

## Willing Mothers: Ectogenesis and the Role of Gestational Motherhood

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### Abstract:

While artificial womb technology (ectogenesis) is currently being studied for the purpose of improving neonatal care, I contend that this technology ought to be pursued as a means to address the unprecedented rate of unintended pregnancies. But ectogenesis, alongside other emerging reproductive technologies, is problematic insofar as it threatens to disrupt the natural link between procreation and parenthood that is normally thought to generate rights and responsibilities for biological parents. I argue that there remains only one potentially viable account of parenthood: the voluntarist account, which construes parental rights as robust moral obligations that must be voluntarily undertaken. The problem is that this account mistakenly presumes a patriarchal divide between procreation and parenthood. I propose a reframing of procreation and parenthood from a feminist perspective that recognizes gestational motherhood as involving robust moral obligations that ought to be voluntarily undertaken. If this were the case, all gestational mothers would be, by definition, willing mothers. To make this happen I argue that ectogenesis technology must be a widely-available reproductive option.

Imagine a human embryo undergoing gestation in an artificial womb completely external to the female body. This possibility, also known as ectogenesis, may seem like science fiction. Yet recent research and technological innovation are beginning to make ectogenesis look like a reality. In 2017, scientists at the Children's Hospital of Philadelphia Research Institute created a device designed to replicate the natural environment of the womb.<sup>1</sup> These 'biobags' included a system for circulating amniotic fluids and were used to successfully gestate premature fetal lambs. The stated aim of the research team was to mitigate the high rates of neonatal mortality and morbidity associated with fetal prematurity. Although research on animals only supplies limited indications about the potential applications for human use, this study has been regarded by many as a breakthrough in ectogenesis research.

But while ectogenesis may seem straightforwardly desirable insofar as it serves to improve neonatal care, the philosophical literature concerning this technology paints a more complicated picture. In 1970, second-wave feminist Shulamith Firestone argued that ectogenesis could potentially liberate women from an oppressive patriarchal family structure.<sup>2</sup> More recently, it has been argued that ectogenesis should be made available because it would help promote justice, primarily with respect to equality of opportunity for fetuses.<sup>3</sup> There is also debate concerning how ectogenesis might affect the moral permissibility of abortion, where it has been suggested that women may no longer be entitled to choose the death of the fetus.<sup>4</sup> One issue that has largely been overlooked, however, is how ectogenesis will affect the relationship between procreation and parenthood.

Ectogenesis, alongside the continued development of assisted reproductive technologies (ARTs), is positioned to radically change the face of procreation. This should be cause for concern insofar as biological reproduction has been widely-recognized as a suitable explanation of why

procreators ultimately become parents to their offspring. As technology becomes increasingly responsible for facilitating procreation, more careful consideration must be paid to the ramifications for parental rights and responsibilities. While one might initially expect ectogenesis to spell disaster for accounts of parental rights, I contend that ectogenesis may actually offer the most humane version of procreation, and hence allocation of parental rights, yet to be seen. Most notably, this technology offers an opportunity to install an important juncture on the track from procreation to parenthood; a track that is all too often coercive owing to the pressures it places on procreators, particularly women, to assume responsibilities for bearing and rearing a child.

In the first section, I consider accounts that ground parents' rights in some feature of procreation and demonstrate why they are ultimately untenable. In the second section, I consider an account of parenthood that focuses on features of the prospective parents' agency instead. More specifically, the voluntarist account construes parental rights as robust moral obligations that must be voluntarily undertaken. The problem, I argue, is that this account mistakenly assumes a patriarchal divide between procreation and parenthood. In the third section, I propose a reframing of procreation and parenthood from a feminist perspective that can account for the robust moral obligations of gestational mothers. Subsequently, I argue that ectogenesis technology must be a widely-available reproductive option to ensure women voluntarily undertake the responsibilities of gestational motherhood. In the fourth section, I consider objections to my proposal and offer responses. And in the fifth section, I explain why the social arrangement I have proposed, wherein all gestational mothers are necessarily *willing* mothers, ought to be preferred.

## I. The Moral Basis of Parental Rights and Responsibilities

Biological reproduction may be a natural phenomenon but the fact that procreators are responsible (p 321) for rearing their children is not. While many societies are arranged in such a

way that procreators subsequently become the moral and legal parents of the child they brought into existence, there are notable exceptions. For instance, the early 20<sup>th</sup> century saw the advent of kibbutzism in Israel, an alternative social arrangement for child-rearing where children are raised by the community as opposed to their biological parents. It is worth noting, then, that my concern here is not to justify the predominant social arrangement for childrearing against other possible arrangements. Instead, the more modest task at-hand is to identify the grounds on which procreators become moral parents, replete with rights and responsibilities, to their offspring. As one recalls the process of biological reproduction—including sexual intercourse, fertilization and implantation, and pregnancy—it might seem natural to identify these biological features of procreation as having the potential to explain why procreators become parents. However, I will argue that these features of procreation are not viable explanans when considered in the context of emerging ARTs.

