability to have children. In this way, she argues that ectogenesis provides the starting point for change together with other feminist arguments such providing a more family friendly workplace.

It is clear that Firestone wants to work within the current social structure by eradicating (what she takes) to be the cause of inequality in order to change the social structure from within. However, it is not clear that ectogenesis would need to be implemented to achieve this end. If the problems that arise for women have to do with the structure of society being incompatible with the role of a primary caregiver, there is no reason to suppose that ectogenesis can resolve this incompatibility. Grounding the basis of inequality in the biological differences between men and women reinforces essentialist type arguments. If social structures were to be changed in the proper way, there would be no need to eliminate the biological differences between men and women.⁶⁹ In other words, not only would there be no need to introduce ectogenesis, it would seem rather irrelevant to the situation of women since when changes in social structures are made, the origin of prior inequality would become beside the point.

⁶⁹ By social structure changes, I mean to include more than simply care giving but also policy changes such as better maternity and paternity leave, day cares, work equity etc.

Again, Firestone's argument hinges on her assumption that the reason why women are more likely to take on the role of a primary caregiver is because they have the ability to bear children. However, feminists have argued that women have been, and continue to be, socialized in a way that promotes them to be primary caregivers and men are socialized to be employed full time in the workforce.⁷⁰ The way men and women are socialized can have a profound impact on the roles they take on later in life and the way they interact with others.⁷¹ Social pressures, gender roles and social structures teach and enable women to be primary caregivers and men to be in the workforce full time – a fact that challenges Firestone's argument that women are primary caregivers because of reproductive capacity. There are, undoubtedly, aspects of women's ability to have children that are biologically tied to being a female and cannot be replicated by men – nursing for instance. However, there are other ways to accommodate for this difference (such as workplaces that have childcare, pumping breast milk or using formula). Ectogenesis would not address these types of issues anyways since it only takes into account the period of time when the fetus is developing. The ability to raise a child is not inherent only to women. Being a good parent is independent of gender and men as well as women can, and do, provide care for children.

In other words, Firestone assumes that since women have the ability to carry a child to term, this in some way means that she is more likely to raise the children. However, it seems that gender socializing more than biological differences affect the likelihood that women will be the primary caregiver rather than men. Firestone's

⁷⁰ Lynda Birke, "Biological Sciences," in *A Companion To Feminist Philosophy*, Alison M. Jaggar & Iris Marion Young eds. (Massachusetts: Blackwell, 2000, p. 194).

⁷¹ Loc. cit.

proposal seems to indirectly reinforce, rather than challenge, traditional gender roles by insisting that society is structured based on inherent differences between men and women. Although she argues that this ought to be changed through ectogenesis, making the origin of inequality the inherent ability for women to carry a fetus to term, Firestone has indirectly evoked essentialist arguments.

In Firestone's ideal world, parenting would be shared amongst men and women and there would not be a sole provider for the care of children.⁷² This appears to be a commendable suggestion that advocates increased sharing of childrearing responsibilities. However, this suggestion fails to recognize that the area of contention is not with *who* does the parenting but rather the way that being a sole provider is at odds with societal structures. Sharing childrearing responsibilities ought to be promoted for the benefit of women, men and children. However, it is not simply the lack of sharing childrearing responsibilities that places women at a disadvantage but rather the way childrearing and the workplace interact. Firestone rests her solution of ectogenesis on problematic grounds that do not show a clear and convincing reason to support human ectogenesis.

Biological Differences

D) In other words, Firestone's argument that ectogenesis can solve the problems of oppression depends on the idea that it is this biological difference between men and women that causes inequality. However, biological differences are not in themselves hierarchical. Differences between men and women are not divided into binary distinctions of better or worse, good or bad, right or wrong, *outside* of a social context.

⁷² Shulamith Firestone, *The Dialectic of Sex*, (New York: William Morrow and Company Inc., 1970, p. 258).

Differences between men and women are, simply put, differences. While it is true that there are differences between men and women, this does not show that any one trait is better and another worse. Nor does it show that biological differences are the cause of inequality. A social context is where these differences receive their meaning and the social setting has been, and continues to be, patriarchal. For instance, historically, the workplace has been male dominated so the model employee has been defined by masculine standards. Therefore, it is difficult for women to meet these standards when aspects of women's roles and the interaction with the workplace have not been considered. It is the social context where women find themselves as primary caregivers and the oppressive position this puts them in which is problematic.⁷³

For Firestone's argument to be successful, she needs to show a) exactly how biological, rather than socialized differences oppress women and also b) exactly how biological differences even matter in today's society. Her argument does not address the first concern because she does not show that biological differences are a necessary and sufficient cause of oppression – socialization and oppressive social structures are a much more likely explanation. Her argument does not address the second concern because even if she can give an evolutionary account of the cause of inequality rooted in the distribution of labour between men and women, these types of issues are not present in today's society. Historically, women remained in the home to nurse children. This issue

⁷³ Even if we grant an explanation that details the roles of men and women during hunter-gather times, this explanation hardly justifies why there is inequality in our society today. Although it may be true that during nomadic times, women stayed at the camp to raise children while men went hunting, the social circumstances of those times are so unlike the social circumstances of today that a fair comparison cannot be justified. To argue that the structure of the workplace is currently male dominated because it stems from the roles of men and women in nomadic or hunter/gather times does not show that the structure has to be this way or that it cannot be otherwise.

is no longer an issue as the availability of formula, pumping breast milk or childcare at the workplace can deal with these matters.

Moreover, Firestone does not show how carrying a child is a problem to women's lives today as most such problems centre in the raising, not the bearing of children. Firestone is fixated on (what she takes to be) the causal level of inequality when that issue is ancillary to the issue of oppressive social structures. She has a limited point of view of what she argues are the causes of inequality because she does not take into account the symptoms of the overarching structure itself. Even if one were to grant Firestone that the cause of inequality is due to women's child bearing abilities, implementing ectogenesis would not address the issue of the need for a caregiver. This biological fact is not, by itself, the cause of patriarchal oppression. There is no reason to suppose that ectogenesis will bring about the changes in the social structure that Firestone envisions and there is no reason to suppose that changing the social structure is not essentially what is required for women to have meaningful reproductive autonomy.

With regards to ectogenesis, Firestone's argument makes distinctions between women and men, focusing on men's inability to carry a fetus. Her solution to dissolve the inequality by introducing ectogenesis implies that women's biological make up is the cause/reason for inequality. This is counterintuitive to some feminist attempts which try to promote equality by not favouring one trait (the masculine) over another (the feminine). When the reproductive ability to carry a child is seen as the cause of women's marginalized position in society, this reinforces negative stereotypes that views feminine traits and qualities as inferior and masculine traits and qualities as superior. In this way,

Firestone's suggestion would do more to harm women than empower them by reinforcing and perpetuating stereotypes against women's bodies, traits or roles.

Women in Science and Medicine

E) Not only is Firestone's suggestion contrary to arguments in favour of gender equality, but it also relies on scientific and medical research that is heavily male dominated. The scientific community in general, and the medical field in particular, have historically excluded women and do not always have women's best interests in mind even when (as with reproductive technology) there is a direct impact on the lives of women.

Susan Sherwin has addressed the issue of women in the context of health care.⁷⁴

Sherwin argues that the medical profession, as a powerful institution, contributes to the dis-empowerment of women because it works within a masculine framework that has excluded women and does not question the impact of hierarchical structures within it. Sherwin argues further that it is important to recognize power relations between patients and professionals in the medical profession and to recognize the ways in which this adds to the oppression of women.⁷⁵ She states that "feminist criticisms range all over aspects of modern medical practice, from its institutional structures, to its insistence on authoritarian patterns of control, from its different treatment of male and female patients to its obsessive interest in women's reproductive functions, from its perpetuation of sex-role stereotype to its role in reinforcing women's subservience in family relationships."⁷⁶ She notes that feminists have been critical of medicine and traditional bioethics as it favours men and is male dominated. However, it is women who are usually responsible

⁷⁴ Susan Sherwin, *No Longer Patient*, (Philadelphia: Temple University Press, 1992, p.84).

⁷⁵ *Ibid.* p. 82.

⁷⁶ *Ibid.* pp. 84-85.

for the health care needs of their families.⁷⁷ Women's role within the family to attend to the health care needs of herself and her family within a male dominated profession that has excluded women from decision making powers mirrors, and furthers, the privileged structure of society at large.

Moreover, she states that "men maintain the positions of power and authority in medical institutions and women, for the most part, are relegated to the support staff or made invisible in their roles as caretakers of the ill at home."⁷⁸ Sherwin argues that it is important to recognize the political nature of bioethics and medicine in that they occur within a social setting.⁷⁹ So to fight against oppression politically, we need to understand how medicine is contributing to women's oppression.⁸⁰

In all fairness, it must be admitted that Firestone shares the concern of unequal power relations within the field of medicine, and she tempers her advocacy of ectogenesis by stating that ectogenesis should not be implemented unless women's interests are represented.⁸¹ Unless the social status and role of women was fundamentally altered to deal with these concerns, implementing ectogenesis would be worthless because it would only provide men with further control of women's bodies and reproduction.

