Special Section: Open Forum

In Defense of Ectogenesis

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In his article ''Research Priorities and the Future of Pregnancy'' in this issue of *CQ*, Timothy Murphy evaluates some of the arguments I advanced in an earlier publication, ''The Moral Imperative for Ectogenesis.'' In this reply to Murphy's article, I acknowledge some of his points and seek to show why some of his objections are not as powerful as he thinks. I start here by summarizing the argument put forward in my original article.

Pregnancy is a condition that causes pain and suffering, and that affects only women. The fact that men do not have to go through pregnancy to have a genetically related child, whereas women do, is a natural inequality. Ronald Dworkin argues that natural inequalities are candidates for redistributive justice. Dworkin recommends a veil-of-ignorance technique for describing which inequalities might be ''insured'' against, that is, which medical treatments should be funded. I suggest that there is a strong case for prioritizing research into ectogenesis as an alternative to pregnancy. I conclude by asking the reader the following: if you did not know whether you would be a man or a woman, would you prefer to be born into Society A, in which women bear all the burdens and risks of pregnancy, or Society B, in which ectogenesis[1] has been perfected.

Murphy raises the following broad objections:

1) There are conditions that cause greater pain and suffering than pregnancy, so these other conditions would supersede pregnancy in the hierarchy of research priorities.
2) Ectogenesis would be risky for offspring.
3) Ectogenesis would not resolve all the inequalities that exist between men and women, nor would it resolve socioeconomic inequalities between women.
4) The advantages men have in reproductive matters could be offset through social/financial measures, for example, taxation, rather than ectogenesis.

Pain and Suffering

Murphy observes that in my original paper, I emphasize the physical impact of pregnancy and childbirth on women's bodies. I focused on this to make the point that pregnancy could be construed as a medical problem, along with other conditions that cause pain and suffering. But I do not claim that the physical risks and burdens of pregnancy alone are sufficient to show that ExCG should be prioritized. I argue that this is just enough to show why ExCG has a prima facie claim to be considered among other conditions that cause pain and suffering. There are three factors that I take to be significant for decisionmakers behind the

Cambridge Quarterly of Healthcare Ethics (2012), **21**, 90–103.

doi:10.1017/S0963180111000521

veil of ignorance. In addition to the consideration of pain and/or suffering, there is the question of justice: women are disadvantaged as a group through brute luck, because men can reproduce without undergoing the risks of pregnancy. There is also the issue of probability. Around 50 percent of the population is susceptible to these reproductive risks. Decisionmakers from behind the veil of ignorance might reasonably prioritize remedies for conditions that they are likely to suffer from, that arise from brute luck, and that cause pain and suffering. It is in conjunction that these three factors can be taken to argue for ExCG.[2]

Murphy addresses these considerations separately in his critique of my argument. In splitting off the issue of pain and suffering from the question of justice, he persuades himself that neither in isolation is sufficient to justify the prioritization of ExCG research. This separation is a problem, because it fails to address the interrelated nature of the various burdens of pregnancy that constitute part of the argument for ExCG as a "remedy." The physical burdens of pregnancy feed into assumptions about women's roles as mothers, which restrict and thwart women's ability to function as men's equals in society. The sheer numbers of women who undergo pregnancy and childbirth make it hard to see the woods for the trees, as it were. The necessity of women for gestating and nurturing society's children is so entrenched in our consciousness that we fail to recognize that we could change the situation.

Even so, it is worth considering whether Murphy is correct that—considered in isolation—the pain and/or suffering of pregnancy and childbirth do not merit the development of ExCG. Murphy argues that there are worse pains, and greater risks, than those of pregnancy and childbirth. He also claims that "the totality of other diseases and disorders inflicts pain and suffering on women in ways that equal or exceed the ills of pregnancy."[3] This seems unreasonable! Of course, the totality of other diseases and disorders outweighs the ills of pregnancy. The total suffering caused by disease generally would probably outweigh any condition considered in isolation. This does not help in deciding what to prioritize.

What of Murphy's objection that pregnancy and childbirth are not the worst of pains that one can suffer? It is interesting to note that discussions on Internet fora about the "worst pain you have ever experienced" invariably include reference to childbirth. Where childbirth is not placed first, it is often used as a kind of yardstick—if something is worse than childbirth, by implication it is very bad.[4] But I do not think it necessary to establish that pregnancy and childbirth are the most painful experiences a person can have. It is sufficient to establish that they *are* painful, and not merely trivially so. Funding decisions will be made not solely on the basis of pain but taking pain into account along with other factors.