The most foundational biological feature of procreation seems to be the genetic contribution made by prospective parents. After all, a contribution of genetic material is still required from individuals in order to procreate, even if this genetic material is ultimately modified in importantly relevant ways. Accordingly, the necessary role of genetics in bringing a child into existence might lead one to think that the genetic-relatedness between procreators and their offspring should entail parental rights for those procreators. Yet even among those who advocate for this overall position, there is disagreement about precisely why genetic-relatedness is morally significant. It has been argued by Barbara Hall, for example, that self-ownership claims over one's genetic material translates into a right to parent one's genetically-related child.<sup>5</sup> However, this view relies on a controversial assumption that there can be self-ownership of genetic material. Alternatively, it has been suggested that parents are more likely to provide adequate care to a

genetically-related child. While this argument ultimately boils down to an empirical matter, it is worth noting the countervailing evidence; rates of child abuse are higher among non-related caregivers than biological parents, but these rates are actually lower among adoptive parents than biological parents.<sup>6</sup>

The most promising strategies for defending genetic-relatedness invoke claims of personal identity. For example, Matthew Liao argues that the right to parent one's biological child is a human right partly owing to a morally significant genetic relation, and hence identity relation, between procreators and their offspring.<sup>7</sup> In particular, he claims that "when a new individual is created in part using one's genetic material, this new individual is created using some core aspect of one's identity...there is value in such a biological process because [it] involves some core aspect of one's self" (p 658). While Liao takes genetic-relatedness to be an essential good, it has alternatively been argued that the genetic link between parents and their offspring is an instrumental good. Melissa Moschella, for example, has suggested that procreators are in a unique position to develop valuable parent-child relationships in virtue of their genetic relationship to the child.<sup>8</sup> She argues that procreators create a personal relationship by bringing a genetically-related child into existence, wherein the child is dependent upon them for receiving love. Thus, procreators have a responsibility to love their child that translates into a right to rear their child. Relatedly, David Velleman has argued that genetic-relatedness constitutes a weighty moral good in virtue of its epistemic role. Velleman suggests that having knowledge of one's genetic ancestry plays an essential role in the formation of one's identity, and maintains that one's "biological origins...[are] worth knowing" (p 378).<sup>9</sup> Since biological parents have privileged access to knowledge that is pertinent to the well-being of the child, Velleman concludes that biological families, in virtue of their genetic-relatedness, should be the paradigmatic form of family. Even setting aside the

obvious concern that these accounts seem to privilege biological parent-child relationships over their adoptive counterparts, there are several problems remaining.<sup>i</sup>

First, emphasizing genetic identity as the grounds for parental rights supports a patriarchal view of parenthood. By this, I mean a view that narrowly focuses on genetics as the basis for parenthood while ignoring the significant and crucial role played by gestational mothers. At first blush, it would seem that the genetics account offers a gender-egalitarian explanation of parenthood since it rightly acknowledges that genetic material is contributed by both the mother and father. But the genetics account fails to acknowledge the subsequent contributions from a gestational mother that are necessary for bringing a child into existence.<sup>10</sup> In light of the fact that fetuses are materially-derived from their gestational mothers, proponents of the genetics account are likely to claim that the contributions of gestational motherhood have no bearing on the underlying genetic material. Thus, they are likely to identify the genetic contributors as parents while resisting any attempt to account for the role played by gestational mothers. This becomes problematic in cases where a gestational surrogate is used to procreate, who then has no grounds for claiming parental status to the child she brought into existence.

To be sure, gestational motherhood does not involve any contributions of genetic material that comprise the developing fetus's DNA sequence. However, I argue that what has been overlooked is the gestational mother's influence over the epigenetic changes of the developing fetus. Epigenetic changes do not alter the DNA sequence itself but they can significantly alter the gene expression of a particular DNA sequence. The effects of maternal nutrition and health on the epigenetic status of the fetus have been well-researched, and a wide range of maternal factors—

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<sup>i</sup> For a detailed discussion of this objection, see Haslanger S. Family, ancestry, and self: what is the moral significance of biological ties? *Adoption & Culture* 2011:2;91-122.

including age, diet, alcohol consumption, obesity, and diabetes mellitus—have been shown to contribute to neurodevelopmental disorders of the developing fetus. If the gestational mother has a folic acid deficiency, for example, this may result in neural tube defects that can lead to severe disabilities or death. This matters for genetics accounts insofar as they will have to explain why considerations of a genetic sequence should be taken in isolation of considerations relating to the expression thereof. While genetics accounts acknowledge how DNA is linked to personal identity, I maintain that they should similarly acknowledge how epigenetic changes are linked to one's identity. Since gestational motherhood can influence epigenetics, it would seem that genetics accounts are obligated to accommodate for this. However, if genetics accounts acknowledge the contributions of gestational mothers then these accounts no longer offer a clear picture for the assignment of parental rights. That is to say, genetics accounts would presumably struggle to determine which individuals should be parents in a case where the child is born through a gestational surrogate. More generally, it is unclear how the epigenetic contributions of the gestational mother are meant to be weighed against the initial contributions of genetic material.

**(p 322)** Furthermore, the genetic link between parents and children seems like an increasingly precarious foundation for parents' obligations in light of emerging technologies. For instance, there is currently extensive research being done in the name of gene therapy, notably including CRISPR technology. By editing the genome, parents may have a way to procreate that does not entail passing on certain genetic diseases. Consider the case of a mitochondrial disease like Leigh's syndrome; a severe neurological disorder that leads to death within a few years of being born. In 2017, a mitochondrial DNA transfer was performed so that procreators could prevent this disease from being passed on to their offspring.<sup>11</sup> After a successful mitochondrial DNA transfer, a child with three genetic parents was born. The question that arises for the genetics

account is what stake the third genetic parent can be said to have in this case. While perhaps a more distant concern, there is also the possibility of genetic enhancement on the horizon. If genetic enhancement becomes an available reproductive technology it will be necessary to determine how many modifications can be made to a child's genome before the presumed identity relation between the parents and child is compromised. Moreover, even if parents only arrange for minor gene editing to select against disease traits, this seems like a problem given the emphasis genetics accounts place on identity. That is to say, I imagine it would be difficult to maintain the importance of knowing one's biological origins, as Velleman does, in cases where the child no longer resembles them in importantly relevant aspects. Ultimately, it seems unlikely that proponents of the genetics account will be able to delimit the relevant notion of 'genetic resemblance' without appealing to some set of *ad hoc* criteria.