2.2 Conclusion

To summarize, supporting ectogenesis on the grounds that it will lead to gender equality is premised on problematic grounds. To view the benefits of ectogenesis in this way underdetermines the role and impact of the overarching social structures that are in

⁷⁷ Ibid. p. 232.

⁷⁸ Ibid. p.85.

⁷⁹ Although the numbers of women in medical school may be increasing, the practice as it stands today, continues to be male dominated.

⁸⁰ Susan Sherwin, *No Longer Patient*, (Philadelphia: Temple University Press, 1992, p.89).

⁸¹ Shulamith Firestone, *The Dialectic of Sex*, (New York: William Morrow and Company Inc., 1970, pp. 232-235).

place and takes as its focus biological differences rather than addressing entrenched structural inequality. Further, it is important for women and women's interests to be meaningfully represented in science and medicine in order to address issues of gender inequality with respect to new reproductive technology.

Chapter 3: Abortion

3.1 Introduction

As we have seen previously in Chapter One, Singer and Wells argue that ectogenesis could provide the solution to the ongoing abortion debate. In this Chapter, I will outline the abortion debate and argue that a moderate position in this regard is the most convincing based on the biological development of the fetus. I will also point out inherent problems with arguments made for either extreme of the debate. Then, I will detail Singer and Wells' argument that ectogenesis could solve the disagreement between the groups. I will criticize their argument and I will show that it will not resolve one main area of contention which is central to the debate. For this reason, it is wrong to suggest that ectogenesis will resolve the abortion debate.

3.2 The Abortion Debate

According to Singer and Wells, one reason to support ectogenesis is that it provides a solution to the abortion debate between extreme pro-life and extreme pro-choice positions without either side having to compromise their beliefs.⁸² The abortion debate is complex, so my intent is to outline only its main lines in order to explain what ectogenesis can contribute to the discussion.⁸³ My ultimate rejection of Singer and Wells' argument will be based on a rejection of the so-called conception argument.

⁸² Peter Singer and Deane Wells, "Ectogenesis" in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, p.11).

⁸³ I will address the debate from a more Kantian rather than consequentialist perspective

One way of framing the issue of the moral status of abortion is to approach it from the concept of a right and of who can be thought to hold or use their rights.⁸⁴

A large part of bioethical debates surrounding abortion is concerned with determining the defining features of when the fetus is considered to have rights. On this rights based approach, David Boonin⁸⁵ argues that when people generally ask: ‘Is abortion moral,’ what they mean is: ‘Does abortion violate any rights?’⁸⁶ Boonin summarizes the morality of abortion in the following way: “To say that an action of mine is morally permissible is to say that no one has a valid claim against my doing it, that doing it violates nobody’s moral rights.”⁸⁷ Using this understanding of a morally permissible act, Boonin then argues in support of abortion by maintaining that abortion does not interfere with anybody’s rights.

The rights approach can also be wedded to another approach to the ethics of abortion, which centres in the status of the fetus, which is then brought into relation to the question of women’s rights. If the fetus is a person upon conception, then it has a right to life and abortion is morally impermissible. If the fetus is not a person until sometime after conception, then it is generally thought that abortion is morally permissible before the fetus gains personhood status.

However, regardless of the personhood debate, even if we suppose that the fetus is a person (with a right to life,) can its right to life demand whatever is necessary from the pregnant woman? Is the pregnant woman morally required to give the fetus her body

⁸⁴ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, p. 5).

⁸⁵ *Ibid.* pp. 1-18.

⁸⁶ *Loc. cit.*

⁸⁷ *Loc. cit.*

to use to continue growing? With these questions in mind, I will briefly outline three positions on two arguments.

In other words, on a rights based approach, the idea of ‘personhood’ inherently carries with it the idea of rights.⁸⁸ When something is considered a person, it can then be said to have rights which can be thought of as a justified claim that someone may wish to exercise.⁸⁹ In arguments on abortion, the disagreement between pro-choice and pro-life groups is in determining exactly what constitutes the moral standing or personhood of a fetus and, therefore, when can it be said that the fetus is considered to have rights.

In the literature, there are mainly three positions one can take A) the pro-life position, B) the moderate position and C) the pro-choice position.⁹⁰

The Pro-Life Argument

A) Boonin details several arguments under the general umbrella term of “the conception criterion”⁹¹ of abortion. In his review, he analyzes the following arguments: “the Parsimony Argument; the Species Essence Argument; the Kindred Spirit Argument; the Sanctity of Human Life Argument; the Slippery Slope Argument; the Potentiality Argument; the Essential Property Argument; the Future like Ours Argument; and the Probability Argument.”⁹² While these arguments are distinct, they are all pro-life and share the common idea that personhood begins upon the moment of conception. I am

⁸⁸ I understand that this rights based approach will not satisfy consequentialists, however, I will use this perspective in describing the abortion debate for the sake of brevity and because I do not think that a consequentialist perspective will necessarily change my final argument against ectogenesis as a solution to the abortion debate.

⁸⁹ In conversation with Dr. Eike-Henner Kluge, April, 2010.

⁹⁰ These terms are contentious and I use them because they are well known rather than to endorse views that pro-choice proponents are in any way anti-life and vice versa.

⁹¹ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, pp. 19 - 85).

⁹² Loc. cit.

going to summarize the conception criterion using a few of the arguments that I find the most powerful and I will call this the ‘pro-life position.

Taken at its most general level, the pro-life position argues that the salient feature that all people share (and which gives them a right to life) is shared with a fetus upon conception and hence it, too, has a right to life upon conception.⁹³ Using this understanding, pro-life debaters argue that rights can be applied across the board from very young infants, people in comas or elderly people because the criterion of personhood is not based on capabilities that humans have. The argument states that in the development of the fetus, no non-arbitrary decision can be made that distinguish the fetus from a new born baby.⁹⁴ It is a gradual process where changes slowly develop to produce a baby which can survive outside of the pregnant woman’s body. When each moment of the development of the fetus is compared to the one prior, there are very slight changes and it becomes difficult to discern exactly which changes are significant in determining personhood. Due to the gradual nature of development, Coleman argues that the pro-life position states: “any distinction that we attempt to make must be made on morally non-significant ground, and thus must be considered arbitrary, and morally suspect.”⁹⁵ In attempting to find a non-arbitrary point of moral significance with regards to the development of the fetus, Coleman reviews the argument that birth could be a significant point in the fetus’ life. However, he dismisses this as a significant point because it seems to only favour the location as being either inside a woman’s womb or outside.⁹⁶ He compares an unborn fetus at 38 weeks to a newborn baby at 28 weeks and argues that the

⁹³Ibid. p. 19.

⁹⁴ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 85).

⁹⁵ Ibid. p. 86.

⁹⁶ Loc. cit.

unborn fetus is more mentally developed, stronger and larger than the 28 week old baby. Using this example, he argues that birth cannot be the point of moral significance since the defining aspect only regards the location of the fetus.⁹⁷ Since birth cannot be the point of moral significance, Coleman considers the suggestion that it could be the point of viability that is of importance.⁹⁸ It can be argued that the moment the fetus can survive outside of the pregnant woman's body is a morally significant moment since the body of the pregnant woman is no longer required to provide for the growing fetus. Given the right neonatal technology, the fetus may be able to survive outside of the pregnant woman's body at an earlier stage than the typical nine months required, provided there is access to medical technology and assistance to keep it alive. For this reason, Coleman argues that the point of viability cannot be of moral significance either since neonatal care could provide for some children but not others (depending on the advancement of the technology); therefore, some children would be considered viable and others would not due to the lack of neonatal care.⁹⁹ The viability of the fetus varies depending on access to good neonatal care to areas with a lack of neonatal care. Since the geographical and social location of the pregnant woman changes the availability of appropriate technology for the fetus, the point of viability cannot be a good indicator of moral significance. Given the difficulty in trying to find a point of moral significance, the pro-life position on abortion concludes that the fetus, at day one, must have the same moral worth (i.e., personhood) as a fetus at nine months. Therefore, it is argued that abortion is always wrong because at the moment of conception, the fertilized egg is considered a

⁹⁷ Loc. cit.

⁹⁸ Ibid. p. 87.

⁹⁹ Loc. cit.

person (by virtue of their genetic code or a future like ours, etc.) and therefore, to interfere with the development of the fetus and essentially kill an innocent person would be wrong. On this view, a fertilized egg at day one has the same moral standing as a new born baby.¹⁰⁰

Criticisms of the Pro-Life Argument

There are many ways the pro-life argument can be criticized. Firstly, the logic of the argument is problematic.¹⁰¹ The pro-life position argues that a new born child certainly has full moral status and that a developing zygote will eventually become a child, and since no clear point of demarcation can be found to distinguish the child and the zygote, then the zygote must also have full moral status.¹⁰²

However, Rosalind Hursthouse explains that the above is not a compelling reason to support the thesis that a zygote has the same moral standing as a newborn baby. She illustrates this by using an example where a patch of green fades to blue. There is no particular point that is the obvious turning point, but it would be wrong to say that the patch was blue all along.¹⁰³ Similarly, simply because it is difficult to find an exact point which designates the change of status to a being with full moral standing, this is no reason to suppose the zygote had full moral standing all along.