Transience and Manageability

Murphy argues that health problems associated with pregnancy are "recoverable or at least medically manageable."[5] Those who might prioritize treatment for kidney stones from behind the veil of ignorance might not prioritize ExCG because the pain of childbirth, even if comparable to kidney stones, will pass. I am not sure how compelling this is. Many unpleasant illnesses are recoverable. Measles is—usually. Not always, of course, but then neither is pregnancy. The relevance of the fact that something is medically manageable is also questionable. With dialysis, kidney failure is medically manageable, but this does not mean

that this is the best solution. Prosthetics mean that the loss of a limb is "manageable." In most areas of medicine, it is accepted that prevention is better than cure, and that cure is better than management. The fact that incontinence, for example, can be managed with pads does little to reconcile one to the prospect of suffering from it.

What about the death rate? Murphy argues that the risk of death is not significant enough to merit prioritizing ExCG. He observes that "in 2006, in the United States, 760 women died from pregnancy and childbirth." Whereas "tens of thousands of women died from respiratory diseases, liver diseases, and kidney diseases, and many more died from chronic respiratory diseases and accidents."[6] By implication, liver diseases, kidney diseases, and so on, are what we should focus on if we are thinking about reducing death rates. There are a number of issues to raise about Murphy's point here. First, it is widely acknowledged that morbidity and mortality related to pregnancy and childbirth is underreported.[7,8] Second, it is not clear how to interpret the low number of maternal deaths in relation to deaths from other causes. Because every one of us will die of something, it is not surprising that, of the total number of deaths, not all that many result from childbirth. And not all deaths are obviously avoidable through a single medical intervention; for example, suicide and traffic accidents figure surprisingly highly in death statistics.[9]

It might be more useful to consider the risk of dying in pregnancy and compare that with figures on, for example, the risk of dying from other transient diseases. World Health Organization figures indicate that "in sub-Saharan Africa, 1 in 16 women have the risk of dying during pregnancy or childbirth over a lifetime, compared with about 1 in 2800 women in the rich world."[10] Murphy makes separate points about the risks of childbirth in the developing world, so I concentrate here on the figures for the "rich" world.

If there were a disease that caused symptoms and risks similar to those caused by pregnancy, I contend that it would be regarded as being fairly serious, and that we would have good reasons to try to insure against it. It is hard to think of diseases that last a full nine months and end with such a cataclysmic bodily convulsion as pregnancy. Add the risks of morbidity and mortality to that, and it seems clear that pregnancy is a formidable prospect. In the absence of any better comparator, let us compare pregnancy with measles—also a transient disease. Measles lasts less than nine months, and it is—usually—survived with few if any permanent aftereffects. But in the UK, for example, it is a notifiable disease, with 10 percent of cases requiring hospital admission and fatality rates of 1 per 5,000.[11]

Pregnancy compares very unfavorably with this. Almost all pregnant women require some form of hospital treatment, and as shown by the WHO figures, even in the rich world, a woman who becomes pregnant is more likely to die than one who catches measles. Yet for many people, there is a fundamental difference between measles and pregnancy. One of Murphy's objections to my original paper was that I failed to acknowledge the value of pregnancy. Measles may have nothing to recommend it, but perhaps there is some good in pregnancy and/or childbirth.

The Value of Pregnancy: Enjoyment and Preparation

Murphy observes that some women enjoy the experience of being pregnant. I am skeptical about what we can infer from this. Women currently undergo

pregnancy with the knowledge that there is no alternative means of having children. They have no reason to question the value or importance of pregnancy and childbirth independently of the arrival of their child. For my argument to be given a fair hearing, we need to uncouple these phenomena and consider the pains and risks of pregnancy and labor separately from the ''good'' of having a child. This, after all, is the whole point of ExCG.

In any case, the fact that some people enjoy a condition is of questionable significance from behind the veil of ignorance. People can find meaning and value in illness generally. A study of quality of life in young people suffering from congenital heart disease notes that some groups felt they had gained something from their illness.[12] The nature of the gains that people get from pain, disease, or suffering may vary, but it is undeniable that human beings have the capacity to derive value from painful experiences.