Rather than focusing on genetics, some have pursued a feminist line of thinking by arguing that the gestational labor involved in procreation is an appropriate basis for acquiring parental rights and responsibilities. In order to restore gestational motherhood, and hence women, to the picture of procreation, it is thought that some weight must be attributed to the labor involved in pregnancy. Pregnancy is notoriously burdensome given the emotional, financial, physical and other various costs involved. These costs disproportionately burden women, although their partner may make efforts to offset this burden when possible. This has led Anca Gheaus to argue that the demands on biological parents with respect to pregnancy, combined with the intimate parent-child relationship that forms partly in virtue of those demands, are sufficiently weighty reasons in favor of procreators acquiring parental rights and responsibilities.<sup>12</sup> But this view has its drawbacks. Since Gheaus focuses on gestational labor, the lion's share of which consists in pregnancy, it would seem that Gheaus only succeeds in justifying a woman's right to the child she gave birth to. As



Liao points out, the view seems to imply, at the very least, that “men have lesser right than women to be parents to their biological children” (p 166).<sup>13</sup> Perhaps this is the right result, but there will need to be a principled account of how much weight should be attributed to the role of gestational motherhood. Without this, it is unclear how the father’s claim to parental rights ought to be balanced against the mother’s claim (if at all), or how a surrogate mother’s claim to parental rights ought to be balanced against the genetic mother’s claim. If the gestational labor account is meant to leave room for consideration of genetics, then the problems plaguing the genetics accounts will reassert themselves in this context. If, however, gestational labor is meant to be the only relevant consideration, it would seem that surrogate mothers have a claim to parental rights that the mother and father qua genetic contributors do not, in which case, the practice of surrogacy itself may be untenable.

If one already considers the practice of surrogacy to be controversial and maintains that it ought to be abandoned, it may be argued that this implication does not qualify as an objection to the gestational labor account. However, this problem re-emerges when considering a context where ectogenesis technology is available. Ectogenesis may be controversial, but not for the reasons of being a potentially exploitative practice. Thus, it seems legitimate to hold the gestational labor account liable for an explanation of how procreators who use ectogenesis acquire parental rights and responsibilities. In a situation where all gestational labor takes place in an artificial womb, assisted by a lab technician, it is unclear who can be said to have a stake in the developing fetus. Suppose the implausible implication whereby the lab technician incurs parental rights is ruled out. What remains unclear is how the commissioning (p 323) couple could be said to have any claim to the child that comes into existence. Gheaus readily acknowledges this limitation of the view, and maintains that “the particular way in which we come into existence is essential for

determining who has the right to rear us. If we all came into the world in laboratories, created by scientists, there would be little reason for granting a right to rear us to the people who provided the genetic material” (p 42). While Gheaus’ view, in light of how it has been formulated, is committed to viewing ectogenesis technology as problematic, it is not necessarily the case that affording consideration to gestational labor is itself inconsistent with advocating for ectogenesis technology.

An interpretation of gestational labor has been advanced that makes room for commissioning couples using ARTs by focusing on their investment, broadly-construed. As Joseph Millum argues, individuals acquire parental rights in light of performing the relevant work. He proposes the following investment principle to explain why procreators incur parental rights: “*Ceteris paribus*, the extent of an agent’s stake in an object is proportional to the amount of appropriate work he or she has put into that object” (p 112).<sup>14</sup> To see why this formulation of the account is still problematic, let us imagine that the process for prospective parents to use ectogenesis is similar to the application process that is currently in-place for adoption. Couples who successfully qualify may then arrange to procreate via ectogenesis. In order to use this technology, they must pay the associated financial costs to maintain the artificial womb as well as commit to attending routine appointments to monitor the progress. If this were the case, the commissioning couple would perform a significant amount of work, even if the actual work of gestating the fetus takes place in an artificial womb. At this point it may seem appropriate to say that the commissioning couple has a stake in the child that justifies assigning them parental rights. An advantage of this account is that it recognizes the labor performed by the commissioning couple despite the absence of a physical pregnancy. This may be especially useful in determining which individuals become parents in cases involving gestational surrogacy, as the labor involved in

pregnancy can be more clearly measured against the labor performed by the commissioning couple. Moreover, this account creates an opportunity for socially-infertile couples, non-traditional parenting units or a whole community (e.g. kibbutz) to perform gestational labor and become parents in a way that is not currently available. But there is a problem with this picture; the foundation of parental rights is now entirely dependent on what costs are tied to ectogenesis for the commissioning couple. If there are no costs, then the commissioning couple has no stake. If there are minor costs, the commissioning couple has a marginally larger stake than others. While Millum's account may be salvaged by attaching significant costs to ectogenesis so that the commissioning couple could reliably be picked out as the individuals acquiring parental rights, there is something deeply unsettling about relying on morally-arbitrary costs to determine the moral basis of parenthood.