Another objection to the pro-life argument that Coleman considers is the difficulty it has in distinguishing abortion from certain contraceptives.¹⁰⁴ Certain contraceptives, such as the morning after pill or intra-uterine devices, act to prevent

¹⁰⁰ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, pp. 19-23).

¹⁰¹ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 88).

¹⁰² Loc. cit.

¹⁰³ Rosalind Hursthouse, *Beginning Lives*, (Oxford: Wiley-Blackwell, 1991, pp. 36-38).

¹⁰⁴ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 91).

implantation and thereby ‘abort’ a fertilized egg. At the extreme pro-life end, these contraceptives ought to be considered a kind of abortion since they interfere with the development of the fertilized egg in a similar way that abortion removes the fetus from the uterus.

However, Coleman argues that this view of contraceptives ignores the developmental process of zygote formation. Coleman states that the pro-life argument that rights ought to be conferred at the moment of conception ignores the fact that fertilization is itself a process and not an event that occurs at a particular moment.¹⁰⁵

Further, the possibility of mono-zygote twinning appears to occur four weeks after conception, so there is a possibility that one zygote can produce two distinct individuals.¹⁰⁶ This is a problem for the pro-life proponents since the development of two individuals can occur from one zygote and hence, the moment of conception is not the morally determining factor for at least one of the two individuals. This is problematic for pro-life position because it will be difficult to argue when the second zygote becomes a person. The conception criterion requires the argument that a fetus is a person upon conception but the second zygote does not develop until around four weeks. Consequently, it seems that the proponents of the conception argument would have to accept that, at least for the second zygote, conception is not the morally relevant condition. However, if this is conceded, then the pro-life position is on shaky grounds.

A final criticism against the pro-life argument is one aimed at the position advanced by Don Marquis, who argues that abortion is immoral because it deprives the

¹⁰⁵ Ibid. p. 93.

¹⁰⁶ Ibid. p. 94.

fetus from a future like ours.¹⁰⁷ Marquis argues, “the future of a standard fetus includes a set of experiences, projects, activities, and such which are identical with the futures of adult human beings and identical with the futures of young children. Since the reason that is sufficient to explain why it is wrong to kill human beings after the time of birth is a reason that also applies to fetuses, it follows that abortion is *prima facie* seriously morally wrong.”¹⁰⁸ What Marquis’ argument hinges on is not that fetuses are persons and that it is wrong to kill persons, but that it is wrong to deprive someone of a valuable future like ours.¹⁰⁹

However, a ‘future like ours’ is a somewhat ambiguous term. Marquis is initially committed to arguing for a valuable future in an objective sense where it need not be valued by the actual subject whose future it is. Marquis does not provide further explanation of what experiences, projects and activities he means, and he argues there may be an objective ‘valuable future’ without specifying the subject. In other words, Marquis’ argument presupposes the subject who already has experiences, projects and activities and he argues that to deprive the person of that would be wrong. However, that requires specifying the subject of such a future. Without that, arguing for a “valuable future” will make no sense.

Marquis does consider the objection that “value implies a valuer”¹¹⁰ and that therefore, a future is only valuable if the subject values it. Thus, Marquis argues that “let us assume that something cannot be of value unless it is valued by someone. This does

¹⁰⁷ Don Marquis, “Why Abortion is Immoral,” in *Ethical Issues in Modern Medicine*, Bonnie Steinbock, John D. Arras, Alex John London ed., (New York: McGraw-Hill, 2003 pp. 463 – 470).

¹⁰⁸ Don Marquis, “Why Abortion is Immoral,” in *The Problem of Abortion*, 3rd Edition, Susan Dwyer and Joel Feinberg ed., (Belmont: Wadsworth Publishing Company, 1997, p. 31).

¹⁰⁹ Loc. cit.

¹¹⁰ Ibid. p. 35.

not entail that my life is of no value unless it is valued by me. I may think, in a period of despair, that my future is of no worth whatsoever, but I may be wrong because others rightly see value – even great value – in it.”¹¹¹ However, although Marquis is granting his opponent the argument that a future is valued because it is valued by someone and this someone does not have to be the subject, his argument is still not persuasive. It is not persuasive because this would make autonomy irrelevant and might lead to cases where someone is kept alive because others see a valuable future, regardless of the wishes of the subject themselves.

While it is true that the fetus will develop and (in most ordinary cases) have a future, this alone does not provide a good reason to oppose abortion. The onus is on pro-life supporters to argue why it is immoral to interfere and stop the fetus from developing through abortion before it has the determining features (which will be discussed in further detail in the next argument) that confer on it full personhood status. There needs to be a further argument that shows why it would be immoral to stop the further development of the fetus. The supporter of the pro-life argument can respond by saying that it is immoral to interfere in a natural process such as the development of the fetus and this is why abortion is immoral. However, this is not a strong response to the criticism since many medical interventions are themselves interruptions of natural processes – such as the removal of a tumour, by-pass surgery or wisdom teeth removal. Simply being a natural process does not mean that it is good or that we ought not to interfere. It can be argued that abortion (thus understood) cannot be objected to since the onus is on the pro-life

¹¹¹ Loc. cit.

supporters to show that it is indeed immoral to interrupt the development process of the fetus.

The Moderate Argument

B) Boonin also outlines several arguments under the umbrella term of what he calls “The Postconception Criteria”¹¹² which I will refer to as the moderate position. His analysis includes the following arguments: “Implantation; External Human Form; Actual Fetal Movement; Perceived Fetal Movement (Quickening); Initial Brain Activity; Organized Cortical Brain Activity and Viability.”¹¹³ I will focus mainly on the arguments relating to cognitive ability since I believe these to be the strongest of the moderate position.

The moderate position argues that the criterion of personhood involves a level of fetal brain development that results in a cognitive capacity involving sentience. The moderate view is appealing because it uses the obvious fact that the fetus’ development at day one is different from its development at 3 months and it is different yet from its development at 9 months. Obviously, the continuous change in the complexity and development of the fetus cannot be denied. However, the question remains: is there is a precise point where the fetus “achieves some moral milestone during pregnancy?”¹¹⁴

Colman defines this milestone as conscious awareness and argues that “without conscious awareness, beings cannot care about anything. Conscious awareness is a prerequisite to desires, preferences, hopes aims and goals. Nothing matters to non-sentient, non-conscious beings.”¹¹⁵ Fetuses are non-sentient until about 20 – 24 weeks

¹¹² David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, p. 91).

¹¹³ Ibid. pp. 91 – 129.

¹¹⁴ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 104).

¹¹⁵ Ibid. p. 105.

and therefore abortion is permissible up until the end of the first trimester.¹¹⁶ Until the fetus reaches this level of development, it is not considered a person and does not have rights and therefore abortion is not morally wrong.¹¹⁷ This means that the development of the fetus is an integral part of determining its moral status since, on this approach, the early fetus is not considered a being with moral standing until it has a certain level of cognitive ability. This view is compatible with scientific claims of fetal development and neurological development of cognitive capacities.

To refine the above argument, research done by Harold Morowitz and James Trefil suggests that the development of synapses in the brain is what is most important when looking at brain activity, rather than simply consciousness. On Morowitz' and Trefil's view, brain activity involves more neurological complexity than the fetus would have at 20 – 24 weeks. They argue, "Before synapses are formed, the fetal brain is just a collection of nerve cells. The fetus is incapable of awareness or volition. After the synapses have formed, the brain is functional."¹¹⁸ According to Morowitz' and Trefil's studies, large numbers of synapses begin forming at around 7 months.¹¹⁹ Their argument is that not only is it important for the fetus to have a brain, but it must have a functioning brain (which can be said to have organized cortical brain activity) and that this does not occur until late in pregnancy with the development of synapses. This view depends on a distinction between simple (which could be detected at 6 weeks) vs. complex brain activity (which begins at around 7 months).¹²⁰

¹¹⁶ Loc. cit.

¹¹⁷ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, pp. 98-102).

¹¹⁸ Harold J. Morowitz and James S. Trefil, *The Facts of Life: Science and the Abortion Controversy*, (Oxford: Oxford University Press, 1992, p. 116).

¹¹⁹ Ibid. pp. 118-119.

¹²⁰ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, pp. 109 – 112).

Criticisms of the Moderate View

One criticism of the consciousness view is that it would allow one to say that anything that is not conscious (such as a person under aesthetic,) is not considered a person. This would create a number of problems. For instance, it would entail that people could gain and lose their status as persons. This suggests that the defining characteristic cannot simply be consciousness.

Further, an argument for the early stage personhood criterion described in terms of *initial* brain activity challenges the late stage personhood criterion described above in terms of synapse formation. In support of the initial brain activity criterion, it can be argued that the requirement that marks the end of life should match the requirement that marks the beginning of life. A person is considered dead with no right to life when all brain activity ceases (even though they may still be biologically alive.) At the opposite end, a person can be said to be alive with a right to life once initial brain activity is detected.¹²¹

While this argument for the beginning of life seems appealing, Boonin argues that it rests on an assumption that birth and death are symmetric, which he argues, they are not.¹²² They are not similar in the respect that death deprives you of any continued future, but before the beginning of life, it simply has not started yet. To help clarify Boonin argues, “Time, that is, runs in one direction, and birth and death are not symmetric to each other with respect to it. This asymmetry in turn undermines the symmetry assumption embodied in P1 – the property whose permanent loss makes one lose a right to life is the same as the property whose initial acquisition makes one gain a right to life –

¹²¹ Ibid. p 112.