What are we to make of the variety of attitudes toward illness, and can we extrapolate directly from some people's enjoyment to a general conclusion about what conditions should be prioritized? I think this is both hasty and risky. It is a central tenet of medical ethics that people can refuse treatment for an illness, even if this results in death. This stems from the recognition that clinical benefit is not all that motivates patients' choices. Some cancer sufferers may find value in suffering or wish to cultivate acceptance or resignation. But this does not demonstrate the ineligibility of cancer for prioritization behind the veil of ignorance, either on a personal or on a population level.

A person who finds value in suffering might still insure against this suffering given the chance. This is neatly illustrated in the context of childbirth by a study of women's attitudes to labor. Some women attached value to childbirth pains. But the majority of women, including most of those who thought labor pains good, believed that they should be relieved if possible.[13]

Murphy's suggestion that pregnancy prepares women for motherhood in some way—perhaps emotionally—is also problematic. It implies that fathers necessarily lack some essential component of preparedness, and that adoptive parents are also fundamentally unprepared. In fact, everyone around the child—grandparents, aunts, uncles, siblings, child minders, and nursery and medical staff—are unprepared and, by implication, unfit to care for it. Murphy would have it that gestational mothers are the only people who are prepared to care for children. This assumption feeds into a kind of maternal exceptionalism that is very common but that is not without its critics. Why is it that caregivers have to be mothers, or have to have gestated the children they care for? This simultaneously overvalues the importance of women qua mothers and invests motherhood with excessive responsibility. If none but gestational mothers are capable of caring for a child, this leaves the mother isolated, carrying a very heavy burden indeed.

The philosopher Amy Mullin argues persuasively that children can be, and are, cared for by a variety of people. To fixate on gestational mothers as carers is to denigrate the participation of fathers, aunts, friends, babysitters, teachers, medical staff, and the myriads of other people who contribute to the care of a child.[14] Following from Mullin's point, it is not clear that a gestational mother must or should be the primary carer for a young child. If she is right about this, then the necessity of gestation to prepare women for mothering is questionable.

In fact, pregnancy and childbirth, so far from being essential to guarantee motherly bonding, can impede women's ability to care for their children. Mullin's own

pregnancies were characterized by hyperemesis (essentially, nonstop vomiting), requiring her to be fed through a nasal tube. The vomiting may cease once the child is born, but caring for one's existing children while in this state is more or less impossible, and Mullin notes with gratitude the fact that her own family was supported by a variety of friends, relatives, and carers.[15]

Murphy is not clear about the definition of the better preparedness that pregnancy and childbirth entail, or how to measure it. Is it gauged by how the parent feels, or by how well the child is cared for? I can find no evidence that gestational mothers are better prepared (whatever this might mean) than other mothers. Indeed, a study comparing experiences between biological, step-, and adoptive parents notes that

> although marked by society as a generally glorious life event, research indicates that the birth of a child presents many new parents with a potentially difficult and complicated adjustment period. The transition to parenthood has been widely studied, and the array of negative individual and relational outcomes following the birth of a first child is one of the most consistent findings reported in the literature.[16]

The authors conclude that "the experience of becoming an adoptive parent or a stepparent may be less stressful than the adjustment to biological parenthood."[17]

In my original article I argued that gestation is neither necessary nor sufficient to guarantee parental bonding and can in fact be detrimental to it. Murphy is skeptical about this but does not supply any conclusive argument against it. I therefore reiterate this point. Gestation is neither necessary nor sufficient to guarantee parental bonding and can actually impede mothers' ability to care for their children. Moreover, because children are not raised solely by gestational or genetic mothers, the value of pregnancy cannot be established simply by asserting that it prepares women for motherhood.