Leaving behind accounts that focus on a particular feature of biological reproduction like genetics or gestational labor to ground parenthood, we might consider an account that considers the act of biological reproduction taken in its entirety to be morally significant. For example, one may emphasize procreators' role in causing a needy being to exist as generating parental responsibilities, and hence, parental rights. Jeffrey Blustein, an early proponent of the causal account, explains how social customs dictate that procreators are in a special position to care for the child they caused to exist. If social customs established that childrearing were to take place in a state-run orphanage, then creating a child would not result in any special obligations for procreators. But since children are normally expected to be raised by their biological parents, it can be said that caring for a child is a reasonably foreseeable consequence of having one; this fact, combined with the basic moral principle whereby "people are responsible for the foreseeable

consequences of their voluntary acts” explains why procreators incur parental obligations (p 146-7).<sup>15</sup>

For some, a perceived advantage of the causal account is that reckless and negligent procreators can be held morally responsible. Since pregnancy is a foreseeable consequence of having sex, cases of accidental pregnancy or contraceptive failures do not exonerate one from parental responsibilities. But the causal account falters over situations involving rape, as it is unclear if a woman who becomes pregnant as a result of rape falls into the category of ‘reckless and negligent procreators’ or not. On the one hand, it seems unjust if a woman is forced to undergo an unwanted pregnancy, and more so if she is subsequently expected to assume parental responsibilities. On the other hand, it seems problematic, given the interests of the developing fetus, if the mother is completely exempt from any moral obligations. Similarly, it remains unclear how the perpetrator may be held liable for compensation without incurring parental status, a privilege which would normally be considered to have been forfeited. Most broadly, the causal account problematically maintains that procreators are responsible for the children they cause to exist regardless of whether they formed the intention to become parents.

Accordingly, the causal account is often criticized for its implication that individuals may acquire parental rights and responsibilities that they may not have ultimately wanted. Insofar as one regards parents as ideally *willing* parents then this way of assigning parental rights irrespective of parents’ intentions would appear less than desirable. More critically, it would seem that this social arrangement of parenthood is oppressive and unjust. However, while the charge of injustice may be well-supported, this should not lead one to conclude that the causal account has not provided an accurate explanation of how procreators acquire parental rights. Blustein acknowledged that there may very well be justice concerns with our current social arrangements,

but concludes that “the problem of justifying a practice is distinct from that of explaining how it is that particular individuals typically come to occupy positions within it” (p 147). The only way to dismantle the causal account would be to demonstrate that it is an inaccurate account of how parents incur rights and obligations to rear a particular child.

One such objection to the causal account is that the relevant notion of causation is unclear. For example, in cases where in-vitro fertilization (IVF) is used it could be argued that the lab technician who facilitates the IVF process is causally responsible for the child that comes into existence. With ectogenesis on the horizon, it could similarly be argued that the lab technician who facilitates this process acquires parental obligations. This is a problematic result insofar as the commissioning couple is normally thought to incur parental rights. What is required is a principled explanation of what constitutes ‘causation’ that can reliably pick out the commissioning couples as opposed to the technicians tasked with assisting them in reproduction.

An even deeper worry is that the causal account suffers from a deficient understanding of parents’ moral obligations. Assuming a background social arrangement that favors biological parenthood, the causal account maintains that procreators are in a special position to prevent harm from occurring to the child they caused to exist. But as Elizabeth Brake notes, this formulation of parents’ moral obligations is exceedingly weak; parents are only required to provide a minimally decent life for the child as compensation for causing harm, namely the child’s existence in a state of neediness.<sup>16</sup> She subsequently argues that compensatory obligations are incapable of capturing the more robust obligations parents are normally thought to have, including intimacy and long-term care.

## II. The Voluntarist Account of Parenthood

Following her criticism of the causal account, Brake proposes an alternative way of cashing out parents' moral obligations. She explains that parental obligations are a form of special obligations, with the latter being divisible into two categories: compensation and role responsibilities. Of these two kinds of special obligations, role-responsibilities are distinct insofar as they require an individual to voluntarily undertake them. Since the causal account excludes any considerations of procreators' agency with respect to their decision, or lack thereof, to become a parent, role-responsibilities are an ineligible avenue for explaining parents' obligations. Compensation may succeed in depicting the bare minimum in terms of parents' obligations but, as Brake demonstrates, role responsibilities are the more attractive option. Unlike compensatory obligations that may be contracted out, role responsibilities require direct performance. This is significant insofar as it is normally thought that being a parent involves rearing a child and not merely ensuring that a child is reared. Moreover, role responsibilities can explain parental obligations like intimacy and long-term care that cannot be captured in terms of compensation. Finally, role-responsibilities have the added requirement that individuals voluntarily undertake them in order to incur the respective moral obligations. If Brake is correct in defining parental obligations in this way, then her voluntarist account has the desirable implication that all parents are, by definition, *willing* parents.

But the voluntarist account has been criticized for assuming that individuals have sufficient agency to voluntarily undertake parental obligations. For example, while pregnancy may be a foreseeable consequence of sexual intercourse, it does not follow from this that every case of pregnancy was the product of a carefully planned intention to procreate. If a woman finds herself unintentionally pregnant but ultimately chooses to bear and rear the child, does this qualify as voluntary acceptance? Brake claims that it does. She maintains that a woman who does not opt for

an abortion (assuming this is an available reproductive option) or arrange for adoption following the birth of the child can be considered to have *tacitly* accepted the role of parent. As it would appear, a woman's attitude towards her pregnancy is not a factor in determining whether she has voluntarily (p 324) undertaken parenthood. A woman who is ambivalent about her pregnancy, or even considers it unwanted, is still considered by the voluntarist account to have tacitly accepted parental obligations, barring those cases where she opts for an abortion or arranges for adoption.

This notion of tacit acceptance is of crucial importance, as the voluntarist account would otherwise seem to suggest that only explicitly stated intentions to become a parent qualify as being voluntarily undertaken. But in order for tacit acceptance to be an available avenue for acquiring role responsibilities, it must be the case that there are appropriate exit options for procreators. For instance, it would be incoherent to claim someone has tacitly accepted the role of parent if there was no possible way of declining this role. Since social customs allow procreators to arrange for adoption after the child is born, there exists a possible way for procreators to subsequently decline the role as the child's parent.