¹²² Ibid. p. 113.

for the following reason: When a person lacks a certain quality because he has lost it to death, then he lacks not just the quality itself, but also the prospects of having that quality in the future. But when a person lacks a certain quality because he has not yet acquired it, then he does not lack the prospect of having the quality in the future.”¹²³

Similarly, Gareth Jones argues that there is a striking difference between defining initial brain activity (brain birth) vs. brain death.¹²⁴ Jones explains brain death in this way: “Brain stem death is seen as synonymous with death of the individual, since loss of functions associated with the brain stem results in the individual ceasing to function as an independent biological unit.”¹²⁵ Jones argues that a pre-conscious nervous system (such as the one in the developing fetus) is fundamentally different from a post-conscious nervous system (such as the one in a person who is brain dead.)¹²⁶ These two definitions are not symmetrical and on this view, it would be a mistake to use the same criterion for brain death (a cessation of brain activity) to define brain birth (an initiation of brain activity.) Jones argues that meaningful brain activity lies somewhere in the vicinity of 24-36 weeks.¹²⁷ In other words, “definitions of death apply specifically to those who are dying, not to those who are developing. Development and degeneration are not interchangeable.”¹²⁸

So, Boonin and Jones dismiss the argument that a right to life ought to be granted with signs of initial brain activity. Instead they propose that it should start with

¹²³ Ibid. pp. 113 – 114.

¹²⁴ Gareth Jones, “The Problematic Symmetry Between Brain Birth and Brain Death,” in *Readings in Biomedical Ethics: a Canadian Perspective*, 3rd Edition, Eike-Henner Kluge ed., (Toronto: Prentice Hall, 2005, pp. 305-309).

¹²⁵ Ibid. p. 302.

¹²⁶ Ibid. p. 306.

¹²⁷ Loc. cit.

¹²⁸ Loc. cit.

“organized cortical brain activity [which] refers to electrical activity in the cerebral cortex of the sort that produces recognizable EEG readings.”¹²⁹ If we accept the moderate view based on Boonin’s and Jones’ argument for organized cortical brain activity, abortion would not be immoral until the time the fetus develops this mental capacity since it would not be considered a person.¹³⁰

The moderate view is also supported by L.W. Sumner who takes the developmental process of fetal growth into account and argues that there is nothing immoral about abortions in the early part of pregnancy.¹³¹ Sumner’s position was used in the Supreme Court case *R. V. Morgentaler*.¹³² Specifically, on page 183, Sumner was quoted as stating that “in the early stages the woman’s autonomy would be absolute; her decision, reached in consultation with her physician, not to carry the foetus to term would be conclusive. The state would have no business inquiring into her reasons. Her reasons for having an abortion would, however, be the proper subject of inquiry at the later stages of her pregnancy when the states compelling interest in the protection of the foetus would justify in prescribing conditions.”¹³³ From this we can see that the moderate position is reasonably based on the biological development of the fetus and has been used in related court cases in Canada.

¹²⁹ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, p. 115). As previously mentioned, this occurs at approximately 25 weeks

¹³⁰ This is not to say that early signs of brain activity or sentience cannot confer on a being *some* moral standing (since animals fall in this category). However, it appears that Boonin argues that full personhood rights require organized brain activity.

¹³¹ L.W. Sumner, “Toward a Credible View of Abortion,” in *Readings in Biomedical Ethics: a Canadian Perspective*, 3rd Edition, Eike-Henner Kluge ed., (Toronto: Prentice Hall, 2005, pp. 324-339).

¹³² *R. V. Morgentaler*, S.C.R 30 1988,

<http://www.canlii.org/en/ca/scc/doc/1988/1988canlii90/1988canlii90.html>

¹³³ Loc. cit.

At the same time, one can make an argument against the moderate view that the time frame where abortion would be morally permissible (until 20 – 24 weeks for Coleman and 25 – 30 weeks for Boonin) does not provide a precise enough point that determines the moral status of the fetus. Since development varies and the level of development would not be known until the abortion was performed, this could mean that an abortion was performed on a fetus that had reached the developmental complexity at 21 weeks. Consequently it would be possible that a fetus with a right to life was in fact killed.

This criticism of the moderate view provides a good argument to continue to improve research into fetal development in order to find a more precise point rather than as an argument to prohibit abortion. Also, the majority of abortions are performed prior to the most conservative estimation (at 20 weeks) of the development of organized brain activity.¹³⁴

All that being said, the moderate view as defended by the various authors is the most appealing since it takes into account the empirical evidence of the development of the fetus. By contrast, the pro-choice argument sketched below argues for a stricter requirement for the right to life, and can, in extreme cases, be said to support infanticide.

The Pro-Choice Argument

C) The pro-choice position holds that self-consciousness is integral to personhood. Since self-consciousness does not develop until sometime after birth, this means that abortion at any time during gestation – and indeed killing after birth until the stage of self-consciousness has been reached – is perfectly permissible. Coleman describes this stance

¹³⁴David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, p. 128).

(what I have been calling the ‘pro-choice’ position) in the following way: “Some liberals extend the lack of rights beyond birth, concluding that infanticide may be permissible.”¹³⁵ For instance, Michael Tooley argues that “an organism possesses a serious right to life only if it possesses the concept of a self as a continuing subject of experiences and other mental states, and believes that it is itself a continuing entity.”¹³⁶ Tooley argues that it is important for a being to have these properties in order to be considered a person. Since fetuses and young children do not possess these features, they are not considered persons, and hence abortion and infanticide are morally permissible.

Others find some moral significance in birth, suggesting that the change in relationship (rather than location) that takes place and the event of birth bring about a change in the moral status of the developing human. Thus, Mary Anne Warren argues that “a fetus cannot be considered a member of the moral community, the set of beings with full and equal moral rights, for the simple reason that it is not a person, and that it is personhood and not genetic humanity which is the basis for membership in this community.”¹³⁷ For Warren, the characteristics that are most pertinent are consciousness, reasoning, self motivated activity, the capacity to communicate, the presence of self concepts and self awareness.¹³⁸ She concludes that “a woman’s right to protect her health, happiness, freedom and even her life by terminating an unwanted pregnancy, will always

¹³⁵ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 99).

¹³⁶ Michael Tooley, “Abortion and Infanticide,” in *The Problem of Abortion*, 3rd Edition, Susan Dwyer and Joel Feinberg ed., (Belmont: Wadsworth Publishing Company, 1997, p. 45).

¹³⁷ Mary Anne Warren, “On the Moral and Legal Status of Abortion,” in *The Problem of Abortion*, 3rd Edition, Susan Dwyer and Joel Feinberg ed., (Belmont: Wadsworth Publishing Company, 1997, p. 62).

¹³⁸ *Ibid.* p. 67.

override whatever right to life it may be appropriate to ascribe to a fetus, even a fully developed one.”¹³⁹

For Warren, balancing rights between the pregnant woman and the fetus will always favour the pregnant woman. On this position, therefore, the attainment of moral standing occurs much later than birth and therefore abortion is always permissible.¹⁴⁰ Her view turns on the argument that an actual person’s rights (the pregnant woman) always outweigh a potential person’s rights (the developing fetus), even if the fetus has some moral standing.¹⁴¹ She argues that “even if a potential person does have some prima facie right to life, such a right could not possibly outweigh the right of a woman to obtain an abortion, since the rights of any actual person invariably outweigh those of any potential person, wherever the two conflict.”¹⁴²

Criticisms of the Pro-Choice Argument

Given the pro-choice argument above, one of the biggest criticisms against this position is that, at the extreme – for instance, as argued by Tooley and Warren – it can be said to support infanticide. The reason is that the criterion of personhood that depends on self consciousness effectively excludes very young children and therefore, according to this view, there would be nothing morally reprehensible in committing infanticide.

One way to respond to this criticism is to retain the view that infanticide would be wrong while still using the pro-choice criterion of personhood. Usually, those who try to defend the pro-choice position in this way argue that allowing infanticide would lead to

¹³⁹ Ibid. p. 71.

¹⁴⁰ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, pp. 135-139).

¹⁴¹ Mary Anne Warren, “On the Moral and Legal Status of Abortion,” in *The Problem of Abortion*, 3rd Edition, Susan Dwyer and Joel Feinberg ed., (Belmont: Wadsworth Publishing Company, 1997, p. 70).

¹⁴² Loc. cit.

bad consequences either for the individual who undergoes abortion or society at large.¹⁴³

It could lead to bad consequences because there could be a situation where there are a large number of cases where parents commit infanticide which could lead to population issues or others may have become attached to the infant.

However, to this in turn one can respond by arguing that our moral intuition that rejects infanticide is misguided and that, at least in some cases, infanticide is permissible.¹⁴⁴ Authors such as Singer and Coleman have argued that the moral apprehension people feel towards infanticide depends on the situation, since those who oppose infanticide do not oppose letting a severely disabled newborn die.¹⁴⁵ This seems to suggest that what most people find morally reprehensible about infanticide is a general commitment against killing rather than letting die – at least with regards to severely disabled newborns. This is not simply a concern with alleviating suffering of the disabled newborns since palliative care is available, but considerations of the type of bleak future that is likely for disabled newborns. When all is said and done, however, it will be clear that the extreme pro-choice position may well be ethically problematic because it can lead to questionable consequences when applied across the board.