Suffering

Murphy takes issue with the conflation of pain and suffering in my original article. He argues that pain and suffering are different in important ways: "suffering involves psychological experiences that are dislocating in profound ways, usually in ways that disrupt an expected future."[18] For Murphy, addressing suffering might be more important than remedying pain from behind the veil of ignorance. I acknowledge that I used the terms "pain" and "suffering" loosely. There are differences between them that could be significant from behind the veil of ignorance. Murphy believes that pregnant women *may* suffer but thinks this is dependent on factors external to the pregnancy itself—especially whether it is planned or wanted. He states: "A woman might not know where the pregnancy will lead, and psychological worries (even despair) may profoundly diminish her life." But even so, "the noxious elements of pregnancy do not usually trigger the suffering sense of a profoundly altered future, in which a woman is beset in her very identity."[19] I would certainly disagree with this. Women's identities *are* profoundly changed by becoming mothers.[20,21] Whether or not she wishes to have a child, a woman may find the experience of pregnancy and childbirth so painful, frightening, humiliating, or dangerous that it overwhelms any anticipated joy. Postnatal depression, for example, is a relatively common problem and could surely be said to "beset a woman in her very identity," as Murphy puts it.[22,23]

Murphy assumes there is a neat distinction between wanted and unwanted pregnancies. The former will cause pain but not suffering. The latter may cause suffering as well. In reality, many pregnancies come about through failure *not* to get pregnant. That is, they are not planned, and their wantedness may depend on a variety of factors.[24] Thus, many pregnancies are conditionally wanted. Women may hope for a "perfect" baby free from disease or disability. Once pregnant, there is little they can do but wait to see whether their hopes will be fulfilled. Pregnant women undergo a battery of tests and procedures that can be profoundly unsettling.[25,26] Adverse results revealed through monitoring and surveillance can cause significant suffering, anxiety, and stress,[27] and this is exactly the sort of thing that may trigger the "suffering sense of a profoundly altered future."[28] Therefore, the crisp distinction between the harrowing unwanted pregnancy and the joyous planned pregnancy falls apart. Elements of both are present in many pregnancies, and women may be ambivalent.

Murphy's focus on the future is interesting. Pregnancy results in a profoundly altered present. Why is it that immediate experiences are to be discounted? When one considers what is involved, it is obvious that the experience of pregnancy is dislocating, identity changing, and profoundly future altering. Take, for example, the feeling of something growing inside you, the sensation of its movements, the altered way in which you are treated by friends and strangers, and the physical awkwardness and mental uncertainty. Mullin observes there is a tendency to neglect the immediate impact and import of pregnancy on women's lives,[29] and Murphy's approach seems to bear this out. This willingness to dismiss the immediate experience of pregnancy is odd, considering that other diseases whose pain and suffering is transient (e.g., measles or kidney stones) are evaluated not just on the basis of future outcomes but largely on the immediate experiences of the sufferer during the time that they are affected.

Finally, Murphy should consider how easy it is for women to admit that a pregnancy that comes to term is *not* an unalloyed pleasure. There is heavy pressure on women to conform to the expectation that the burdens and sacrifices of motherhood are accepted unhesitatingly and without regret. We seldom hear a woman admit she regrets becoming a mother, but that may be because our society is not constructed in such a way that allows women to acknowledge such feelings—perhaps even to themselves.

Suffering as a Means to Achieving a Goal

Many of the counterexamples Murphy puts forward are designed to illustrate the relative insignificance of the pain/suffering of pregnancy as compared to, for example, motor neurone disease or Alzheimer's. These diseases are terrible and people would probably insure against them, whereas because in Murphy's view pregnancy is less terrible, people would not insure against it. But there is something fundamental missing here. The hope of avoiding motor neurone disease or Alzheimer's is fairly uncomplicated. But although one might wish to be spared pregnancy and childbirth, they are currently the only means of achieving a highly valued end.

Suppose that, for men, genital warts were an inexorable part of each act of sexual intercourse. That is, they simply could not have sex at all without suffering from this disease. How should we deal with such a situation from behind the veil of

ignorance? The first move would be to question the value of the good that comes at this price. If the goal has an overriding value, then finding a way of achieving it without suffering the disease becomes imperative. This outweighs much of the apparent triviality of the condition itself. It is for this reason that Murphy's examples of motor neurone disease and Alzheimers fail to do the work he expects of them. The risks and pains of pregnancy and childbirth have a higher priority than some other conditions specifically because they are currently a necessary part of having children. And children are regarded as a good that we cannot forego.

To conclude this section, Murphy is right that pregnancy and childbirth are not necessarily the most painful or the riskiest of ills that affect human beings. Yet this was not my original contention. All I sought to establish was that pregnancy and childbirth do cause pain and suffering, and this may be comparable to other medical conditions that we view as being straightforwardly to be avoided. I now turn my attention to another of Murphy's objections: the risky and experimental nature of ExCG.