But what if a woman finds herself unintentionally pregnant and, rather than arranging for adoption, chooses to abandon her infant? Brake responds to this concern by arguing that the voluntarist account "can hold unintentional procreators to duties of virtue, the duty of easy rescue, legal obligations, and even procreative costs" (p 175). That is to say, a woman who is unintentionally pregnant would not be required to undertake parental obligations subsequent to the child being born, though she may be required to undergo the duration of the pregnancy as a procreative cost and be held culpable if she fails to arrange for an adoption. However, I contend that this is an unsatisfactory account of parenthood because it fails to capture the more robust obligations gestational mothers are normally thought to have.

It is evident that Brake regards procreation and parenthood as conceptually distinct. In particular, she supposes that parenthood begins after a child is born and procreation refers to everything that happens leading up to this. Accordingly, she construes moral obligations associated with procreation as compensatory costs, while parental obligations are regarded as role responsibilities. Since pregnancy is considered a feature of procreation, Brake is led to the conclusion that gestational motherhood is not a role-responsibility. This is significant because it means that the moral obligations of gestational motherhood are not subject to the condition of voluntary acceptance. Thus, Brake maintains that women may be legitimately required to undergo pregnancy in some cases.

But cases of unwanted pregnancy highlight a problem with the voluntarist account's patriarchal division of procreative and parental responsibilities. More specifically, the voluntarist account obscures the way in which the project of procreation is fundamentally different for women than it is for men. For women, parenthood oftentimes begins during procreation; a pregnant woman is not an expecting mother, whose status as a mother is dependent upon, and subsequent, to the birth of the child, in the way this can be said of expecting fathers. She is already a mother from the point of conception. From a feminist perspective, procreation and parenthood are not conceptually distinct for women who undergo pregnancy. Instead, parental responsibilities for gestational mothers appear to coincide with procreative responsibilities. That is to say, it would seem that gestational mothers must undertake parental responsibilities during, and not simply after, pregnancy. If this is the case, then gestational motherhood would seem to generate robust, role responsibilities as opposed to mere compensatory costs. Consequentially, for the purpose of accommodating a feminist framing of procreation and parenthood, the voluntarist account must



explain how gestational motherhood can be voluntarily undertaken, especially in those cases where a woman who finds herself unintentionally pregnant.

### III. Gestational Motherhood as a Role-Responsibility

While I have proposed a reframing of parenthood and procreation that extends parental status to gestational mothers, the voluntarist might move to reject this way framework from the outset. In response, I will demonstrate how gestational motherhood should be considered a role-responsibility by appealing solely to the voluntarist's own definitions. In what follows, I will revisit the differences between compensatory costs and role-responsibilities to explain why gestational motherhood ought to be construed as the latter. However, characterizing gestational motherhood in this way results in a dilemma for the voluntarist account. Ultimately, I explain how ectogenesis technology may provide an innovative solution to this dilemma that preserves the voluntarist's desirable account of parenthood.

As Brake explains, compensatory costs are moral obligations that are owed as rectification for some harm. With respect to children, this requires parents to provide children with the basic necessities of life, the absence of which would otherwise result in some harm to the child. But understanding parental obligations as compensatory costs does not seem to capture the more robust moral obligations that children are normally thought to be owed by their parents. As Brake argues, "contemporary parental obligations are extraordinarily weighty in duration and scope" and normally require parents to provide more than the bare minimum necessary for their child's survival (p 160). Given that our social and legal institutions seem to support more robust parental obligations than what is accounted for by compensatory costs, Brake contends that parenthood is best construed as a role responsibility. However, I would argue that the same can be said with respect to gestational motherhood. Pregnant women are not merely expected to provide the bare

minimum necessary to keep the developing fetus alive until birth. Rather, a pregnant woman is expected to set up prenatal appointments, arrange for the appropriate prenatal tests, take prenatal vitamins along with making other modifications to her diet and daily routine, educate herself by taking childbirth classes, refrain from dangerous habits like drinking alcohol and smoking, and so on. Even legally speaking, pregnant women may stand to suffer criminal prosecution for fetal endangerment in virtue of jeopardizing the health of the fetus. I propose that insofar as the moral obligations of gestational motherhood appear to exceed compensatory costs, it would seem to follow that gestational motherhood should be characterized as a role obligation.

This conclusion is further supported by taking into consideration a second difference between compensatory costs and role obligations; the former can be contracted out, while the latter cannot. As Brake explains, “direct performance” is required in order carry out one’s role obligations, and if an individual is incapable, the role obligations must be “transferred away” (p 161). With respect to parenthood, this means that parents are required to carry out their special obligations to their children, and if they are unable, they must surrender their child to adoption so that their parental obligations may be transferred to capable individuals. When parental obligations are transferred away, procreators no longer retain any parental rights. In contrast, obligations that are contracted-out allow the contractor to ultimately maintain parental rights. Now consider how this applies in the context of gestational motherhood. During pregnancy, the gestational mother is in a unique position (**p 325**) to care for the developing fetus, which necessitates her direct performance of these obligations. This would seem to suggest that gestational motherhood is a role obligation rather than a compensatory cost. I anticipate some might point to surrogacy as an example of how the obligations of gestational motherhood can be contracted out. However, I am inclined to say that this is rather an example of the mother’s obligations being transferred away,

which may partly explain why surrogacy is such a controversial practice and presents problematic cases for the assignment of parental rights.