3.3 Pregnant Woman's Rights

Another strand in the abortion debate is concerned with the pregnant woman's rights.¹⁴⁶ Thus, Jarvis Thomson argues that even if the fetus is considered a person, its right to life cannot include the right to be given all the resources required to survive, (and

¹⁴³ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion* (Burlington: Ashgate Publishing Company, 2004, p. 100).

¹⁴⁴ Loc. cit.

¹⁴⁵ Ibid. pp. 102 – 104.

¹⁴⁶ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003 pp. 85 – 117).

in particular, not the right to use the pregnant woman's body).¹⁴⁷ Her argument is not that there are competing rights between the fetus (and its right to life) vs. the pregnant woman's right to her own body. Rather, she is arguing that a right to life does not include or entail the right to ensure everything possible is granted to one's continued life.

She describes a case in terms of a thought experiment, where you wake up one day and find yourself attached to a famous violinist who requires the use of your body for his survival for nine months.¹⁴⁸ Her argument is that there is nothing that morally requires the continual use of your body for the survival of the violinist.

As Boonin clarifies, "the lesson of the story, [Thomson's thought experiment] therefore, is not that it is sometimes permissible for you to violate the violinist's right to life, but rather that the violinist's right to life does not include or entail the right to be provided with the use or the continued use of whatever is needed in order for him to go on living."¹⁴⁹

Using Thomson's argument, it will not suffice for the pro-life supporter to show that the fetus has a right to life; because even if it does have a right to life, this does not show that it has the right to whatever it needs to continue its survival. The pregnant woman has no obligation to ensure the survival of the fetus because doing so would require her to let the fetus use her body for its survival which cannot be reasonably expected of her.

¹⁴⁷ Judith Jarvis Thomson, "A Defense of Abortion," in *Ethical Issues in Modern Medicine*, 6th Edition, Bonnie Steinbock, John D. Arras and Alex John London ed., (New York: McGraw Hill, 2003, pp. 483-492).

¹⁴⁸ Ibid. pp. 484 – 485.

¹⁴⁹ David Boonin, *A Defense of Abortion*, (New York: Cambridge University Press, 2003, p. 137).

Criticisms of Thomson's Argument

Boonin details several objections to Thomson's argument including, "the Weirdness Objection; the Tacit Consent Objection; the Responsibility Objection; the Killing versus Letting Die Objection; the Intending versus Foreseeing Objection; the Stranger versus Offspring Objection; the Adult versus Infant Objection; the Different Burdens Objection; the Organ Ownership Objection; the Child Support Objection; the Extraction versus Abortion Objection; the Third Party Objection; the Feminist Objection; the Duty to Save the Violinist Objection; the Compensation Objection and the Inconsistency Objection."¹⁵⁰ I will discuss a few of these objections in my analysis below.

One objection that I would like to address is what Boonin describes as "The Tacit Consent Objection."¹⁵¹ He argues that an objection to Thomson's argument could be that the pregnant woman has given the fetus implicit consent to use her body by voluntarily consenting to sex (with the exception, of course, of cases where the woman is raped) knowing that this can lead to pregnancy.¹⁵² A counter argument to Boonin's objection would be the case where birth control methods were used and despite efforts to try and prevent pregnancy, the woman became pregnant regardless. This would show that precautions were taken - which in turn implies that the woman was not consenting to becoming pregnant. However, in the latter case it could still be argued that the woman gave tacit consent by knowingly using contraceptives that are not 100% effective.

¹⁵⁰ Ibid. pp. 133 – 276.

¹⁵¹ Ibid. p. 148.

¹⁵² Ibid. pp. 148 – 150.

Boonin distinguishes two different claims that are being made by the tacit consent objection. One is the idea that it is reasonable to suppose that the woman gives the fetus consent by voluntarily engaging in sex.¹⁵³ Under this rubric, he further distinguishes three necessary conditions that must be met for tacit consent: voluntariness, (the woman chose to have sex voluntarily) causality (intercourse was the cause of the pregnancy) and foreseeability (she understands that sexual intercourse without, and sometimes with, contraceptives can lead to pregnancy and this was foreseeable to her.)¹⁵⁴ He describes a situation with two people where all three necessary conditions were met, yet where one can agree that one person should not be held fully accountable to the same degree as the other.¹⁵⁵ In doing so, he rejects the claim that because the woman acted voluntarily, was the cause of the resulting pregnancy, and knew pregnancy was a risk, it follows that she ought to be held accountable. “Even if voluntarily bringing about a certain state of affairs constitutes consent to bear the burdens it imposes on you....it does not follow that voluntarily doing an action foreseeing that this may lead to a certain state of affairs constitutes such consent.”¹⁵⁶ He insists that a woman who voluntarily engages in sex does not give implicit consent to the fetus to the continued use of her body or that she has waived her right to her own body.

He also argues that although becoming pregnant is obviously caused by sex, consenting to sex is not the same as consenting to carrying a fetus to term. He argues that this distinction is important to bear in mind.

¹⁵³ Ibid. p. 154.

¹⁵⁴ Ibid. pp. 154-155.

¹⁵⁵ Ibid. refer to pp. 154 – 156 for details of his example.

¹⁵⁶ Ibid. p. 157.

Boonin's second distinction about what is meant by tacit consent has to do with a case where a woman initially allows the fetus to use her body for its continued survival, and then changes her mind.¹⁵⁷ He argues that even if there was an initial consent of sorts, there is no requirement for her to continue to let the fetus use her body for as long as necessary.¹⁵⁸ If the woman changes her mind, she is not required to allow to the fetus to continue using her body to grow.

According to Boonin, the responsibility objection argues that even though the woman may not have intended to become pregnant, she nonetheless ought to take responsibility for her voluntary actions in the same way that someone ought to take responsibility for harming an innocent bystander with their involuntary actions.¹⁵⁹ In both cases, the result may have been unintended; however the person involved ought to be held accountable to for being involved in the situation in the first place. So, the woman owes the use of her body to the fetus even though she did not intend to get pregnant and did not give tacit consent.¹⁶⁰ To strengthen this argument, one could add that it is precisely because of a woman's actions that the fetus needs the use of her body; it would not even exist (let alone require her body) if it were not for her actions. Therefore, she owes the use of her body due to her involvement which resulted in the creation of the fetus.

However, Boonin rejects the claim that "if you are responsible for the fact that the person now stands in need of your assistance, then you have acquired an obligation to

¹⁵⁷ Ibid. p. 165.

¹⁵⁸ Ibid. p. 166 .

¹⁵⁹ Ibid. p. 167.

¹⁶⁰ Loc. cit.

provide the person with such assistance.”¹⁶¹ He rejects this claim because even if it were true that the fetus now exists as a result of a woman’s actions (and therefore requires her assistance,) this responsibility does not provide an obligation to provide assistance.¹⁶² Therefore Boonin rejects the tacit consent objection and the responsibility objection because they are unable to adequately argue that engaging in voluntary sex implies consent and that the fetus has the right to the continued use of a woman’s body.

3.4 What Can Ectogenesis Bring to the Discussion?

The preceding discussion merely scratches the surface of the abortion debate – which is still ongoing. It is in this context that Singer’s and Well’s position becomes of interest. Singer and Wells argue that ectogenesis can provide a solution to the abortion debate without any of the various groups compromising their beliefs. They maintain that ectogenesis neatly sidesteps various issues in the debate because, since it does not involve the use of women’s bodies and does not involve any killing, the whole issue of abortion becomes moot.

Support for Ectogenesis from Both Ends of the Abortion Debate

More specifically, Singer and Wells argue that pro-life groups ought to support ectogenesis because it can provide a way for the fetus to survive outside of a woman’s body. Without ectogenesis, a fetus is unable to survive outside of the pregnant woman’s womb. That, after all, is why pro-life groups oppose abortion because to take the fetus out of the pregnant woman’s womb would essentially end its life (and the fetus has a right to life.) With the development of ectogenesis, fetal viability outside the pregnant woman’s

¹⁶¹ Ibid. p. 169.

¹⁶² Loc. cit.

womb is no longer an issue. The fetus can be removed and brought to term in an artificial womb, rather than being destroyed or brought to term in a particular woman's womb.¹⁶³

Further, Thomson's conclusion would become 'the removal of a fetus is permissible' rather than 'abortion/death of the fetus is permissible.' Her argument, after all, is not that the pregnant woman's right to an abortion is the same as the right to kill the fetus. It is merely that the fetus dies as a by-product of its removal from her uterus. To put it in Thomson's own terms, "I have argued that you are not morally required to spend nine months in bed, sustaining the life of that violinist; but to say this is by no means to say that if, when you unplug yourself, there is a miracle and he survives, you then have a right to turn around and slit his throat."¹⁶⁴ With ectogenesis, there would be a way to remove the fetus and ensure its survival thereby respecting, at one and the same time, the pregnant woman's right to her own body and the fetus' right to life.