Risks and Research

Murphy accepts that Society B, in which ExCG is perfected, is preferable to Society A, which relies on "traditional" reproduction. What stands between Society A and Society B is research. Because Society B is morally preferable, we have at least a prima facie reason to conduct the research that would help us to get there. But Murphy argues that "priority should be given to helping women around the world who would benefit from better healthcare while pregnant now rather than researching initiatives that will benefit women who will exist in the future."[30] This argument is very far reaching: it could be taken to preclude research into any condition that people currently suffer, for example, cancer. I cannot in this article go deeply into the issue of what proportion of resources should be diverted to research as opposed to meeting existing needs. But if we accept that some research is permissible, the fact that we are diverting funds away from people who are currently suffering to focus on future needs does not show why ExCG in particular should be excluded.

However, Murphy raises a further concern about the risks involved in developing ExCG. In my original article, I asked: if you did not know whether you would be a man or woman, would you prefer to be born into a society where ExCG has been perfected, or one where women bear all the risks and pains of gestation and childbirth?[31] Murphy objects that this presents ectogenesis "as something that occurs without any kind of risk or cost, not even to children born that way."[32] In real life, the development of ExCG would involve experiments and uncertainty. Between the theoretical possibility of ExCG and the actuality of perfected ExCG, there might be a trail of failed experiments, of damaged or dead embryos, fetuses, babies, and children.

In my original article, I did not discuss risks to offspring born through ExCG. But I will take up the gauntlet that Murphy has thrown down here. I suggest ExCG does not have to be perfect. After all, pregnancy is not perfect either. It is risky and traumatic for women and babies; some are injured during birth, and some die.[33] There are some benefits to nonvaginal births.[34,35] Similarly, there may also may be benefits to nonuterine gestation, for offspring as well as for mothers. The uterine environment itself can be detrimental to a fetus' well-being.

The mother's diet, exercise, state of stress, and so on, all have the capacity to damage the developing fetus.[36] In fact, the more we discover about fetal well-being in utero, the more perilous it begins to look.

If any course of research is to be pursued, there will be developmental phases. No one will know for sure how the first ExCG baby will be affected. Is it unacceptable to impose risks on children by using novel or experimental techniques? This seems to be Murphy's view. And he is not alone in believing this. Leon Kass, for example, objects to reproductive cloning on the grounds that it is experimental, and therefore unethical.[37] This could apply equally to the use of ExCG, or indeed any other reproductive innovation.

Kass believes that experimenting in itself is intrinsically unethical. Others would object only if there is a risk of harm.[38] In Murphy's case, it is not clear whether he objects to ExCG solely on the basis of the harm it might cause or if, like Kass, he believes that experiments in this area are intrinsically unacceptable. In either case, I think the objection is flawed. For Kass, consent is a key issue: experimental procedures that affect children are wrong because they are imposed on people who cannot consent. However, this seems to go too far. None of us can consent to whether we are born, or the means of our conception. Perhaps one might argue that there are some things that by definition could not be consented to (e.g., to be a slave). But it is not clear that ExCG fulfills this criterion. And on Kass's view, the first use of analgesics, forceps, epidurals, birthing pools, ultrasound, and caesarean sections would all be unethical. Likewise preimplantation and prenatal testing and IVF.

The more moderate requirement not to engage in activities that could harm babies is initially more attractive but on closer inspection is also implausibly restrictive. It is not clear why we should focus on birth and gestation. Even if a woman is not currently pregnant, any of her actions may have deleterious effects on her future children. Perhaps we should restrict ourselves not to women at all but to the rest of society. Any change in medical practice may at some stage harm a child; changes to the materials we build with, the energy we use, the means of food production and preparation—all these things may affect babies in ways that cause harm. It is peculiar to fix on conception, gestation, and birth as the sole area of moral concern when our entire lives are fraught with risks and uncertainties that affect not just our own children but those of other people.