At this point, it should be clear that the voluntarist's definition of role obligations can plausibly be extended to include gestational motherhood. But if this is the case, it would seem to follow that a necessary condition for acquiring the role obligations of gestational motherhood should be making a voluntary decision to undertake them. In cases of unintentional pregnancy women should, at the very least, tacitly accept their role obligations. But as I discussed earlier, tacit acceptance requires exit options in order to be viable. The problem is that women often lack sufficient exit options for pregnancy.

Importantly, limited reproductive options present a dilemma for the voluntarist account. If the role of gestational motherhood is sometimes involuntarily undertaken, then the voluntarist account is effectively undermined because it can no longer maintain that voluntary acceptance is a necessary condition for acquiring role obligations. Alternatively, if the role of gestational motherhood is not voluntarily undertaken (and instead defaults to some more minimal moral obligation like compensatory costs) but *ought to have been* voluntarily undertaken, then the voluntarist account would become a normatively desirable, rather than a descriptive, account of parents' moral obligations. The first horn of the dilemma is problematic because we lose the implication of willing parents and appear to default back to something like the causal account. The second horn of the dilemma is problematic because if the voluntarist account turns out to be normative, then it would no longer be interesting. After all, one would be hard-pressed to find a person who denies that all parents should ideally be willing parents.

That being said, I maintain that making ectogenesis technology a widely-available reproductive option would allow women to become willing gestational mothers.<sup>ii</sup> Since ectogenesis technology may be developed in distinct ways, it is important to note the difference between ‘partial’ and ‘full’ ectogenesis technology as well as to clarify which version is required for my proposal. To begin, partial ectogenesis refers to the possibility of removing a fetus from the female body followed by a transfer to an artificial womb to finish gestating. As such, it is assumed that a reliably safe procedure for fetal extraction has been developed to be utilized in combination with artificial womb technology. An advantage of partial ectogenesis is that it offers pregnant women facing health complications an opportunity to opt-out of pregnancy while preserving the life of the fetus. This is significant in cases where the mother is no longer capable of undergoing pregnancy but still wishes to become a parent. Another advantage of partial ectogenesis is that it offers women, for whom pregnancy and/or parenthood is unwanted, an avenue to opt-out of pregnancy outside of abortion. This is significant insofar as abortion procedures may be unavailable or unwanted, in which case ectogenesis is the only remaining option for women to avoid being coerced into bearing a child. Additionally, partial ectogenesis may result in an increase in the number of children surrendered to adoption. To be reminded, there are a substantial number of prospective parents waiting to adopt a child. Part of the explanation for this is that so few women ultimately decide to surrender a child to adoption. Even among women who are unintentionally pregnant, less than 1% will opt to surrender the child to adoption.<sup>17</sup>

Aside from creating another avenue for surrendering a child to adoption, partial ectogenesis may also positively impact how women perceive the option of surrendering a child to adoption.

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<sup>ii</sup> For the purpose of this paper, I will set aside issues concerning the feasibility of ectogenesis in terms of costs to the medical system.

As a woman advances through the stages of pregnancy, her condition becomes progressively more visible. As a result, a woman's reproductive decision may shift from a private matter to an increasingly public affair. Thus, a woman faces increasing social pressures that may effectively constrain her decision. For example, a woman may face pressures to become a parent from loved ones, a religious community, physicians, and so forth. But with partial ectogenesis available, a woman can opt-out of gestational motherhood, and hence parenthood, during the early stages pregnancy when her decision is less burdened by social pressures. The ability to opt-out of the early stages of pregnancy is also significant because mothers may no longer feel like they stand to lose a significant investment by surrendering a child to adoption, which might otherwise serve to over-determine the woman's decision to become a parent.

One question that is a matter for debate is whether the availability of partial ectogenesis has ramifications for the permissibility of abortion. Another question that arises is whether the father, or some other individuals interested in becoming prospective parents, may override a woman's decision to get an abortion and instead require that she undergo a relevantly similar fetal extraction procedure. Since non-invasive medicated abortions work up until 10 weeks of gestation, I am skeptical that a surgically invasive fetal extraction procedure could be considered relevantly similar in this particular context. That being said, there remains an open question of whether fetal extraction procedure should accompany, or altogether replace, surgical abortion procedures.

Moving on to the other version of ectogenesis technology, 'full' ectogenesis refers to the possibility of a fetus beginning, and completing, gestation in an artificial womb, entirely unescorted by the female body. As such, it is assumed that IVF technology is available to be utilized in combination with artificial womb technology. A unique advantage of full ectogenesis technology is that it would offer a means for some biologically, and socially, infertile couples to

have a genetically-related child that they are, at present, incapable of having. In particular, full ectogenesis would allow controversial surrogacy practices to be completely side-stepped. Another unique advantage of full ectogenesis is that it offers women an opportunity to have a genetically-related child without undergoing pregnancy. This would mark a significant step towards making procreation more gender-egalitarian, as a woman may finally form a desire to become a parent to a genetically-related child that does not constitutively require her to form a desire to be pregnant; a possibility that is, at present, solely reserved for her male counterparts.

Given that partial ectogenesis assumes a fetal extraction procedure is available, the advantages, and concerns, raised by partial ectogenesis are not necessarily implied by full ectogenesis. As a result, partial ectogenesis is required to offer women **(p 326)** the opportunity to opt-out of an unintentional pregnancy, and hence, parental obligations. While I believe that both partial and full ectogenesis should be available reproductive technologies, for the purposes of this paper I maintain that, at the very least, partial ectogenesis must be a widely-available reproductive option to ensure women voluntarily undertake the role-responsibilities of gestational motherhood and/or parenthood.