Similarly, according to Singer and Wells, pro-choice camps ought to support ectogenesis given their argument the pregnant woman does not have to provide the fetus the use of her body. For these reasons, then, Singer and Wells claim that ectogenesis can avoid the traditional debates surrounding abortion.

3.5 Why Ectogenesis Will Not Resolve the Issue

Singer's and Well's argument notwithstanding, it is not clear that ectogenesis can resolve the personhood argument as I have outlined it above. As I have argued, the pro-life position does not have a solid case in arguing for the fetus as person upon conception. Consequently, if the fetus is not a person upon conception, there is no reason to support

¹⁶³Peter Singer and Deane Wells, "Ectogenesis" in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, p.12).

¹⁶⁴Judith Jarvis Thomson, "A Defense of Abortion," in *Ethical Issues in Modern Medicine*, 6th Edition, Bonnie Steinbock, John D. Arras and Alex John London ed., (New York: McGraw Hill, 2003, p. 491).

the moral necessity of preferring ectogenesis to termination since the fetus would not have a right to life.

With regard to the ‘pregnant woman’s rights’ argument, ectogenesis may provide an option because the pregnant woman has the right to refuse the fetus the use of her body but does not have the right to demand the death of the fetus.¹⁶⁵ So, ectogenesis might be used to resolve one problem in abortion. However, this does affect the personhood argument. If the fetus is not considered a person until some point in development, then anyone who, like Singer and Wells, argues that ectogenesis provides an answer to the abortion conundrum, has to provide a further argument that shows what reason there could be to put non-persons in an ectogenic chamber if it is not the choice of the genetic parents.

Despite Singer and Wells’ optimism, therefore, it is not clear that ectogenesis can resolve the abortion debate as traditionally formulated since it will not satisfy the critics at both ends of the personhood debate. At most, support for ectogenesis with regards to abortion can maintain that it can provide another option to abortion if women choose to use the technology. However, ectogenesis cannot be supported to preclude the moral permissibility of abortion.

3.6 Other Considerations

It is sometimes argued that a philosophical debate on abortion does not provide the pertinent facts and considerations that women have in mind when they decide to, or not to, have an abortion. Thus, Leslie Cannold argues that women who would consider

¹⁶⁵ I will omit arguments regarding abortion and the right to kill the fetus and I will, instead, focus on the original formulation of Thomson’s argument where she argues that a right to abortion does not grant someone the right to kill a fetus that could survive outside a body.

having an abortion are primarily concerned with the fact that they would not be able to provide for a child (financially, emotionally, physically or otherwise.)¹⁶⁶ Cannold uses empirical data gathered through experiments, which show that the women in her study were not concerned with the typical debates surrounding abortion regarding the ‘personhood’ of the fetus or the right to their own body. When women in the study were told of ectogenesis as an option, this promoted a negative reaction.¹⁶⁷ The women in this study did not feel properly equipped to provide for a child, and the option of giving the child away for adoption made them feel like they would be shrugging off their responsibilities to the child. They felt that they were better off having an abortion than to bring the child into the world where they could not provide sufficient care, rather than give it up for adoption or to use the ectogenic solution. The women in this study were more concerned with not being equipped to be a good parent and with the responsibilities they felt towards a genetically related child. Similar to their sentiments to adoption, ectogenesis would make them feel like unfit mothers that have passed their responsibility to care for their child onto someone else. So, from the perspective of Cannold, ectogenesis does not easily by-pass other issues in abortion as Singer and Wells suggest at first glance.

However, although the empirical evidence found in Cannold’s studies points to a disparity between the reasons traditionally debated in abortion and the reasons women actually take into consideration, it does not show that the traditional debates ought to be ignored.

¹⁶⁶ Leslie Cannold, “Women, Ectogenesis and Ethical Theory,” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, p. 47).

¹⁶⁷ Loc. cit.

Moreover, it should be pointed out that although it is important to bear in mind every aspect of a pregnant woman's reasons to have an abortion, the reasons cited by Cannold do not provide a solid reason (on their own) to argue for the moral permissibility of abortion. The argument that abortion ought to be morally permissible on the grounds that the pregnant woman does not feel she can adequately raise the resulting child can be used to support infanticide. This argument, therefore, when taken to the extreme, can support the thesis that at any point that the mother feels she is unable to provide adequately for her child, it ought to be morally permissible to kill the child. On the face of it, this seems like a ridiculous thesis to support.

As well, while the empirical evidence cited by Cannold is interesting in the sense that it describes some of the reasons women support abortion and why women might not choose ectogenesis, it does not show that these are the moral reasons that ought to be considered when deciding on the moral status of abortion. That is not to say that these considerations should not be taken into account, but rather that they cannot be all that the status of abortion is based on.

Nevertheless, – and importantly for this thesis – Cannold's analysis does show that Singer's and Well's argument in favour of ectogenesis is somewhat simplistic since it does not come to grips with some of the major reasons that motivate women towards having abortions in the first place. So, even if ectogenesis is available as an alternative to abortion, Cannold's studies show that there is no clear indication that women would choose this option.

3.7 Conclusion

As I have argued, the most powerful position in the abortion debate is the moderate view which takes into account the gradual processes that underlie the acquisition of personhood during fetal development. However, this position (as well as most other discussions of abortion) proceeds in complete isolation from the real reasons that motivate women to have abortions. Consequently it is somewhat premature – and wildly optimistic - to support ectogenesis on the grounds that it will solve the abortion debate. At best, ectogenesis be an alternative to abortion methods already offered; at worst, it fails to address the core issue – which is the fact that, for whatever reason, some women who have taken due care in intercourse but have nevertheless become pregnant simply do not want to have biological offspring of their own.

Chapter 4: Legal Aspects

4.1 Introduction

Throughout this discussion, I have criticised some of the supposed benefits of ectogenesis. In this Chapter, I shall consider whether ectogenesis is legally possible in Canada. In my review, I will analyze the current laws that are in place and the potential impact ectogenesis could have on future laws regarding the relationship between children and parents. Also, I will look at one practical problem that could result if direct human ectogenesis were to be developed.

4.2 Current Laws in Canada and Internationally

As detailed in Chapter One, in Canada, the *Assisted Human Reproduction Act* unequivocally prohibits direct/complete ectogenesis where an egg is fertilized by IVF and brought to term through ectogenesis. More specifically, although the *Act* does not specifically refer to ectogenesis, it does prohibit keeping a fertilized egg outside of a woman's body for more than 14 days.¹⁶⁸

However, although complete ectogenesis is prohibited, research aimed at increasing survival rates for premature babies is still a viable option because, unlike IVF, the ovum is fertilized inside the mother and, for whatever reason, the resultant zygote, embryo or fetus is delivered prematurely and then placed into an artificial uterus. This means that rather than keeping a fertilized ovum outside of a body for more than 14 days, a fetus (or zygote or embryo)¹⁶⁹ is provided with life saving technology. In other words,

¹⁶⁸ *Assisted Human Reproduction Act*, S.C 2004, c. 2. <http://www.canlii.org/ca/sta/a-13.4/>

¹⁶⁹ Although the three terms are not synonymous, for current purposes the difference in their meaning is largely irrelevant. The terms will therefore be used interchangeably.

ectogenesis could increase fetal viability for extremely premature babies, and in that sense partial ectogenesis research would not be prohibited.

Although current Canadian law effectively prohibits complete ectogenesis, Coleman states that “there are no international laws, agreements or guidelines that cover research into ectogenesis.”¹⁷⁰ This, he notes, is because there is a lack of global agreement over the ethics into fetal tissue research. Moreover, as Zbigniew Bankowski points out, given the speed with which the technology and ethical perspectives on using fetal tissue is changing, the international community feels that it would be “premature to try to cover them [issues regarding foetal tissue] in the present guidelines.”¹⁷¹ This reluctance is evident from guidelines of the Council for International Organization of Medical Sciences (CIOMS) and World Health Organization (WHO) which do not really address the issue in specific terms. So, given the lack of international sanctions on the use of fetal tissue, complete ectogenesis may be a possibility in countries which, unlike Canada, do not have similar prohibitions against it. Further, if there is opposition, it seems likely that the area of concern in the international community would be with research into complete ectogenic and not with research aimed at developing ectogenetic modalities for saving premature babies.

¹⁷⁰ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 15).

¹⁷¹ Zbigniew Bankowski, ‘International Ethical Guidelines for Biomedical Research Involving Human Subjects,’ in *Ethics and Research on Human Subjects: International Guidelines*, Geneva: CIOMS, (1993), p. ix.

4.3 Animal Research

Although human ectogenesis may be prohibited, Coleman argues that “the use of animals in research is almost universally accepted in the scientific community.”¹⁷² Also, there are fewer controls on animal subjects than on human subjects – a fact that would allow scientists to rigorously test the technology in animal models before introducing it to human populations. The reason is that experimentation guidelines for animals are usually concerned with minimizing pain and suffering of animals.¹⁷³ Ectogenic experiments have been performed using animal’s models in countries like Japan and it is possible that similar experiments can be performed in Canada as long as the animals are not in unnecessary pain or suffering unduly.¹⁷⁴ The Canadian Council on Animal Care has stringent guidelines that define when an animal is in pain, how to alleviate that pain and guidelines on how animals and which animals can be used in a scientific setting.¹⁷⁵ These guidelines help ensure the protection of animals in scientific experiments.