#### IV. Objections and Responses

At this point, I would like to consider three objections to my proposal and offer responses. First, if gestational motherhood involves role-responsibilities, then it would seem to follow that contracting out these obligations to an artificial womb would incur a moral cost. As Brake explains, it matters morally that the role holder fulfills the obligations herself. Hence, the voluntarist can distinguish between the ideal scenario where parents fulfill the obligations themselves, and a “faute de mieux” arrangement where parental obligations are carried out by another party; both cases

might be ways of fulfilling the obligations, but the former is paradigmatic while the latter is not (p 168).

In order to determine if there is a moral cost associated with using ectogenesis, it must first be decided if ectogenesis is a case of contracting out obligations or transferring away the gestational parent role. To be reminded, contracting out obligations involves a moral cost that transferring obligations is not thought to have. The extent to which ectogenesis technology can reliably provide the optimum conditions for gestation will help determine whether it is capable of fulfilling the robust, parental role obligations or merely satisfying the compensatory costs. If the optimum conditions for gestation include care, construed in terms of love, then ectogenesis may be capable of only fulfilling compensatory costs. If this is the case, then there may in fact be a moral cost associated with opting to use ectogenesis technology, but this cost may ultimately be outweighed by the benefits afforded by this technology.

Second, some might object that I have overstated the importance of making ectogenesis widely available by assuming that women would be willing to utilize it. I have in mind here a position like that of Leslie Cannold who argues that even when women are opposed to abortion they are unlikely to welcome artificial gestation through ectogenesis since they would perceive such a choice as involving an abdication of maternal responsibilities to gestate, and rear, the child.<sup>18</sup> Alternatively, for women in favor of abortion, Cannold states that “what women intend in choosing abortion is not only to terminate their *pregnancy*, but to end *the life of the fetus*” (p 60). In brief, the issue is that predicting women’s use of ectogenesis reveals a deep misunderstanding of the moral considerations underlying women’s reproductive decisions. Perhaps women’s reported reluctance to use ectogenesis may reflect the previously stated concern that contracting-out obligations incurs a moral cost, or perhaps it simply reflects a general feeling that such

technology is unnatural. Either way, objectors may maintain that the ability to opt-out of pregnancy using ectogenesis is unlikely to secure reproductive freedom and thus voluntary undertakings of parenthood.

In response to Cannold's consideration, the attitudes she reports among women may be contingent on the current social and legal conventions that expect women to pay the procreative costs of pregnancy. But if parental obligations were no longer assigned on the basis of some causal feature of procreation, then perhaps women's attitudes towards ectogenesis would change. But even if most women feel as Cannold supposes, such that only a few women would use this technology after it was made available, I think the value of protecting women from becoming involuntary gestational mothers would be sufficient to justify making this reproductive option available despite its unpopularity. Moreover, I believe we should express caution before fully endorsing Cannold's empirically-based evidence in the context of assessing emerging technologies. When IVF was first introduced, there was widespread concern and fear about the potential harms and negative impacts of this technology. Though in hindsight it is clear that these speculations about IVF being inhumane were overblown. This is not to say that there are no potential moral costs of using ectogenesis that ought to be considered. Rather, whichever costs are tied to ectogenesis must be weighed against the potential benefits of this technology before a final judgment about the permissibility of this technology can be reached.

The final objection I would like to consider is whether my proposal is undermined if it is assumed that completely effective birth control is available. With studies concerning male birth control already showing signs of success, it may well be the case that completely effective birth control will be available by the time ectogenesis technology becomes viable for human use. But while completely effective birth control may lead to a decline in the number of unintended



pregnancies, I maintain that it would not ultimately eliminate instances of unintended pregnancy. Most importantly, we are not licensed to assume that the mere availability of birth control translates to its widespread use. Unless one is imagining a scenario in which people are required to take this new form of birth control, notably akin to the deeply problematic sterilization practices that have taken place throughout history, then there is insufficient reason to expect the rate of unintentional pregnancy to drastically change. Moreover, it seems that even if a couple intentionally engages in sexual intercourse resulting in a pregnancy, it is possible that these prospective parents may change their mind, perhaps owing to a change in circumstances. Additionally, there would still exist cases where complications with pregnancy require a woman to choose between continuing the pregnancy despite the significant risks posed to her health, or discontinuing the pregnancy by opting for an abortion. In both instances, it would still be the case that ectogenesis must be available lest women be forced to undergo an unwanted pregnancy. Furthermore, completely effective birth control, unlike ectogenesis, would not secure a more gender egalitarian picture of procreation where a woman's desire to be a parent to a genetically related child is no longer assumed to include a desire to undergo pregnancy.

## V. Willing Mothers

The current trajectory for the research and development of ARTs, most notably including the possibility of ectogenesis, will likely end up overturning the 'brute facts' of procreation. This is significant insofar as procreation is commonly understood to provide a legitimate basis for acquiring parental rights and responsibilities. In turn, it seems prudent to investigate whether an account of parenthood can be offered that is immune to the imminent technological mediation of procreation. The voluntarist account, by focusing on procreators' agency, seems like the best candidate. However, as I have argued, the voluntarist account mistakenly presumes a patriarchal

divide between procreation and parenthood and subsequently fails to acknowledge how gestational motherhood simultaneously subjects women to procreative and parental obligations. After demonstrating how gestational motherhood appears to involve role-responsibilities normally associated with parenthood, I explain how the voluntarist account is faced with a dilemma. In order to escape the dilemma and (p 327) preserve the voluntarist's desirable account of parenthood, I have proposed that ectogenesis technology should be a widely-available reproductive option. If it were to be made available, women would be able to voluntarily undertake the role of gestational motherhood. Thus, all gestational mothers would be, by definition, *willing* mothers.

This social arrangement would be straightforwardly desirable insofar as it is normally thought that obligations being fulfilled willingly is to be preferred over obligations being fulfilled unwillingly. But there are additional reasons to think that this social arrangement is ultimately desirable. To be reminded, ectogenesis technology is currently being researched with the aim of improving neonatal care. But the high rates of neonatal mortality and morbidity that warrant such research may actually be a symptom of a deeper problem. In 2006, it was estimated that nearly half of pregnancies in the United States were unintentional, which amounts to roughly three million women.<sup>17</sup> In comparison, it was estimated in 2017 that roughly 22,000 infants died less than a year after birth.<sup>19</sup> Thus, it seems reasonable to conclude that the alarming rate of unintended pregnancy far outpaces the problem of fetal mortality and morbidity. Moreover, research has shown that fetal outcomes, including birthweight and cognitive development, can be affected by whether the pregnancy was considered intentional or not.<sup>20</sup> Hence, it could be argued that involuntarily gestational motherhood is a root cause of fetal mortality and morbidity, and that developing ectogenesis for the purposes of neonatal care would only be addressing the outcome. This is not to say that other mitigating factors may produce the same outcome, although an *efficient* strategy for

addressing this problem concerning neonatal viability would address the root cause prior to these other mitigating factors.

Additionally, the social arrangement I have proposed ought to be preferred given that the social and legal expectations of gestational mothers appear to be in conflict with the moral basis of parenthood. If the role of gestational motherhood ought to be acquired voluntarily, but present conditions do not allow for this, then pregnant women should not be expected, nor legally required, to fulfill these robust role obligations. Unfortunately, current practices in some states allow for maternal policing and the criminalization of pregnancy which have been shown to be counterproductive measures.<sup>21</sup> If we do not make ectogenesis a widely available reproductive option, then our social and legal expectations should be scaled back to reflect the compensatory costs gestational mothers can legitimately be expected to pay. Assuming most would find this scaling-back of gestational mothers' obligations to be objectionable, the only attractive option that remains would be to pursue ectogenesis technology as a reproductive option.

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- <sup>1</sup> Partridge E, Davey M, Hornick M, *et al.* An extra-uterine system to physiologically support the extreme premature lamb. *Nat Commun* 2017;8(1):1-15.
- <sup>2</sup> Firestone S. *The dialectic of sex: the case for feminist revolution*. New York: Morrow 1970.
- <sup>3</sup> Kendal E. The perfect womb: promoting equality of (fetal) opportunity. *Journal of Bioethical Inquiry* 2017;14(2):185-94.
- <sup>4</sup> Overall C. Rethinking abortion, ectogenesis, and fetal death. *Journal of Social Philosophy* 2015;46(1):126-40.
- <sup>5</sup> Hall B. The origin of parental rights. *Public Aff Q* 1999;13(1):73-82.
- <sup>6</sup> van IJzendoorn MH, Euser EM, Prinzie P, *et al.* Elevated risk of child maltreatment in families with stepparents but not with adoptive parents. *Child Maltreat* 2009;14(4):369-75.
- <sup>7</sup> Liao SM. Biological parenting as a human right. *J Moral Philos* 2016;13(6):652-68.
- <sup>8</sup> Moschella M. *To whom do children belong: parental rights, civic education, and children's autonomy*, Cambridge: Cambridge University Press, 2016.
- <sup>9</sup> Velleman D. Family history. *Philosophical Papers* 2005;34(3):357-78.
- <sup>10</sup> Silver LM. Confused meanings of life, genes, and parents. *Studies in History and Philosophy of Science Part C* 2001;32(4):647-61.
- <sup>11</sup> Zhang J, Liu H, Luo S, *et al.* Live birth derived from oocyte spindle transfer to prevent mitochondrial disease. *Repro BioMed Online* 2017;34(4):361-68.
- <sup>12</sup> Gheaus A. The right to parent one's biological baby\*. *J Polit Philos* 2012;20(4):432-55.
- <sup>13</sup> Liao SM. *The right to be loved*. New York: Oxford University Press, 2015.
- <sup>14</sup> Millum J. How Do We Acquire Parental Rights? *Soc Theory Pract* 2010;36(1):112-32.
- <sup>15</sup> Blustein, J. *Parents and children: the ethics of the family*. New York: Oxford University Press, 1982.
- <sup>16</sup> Brake E. Willing parents: a voluntarist account of parental role obligations. In: Archard D, Benatar D, eds *Procreation and parenthood: the ethics of bearing and rearing children*. New York: Oxford University Press, 2010.
- <sup>17</sup> Finer LB, Zolna MR. Unintended pregnancy in the united states: incidence and disparities, 2006. *Contraception* 2011;84(5):478-85.
- <sup>18</sup> Cannold L. Women, ectogenesis, and ethical theory. *J Appl Philos* 1995;12(1):55-64.
- <sup>19</sup> Murphy SL, Xu JQ, Kochanek KD, *et al.* Mortality in the United States, 2017. NCHS Data Brief, no 328. Hyattsville, MD: National Center for Health Statistics, 2018.
- <sup>20</sup> Institute of Medicine (US) Committee on Unintended Pregnancy. Consequences of unintended pregnancy. In: Brown SS, Eisenberg L, eds. *The best intentions: unintended pregnancy and the well-being of children and families*. Washington (DC): National Academies Press (US), 1995.
- <sup>21</sup> Goodwin M. How the criminalization of pregnancy robs women of reproductive autonomy. *Hastings Cent Rep* 2017;47;519-27.