In this context, it may be worth remembering that, as mentioned in Chapter 2, similar doubts about the use of new reproductive technology on humans were brought up when IVF was being developed.¹⁷⁶ It was argued that using IVF on humans could lead to mental, psychological or social ills and that the technology ought to be prohibited due to the lack of full knowledge. In hindsight, one can say that these concerns were

¹⁷² Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 17).

¹⁷³ Loc. cit.

¹⁷⁴ There would undoubtedly be restrictions on which animals are used and how they are used, but unlike the *Assisted Human Reproduction Act* which flatly prohibits ectogenic research, there are no similar prohibitions on animals.

¹⁷⁵ See Canadian Council on Animal Care, “X. Control of Animal Pain in Research, Teaching and Testing,” http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/GUIDES/ENGLISH/V1_93/CHAP/CHX.HTM (accessed July, 2010) for further detail

¹⁷⁶ James Rachels, “When Philosophers Shoot From the Hip,” in *Bioethics, An Anthology*, Helga Kuhse and Peter Singer ed., (Massachusetts: Blackwell Publishing Ltd., 2004, pp. 573-575).

exaggerated and often the results of purely philosophical and academic reflections that had little basis in reality. By the same token, it is arguable that negative arguments that focus on the hypothetical possibility of birth defects resulting from ectogenesis may well be exaggerated and that once ectogenesis is tested on animals, it can be safe in the same way that artificial insemination and IVF have proved to be when transferred to the human setting.

At the same time, given that complete ectogenesis would be unlike any other form of reproductive technology, using it on humans would be a problematic issue given the lack of data on human subjects. Even if ectogenesis was carried out on animals first and was considered ‘safe,’ and ethics aside, the fact remains that human beings are not physiologically the same as other animals. Consequently the full effect of ectogenesis on human beings cannot be known until it has actually been performed on humans. This creates a problem, since the only way to know the effects of the technology would be to try it out on human beings, thereby potentially putting human lives at risk. This may prove ethically troublesome, since it can be argued that putting any human lives at potential risk is unethical. As Singer and Wells put it, “given our lack of complete knowledge of the conditions needed for fully normal, well adjusted children, any attempt to nurture a child entirely outside the womb would be experimentation with human life...therefore, those who urge this objection will say that ectogenesis should be totally prohibited”¹⁷⁷

However, it can be argued in opposition that if this line of argument was accepted, many helpful and life saving experiments in medicine and technology would never have

¹⁷⁷ Peter Singer and Deane Wells, “Ectogenesis” in *Ectogenesis: Artificial Womb Technology and the Future of Human Reproduction*, Scott Gelfand & John, R. Shook eds. (Amsterdam: Rodopi, 2006, p.16).

been developed. Experimentation with human life should never be undertaken lightly. However, it seems likely that scientists can perfect the technology on animals first, before applying it to use on humans. While this would still leave the element of uncertainty when the technology was transferred to the human sphere it would not amount to experimenting on humans in complete ignorance. There are many experimental models of how this could proceed, and many technological and medical advancements have been made in this manner. Indeed, it is one of the requirements of research involving human subjects that wherever possible, animal studies should precede experiments involving human beings.¹⁷⁸ After such animal studies, these technological and medical advancements are carefully introduced into human populations and monitored for their potential side effects.¹⁷⁹ This way, new technology and medicine can be introduced into the human sphere with every effort being made to ensure its safety.

Admittedly, the case of ectogenesis would be fundamentally different from other experimental protocols since normally research subjects are entitled to give informed consent, either in their own person or through a substitute decision-maker to reflect the incompetent person's values. It would be different with ectogenesis because the fetus has no values and cannot give consent. Therefore, if the fetus is born with birth defects as a result of the technology, it would be the result of the choices made by the parents and the researchers without taking the perspective of the fetus into account. Arguably, this would be ethically problematic. Moreover, the parents (and researchers) might be held legally responsible for negligence and damage incurred to the resulting child due to the use of

¹⁷⁸ See Tri-Council Guidelines available at <http://www.pre.ethics.gc.ca/eng/policy-politique/tcps-eptc/>.

¹⁷⁹ Experimenting in this way would mean that ethical guidelines for human subjects would have to be followed. These guidelines are in place to remove risk to human subjects and make it clear who would bear the responsibility for any wrongdoing. This provides another safe guard when experimenting on humans.

ectogenesis, since what essentially amounts to an experimental procedure was conducted in full awareness that relevant information was lacking, and despite the fact that the value perspectives of the fetus could not be acknowledged let alone honoured.

4.4 Possible Legal Implications of Ectogenesis

The preceding considerations are not idle speculations. In the Canadian case of *Dobson (Litigation Guardian of) v. Dobson*,¹⁸⁰ a son attempted to sue his mother for negligence causing harm. Since *Dobson* considered the issue of parental negligence and the duty owed by parents towards their children, it *may* provide some indication of what might be used in Canadian cases involving ectogenesis. I will detail the case below to see if this might apply with ectogenic children.

In this case, the son was born with severe mental and physical disabilities due to a car accident that his mother caused while she was 27 months pregnant with him.¹⁸¹ The mother's negligence while driving caused the accident and therefore caused the mental and physical disabilities of her son. Consequently, so it was argued, she should be held responsible for her actions. The Supreme Court, however, ruled that due to the special relationship between the mother and the fetus, the mother cannot be held responsible for injuries her son sustained while *in utero*. The courts decided that due to this unique relationship, there are no reasonable grounds on which they can restrict the actions of the mother without infringe on her Charter Rights.¹⁸² The Court went on to say that normally the law recognizes the fetus as a person with rights beginning at live birth and ending at death. The only exception to this is the "born-alive-rule" according to which a fetus *en*

¹⁸⁰ 1999 2SCR 753.

¹⁸¹ Loc. cit.

¹⁸² Loc. cit.

ventre sa mere is considered a person at time of injury if it is born alive. However, so the Court concluded, this does not apply in the case of mothers because of the unique relationship that holds between them and their fetuses.¹⁸³ This ruling therefore does not preclude action taken on part of the resulting child who is born with prenatal injuries sustained by a *third* party; however it does mean that children cannot sue their mother for injuries sustained *in utero*.

Of particular importance to the ultimate decision of the above case was the following statement:

“The unique and special relationship between a mother-to-be and her fetus determines the outcome of this appeal. There is no other relationship in the realm of human existence which can serve as a basis for comparison. It is for this reason that there can be no analogy between a child’s action for prenatal negligence brought against some third-party tortfeasor, on the one hand, and against his or her mother, on the other. The inseparable unity between an expectant woman and her fetus distinguishes the situation of the mother-to-be from that of a negligent third-party. The biological reality is that a pregnant woman and her fetus are bonded in a union. This was recognized in the majority reasons of McLachlin J. in *Winnipeg, supra*, at pp. 944-45:

Before birth the mother and unborn child are one in the sense that “[t]he ‘life’ of the fetus is intimately connected with, and cannot be regarded in isolation from, the life of the pregnant woman”: *Paton v. United Kingdom* (1980), 3 E.H.R.R. 408 (Comm.), at p. 415, applied in *Re F (in utero)*, [[1988] 2 All E.R. 193]. It is only after birth that the fetus assumes a separate personality. Accordingly, the law has always treated the mother and unborn child as one. To sue a pregnant woman on behalf of her unborn fetus therefore posits the anomaly of one part of a legal and physical entity suing itself.”¹⁸⁴

Clearly, the *Dobson* rule would not apply to mothers in the case of ectogenesis since there would not be a special relationship between the mother and her fetus. It follows that it would be entirely possible, under a Canadian schema, for the children

¹⁸³ Loc. cit.

¹⁸⁴ Loc. cit.

resulting from ectogenesis to take action against their parents or the researchers. *Dobson v. Dobson*, therefore, cannot be considered as providing any certainty in this regard.

By the same token, however, allowing children who are born as a result of ectogenesis and who suffer injury or disability because of the procedure to take legal action against their parents could lead to problems. Imposing a legal duty of care on parents by allowing children to sue their parents in the case of injury or disability as a result of ectogenesis would open up the possibility of suits for any and all birth defects irrespective of their true aetiology which might have nothing to do with the ectogenetic process itself but rather was grounded in genetic irregularities in the parents' own DNA. The argument might very well be made that the parents *should* have known about their genetic loads, and *should* have refrained from having children under the circumstances.¹⁸⁵ This, however, would place an excessive amount of burden of care on the parents and would extend liability beyond what is currently reasonable given the relationship between parents and their children.

At the same time, it would be important to acknowledge the needs of children who are born disabled or injured as a result of ectogenesis. Therefore, while parental responsibility may not be the appropriate way to deal with the issue, some way of dealing with it in a legally appropriate manner should be developed prior to allowing ectogenesis as a matter of practice.

¹⁸⁵ See Laura Purdy, "Genetic Diseases: Can Having Children be Immoral?" in *Genetics Now: Ethical Issues in Genetic Research*, ed. J.J. Buckley, Jr. (Washington, DC: University Press of America, 1978). for the possible basis of such an argument.

4.5 Cost of the Technology

Another possible area of concern over ectogenesis is more prosaic in orientation. Ectogenesis will undoubtedly be expensive. In Canada, individual provinces decide what is covered by health insurance and what is not by using the criterion of medical necessity, as set out by the *Canada Health Act*. Since fertility treatments are not considered medically necessary by any of the provinces,¹⁸⁶ it would not need to be covered under the *Canada Health Act*.¹⁸⁷ Therefore the burden of the cost would be the responsibility of the persons seeking to use the technology. This would effectively mean that ectogenesis would be available to rich who could afford the technology while those who cannot afford the technology would have no access to it. Of course this would not necessarily hold true for “partial” ectogenesis, since this would be a method to treat premature babies. Arguably, the provinces would wish to fund such use of the technology on the same basis as they currently fund the use of incubators and other high-tech devices and procedures in the neonatal intensive care nursery. In other words, if ectogenesis was viewed as a necessary life saving technology for premature babies, it would likely be covered by provincial health plans and would not become the responsibility of relevant parents.

Another interesting question is regarding resource allocation and whether ectogenesis should be funded through government money. Specifically, David James questions if infertility should be viewed as a disability and therefore, if ectogenesis ought

¹⁸⁶ With the recent exception of Quebec: See CBC news (Montreal) “Quebec to Pay for IVF Treatments,” accessed July 16, 2010). <http://www.cbc.ca/canada/montreal/story/2010/07/13/quebec-ivf-treatment.html>

¹⁸⁷ *Canada Health Act*, R.S.C., 1985, c. C-6. <http://www.canlii.org/en/ca/laws/stat/rsc-1985-c-c-6/latest/rsc-1985-c-c-6.html>

to be publicly funded given other health care priorities.¹⁸⁸ Singer and Wells argue that infertility is a disability similar to blindness or deafness and so it too should receive public funding since infertile couples cannot, for whatever reason, beget a child.¹⁸⁹ Singer and Wells argue “we think it would be absurd for the public purse to pay for a psychiatrist to attempt to treat the depression and anxiety caused by infertility but not for the treatment of infertility itself. The desire for children is, in many people, something very basic and cannot be overcome without great difficulty if at all.”¹⁹⁰

However, even if infertility is viewed in this way, can ectogenesis be considered a treatment? Coleman argues that despite the criticism that ectogenesis (or other reproductive technologies like IVF) will not solve the underlying problem of infertility, it can nevertheless be considered a treatment.¹⁹¹ He argues that similarly, glasses will not solve the underlying problem of vision problems but glasses are considered treatment for vision problems.¹⁹² So, ectogenesis can be a type of treatment for infertility.

Given that Coleman, Singer and Wells have argued that infertility is a disability and ectogenesis can be a treatment for infertility, the question still remains whether it ought to be publicly funded (and it will no doubt be expensive to fund) given other priorities in health care? This is a difficult question to answer since it depends partly on how we view infertility and what kind of priority it can be said to have over other medical treatments. Maureen Sheehan and Deane Wells argue that ideally, reproductive

¹⁸⁸ David V. James, ‘Ectogenesis: A Reply to Singer and Wells,’ in *Bioethics*, 1 (1987, pp. 80-90).

¹⁸⁹ Peter Singer and Deanne Wells, *The Reproduction Revolution: New Ways of Making Babies* (Oxford: Oxford University, 1984, pp. 63-68).

¹⁹⁰ *Ibid.* p. 67.

¹⁹¹ *Loc. cit.*

¹⁹² *Loc. cit.*

technology ought to be publicly funded.¹⁹³ They argue that there are different priorities of health care and reproductive technology would fall somewhere in the middle of the different levels and that affluent countries would see this as a health priority.¹⁹⁴ Also, as mentioned previously, there may be a new trend towards public funding of reproductive technology in Canada with the recent development in Quebec. However, on the other end of the spectrum, a study done by Darren Shickle shows that people in the UK view treatment for infertility as a low priority given other health care needs.¹⁹⁵ So given these different opinions on infertility treatment, it is unclear if ectogenesis would/should receive funding.

Stephen Coleman argues that it seems unlikely that ectogenesis would be publicly funded rather than investing in other reproductive technology instead. He argues that although other infertility treatment may receive some funding, this is because they are cost effective which is unlikely to be true of ectogenesis.¹⁹⁶ Specifically, he argues, “if the cost of ectogenesis is anything like the cost of care for a premature infant, then the cost per treatment would be enormous....given the enormous cost, and the relatively small benefit, I think that whatever the government’s health care priorities may be, it is unlikely that an ectogenic treatment program would be seen as a cost effective way of managing the infertility problems of the relatively small number of infertile couples...”¹⁹⁷

¹⁹³ Maureen Sheehan and Deanne Wells, “The Allocation of Medical Resources,” in *Medical Care and Markets*, C.L. Buchanan & E.W. Prior eds. (Sydney: Allen & Unwin, 1985, pp. 59-69).

¹⁹⁴ Loc. cit.

¹⁹⁵ Darren Shickle, “Public Preferences for Health Care: Prioritisation in the United Kingdom,” in *Bioethics*, (1997, pp. 277-290).

¹⁹⁶ Stephen Colman, *The Ethics of Artificial Uteruses: Implications for Reproduction and Abortion*, (Burlington: Ashgate Publishing Company, 2004, p. 40).

¹⁹⁷ Ibid. pp. 40-41.

Conclusion

The concept of ectogenesis has fascinated researchers and academics for some time. Similarly, the idea of creating human life outside the womb has been the subject of novels, movies and philosophical works. As technological developments with animal models has progressed to the point where it could be applied to human beings, it becomes important to consider under what situation it might be ethically permissible in the human setting. It is tempting to fall prey to the lure of the technological imperative: to get swept away with the technological advancements of reproductive technology out of amazement over what can be done and on the basis of the assumption that if the technology is possible, it should be deployed. However, any such enthusiastic endorsement of the technology should first consider how this undoubtedly unique technological achievement might affect human reproduction within a particular social context. Expressly, Bjorn Hoffman argues that “there is an excessive inquisitiveness about technology and that physicians appear to be wedded to technology. There seems to be a pathological reliance on technology, as technology has become the basis of our culture.”¹⁹⁸ The idea behind technological imperatives, as described by Hoffman, states that what can be done ought to be done with regards to technology in health care.¹⁹⁹ However, Hoffman rejects this imperative and argues that it is important to recognize the ways in which technology can be harmful. He supports a more cautious use of technology and argues that simply because it can be done does not mean that it ought to. Similarly with direct ectogenesis,

¹⁹⁸ Bjorn Hoffman, “Is there a Technological Imperative in Health Care?” in *International Journal of Technology Assessment in Health Care* (Vol. 18, No. 3 2002, p. 675).

¹⁹⁹ *Ibid.* p. 676.

the technological imperative is not strong enough to show that we ought to develop this within a human setting.

Singer and Wells have outlined their support for implementing human ectogenesis, but this support seems premature. One can respect the technological capacity without arguing in favour of developing direct human ectogenesis.

As I have argued, a number of Singer and Wells' arguments in support of ectogenesis are not persuasive and, upon inspection, fail to be justified. I think they rightly identify that one of the most pressing issues women face is that of reproduction and the role this places men and women in. Although I disagree with their solution, I do think we share the same concerns regarding reproductive autonomy for women. I think it is important for women to have non-oppressive choices when it comes to reproduction and the ability to employ their choices. To have meaningful reproductive autonomy, Rosalind Petchesky argues that we need to demand more from our rights. She argues that "rights, to be meaningful, must carry the necessary enabling conditions that will make them concretely realizable and universally available. This is just another way of saying that certain social conditions....are so fundamental to individual moral agency and citizenship that the society must provide them to everyone."²⁰⁰

However, the issue of having meaningful reproductive autonomy will not be solved by having recourse to ectogenesis. The issue of reproductive equality can best be addressed by recognizing the ways that social structures influence and restrict choices and fighting to address the overarching framework of various social institutions.

²⁰⁰ Rosalind Petchesky, *Abortion and Women's Choice* (London: Verso, 1986 p. XV).

Further, the abortion debate is more complex than the ‘solution-by-ectogenesis’ approach suggests. The hope that ectogenesis will avoid the traditional problems in abortion is falsely optimistic since it can, at best, add another dimension to the debate. Moreover, other practical issues of who should bear the cost of ectogenesis and what should happen to the resulting child if ectogenesis were to be used in lieu of abortion remain unexplored.

What’s more, various legal implications of complete ectogenesis would follow if it were to be used on humans. Ectogenesis could not only change the social interactions between parents and children, but it would affect the legal relationship between parents and children. There would need to be a balance between the needs of the child and the responsibilities of the parents in a way that has yet to be explored.

The only situation where ectogenesis is not contentious is through indirect research aimed treating premature babies. Instead of supporting complete ectogenesis to treat infertility, technology can instead improve indirect research which is legal and normatively non controversial. Other arguments in support of ectogenesis fail to provide persuasive justification as to its use on humans.

Direct ectogenesis would undoubtedly profoundly change reproduction as we know it but it is important to analyze if it would be done for the right reasons and, as it stands, research into direct ectogenesis is unjustified.

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