Imposing risks on offspring is highly morally charged, and my suggestion that it does not *automatically* rule out ExCG may be controversial. Surely there are instances in which there is something wrong about reckless risk taking or experimentation. It might indicate a vicious disposition. Someone who wished to reproduce in an experimental way for the sake of mere novelty might not represent the ideal of a responsible parent. While acknowledging that some parents' motivations and dispositions may be worse than others, I think it is a mistake to assume that the use of an experimental technology necessarily indicates a bad, selfish, or reckless disposition. Even if it did, this is not a sufficient reason to exclude ExCG from consideration behind the veil of ignorance. The veil of ignorance is not designed to enforce virtuous choices. There may be virtue-based ethical arguments against ExCG, but they have no specific bearing on my discussion here. The most we can expect of veil-of-ignorance decisions is that they will be less self-interested than they would if we knew in advance what we would suffer from.

But there is a high degree of self-interest in arguing for procedures whose risks fall entirely on one group and whose benefits are reaped entirely by a different group. The risks of ExCG appear to fall on embryos and potential children conceived this way, while women apparently reap all its benefits. This is precisely the kind of thing I object to in our current reproductive situation (men reap all the benefits of women's gestation, while women bear the risks and burdens). Is ExCG no better than the status quo?

Assimilating Risks from behind the Veil of Ignorance

Suppose from behind the veil of ignorance we had no way of knowing at what stage we would enter society. One might be an octogenarian or an embryo or fetus. This casts a different light on the kind of risks one might be willing to accept or to impose on babies and fetuses. From behind the veil of ignorance, would one agree to be born into a society in which experimental procedures were being undertaken, and by which one might be harmed? If ExCG were likely to cause appalling disorders and diseases, perhaps no one would prioritize it, because the risk of being one of the damaged fetuses might be too high. If so, Murphy's concern about risk might seem to be vindicated. Does this mean the prospect of ExCG is a dead end? I am not convinced it does. Let us think about the question of abortion in the same way. Abortion involves more than risk to fetuses: it involves their death. What status should abortion have from behind the veil of ignorance?

A woman with an unwanted pregnancy might benefit from the availability of abortion. But an unwanted fetus would not. Would abortion be excluded from veil-of-ignorance deliberations on these grounds? This is an interesting dimension to the abortion debate. Anyone who supports access to abortion but would not be able to prioritize it in this way from behind the veil of ignorance should question the moral reasons for their position. Abortion would be considered seriously by decisionmakers who prefer to assimilate the risk of lost opportunities at an embryonic/fetal stage rather than those lost at a later stage as an adult woman, when their import would be felt psychologically, socially, and physically as well as simply physically, as (arguably) in the case of a fetus.

In the case of ExCG, the balance is less stark. We are talking about using ExCG not to end the life of fetuses but to free women from the burdens of gestation and childbirth. As suggested earlier, there might also be benefits in this for fetuses themselves: a more readily manageable environment; easy access for delivery; and immunity from the mother's stress, drug habits, oyster eating, participation in risky sports, and so on. If we were willing to accept the risk of being one of these fetuses or babies in this veil-of-ignorance thought experiment, this would go a long way to vindicating the prioritization of ExCG. And self-interest would function as a kind of internal constraint on reckless or wanton experimentation: anything grotesquely dangerous would be eschewed by decisionmakers seeking to balance their interests as potential parents or fetuses. Of course, it is not evident whether most people would be willing to accept these risks. This is an empirical question that I am not equipped to answer. Nevertheless, I think there are strong reasons for accepting it. I now consider another of Murphy's objections to ExCG: its relationship with justice and gender equity.

Justice and Equity

Murphy argues that "research into ExCG in the name of gender equality would take priority only to the extent that other gender inequalities are not worse."[39] There are many things that adversely affect women: they are weaker than men, and their physical differences from men, as objects of sexual desire, and their capacity to conceive and have children are sometimes exploited and commodified by those who are stronger and who wish to profit from them. In any social group, the dis-benefits of being a woman cut across other categories. Whether you are white or black, rich or poor, American or Algerian, if you are a woman, you will be worse off than your male peers. Perhaps not all the dis-benefits of being a woman are attributable to childbearing. But alleviating these burdens would surely help.

Murphy is reluctant to concede that women's reproductive role is a root cause of gender inequality. This leaves us with a pessimistic and depressing picture of inevitability: women must and will be discriminated against simply because they are women, whether or not they gain independence of their reproductive functions and responsibilities. Murphy seems more inclined than I am to view gender injustice as an inexorable fact of life. I argue that it is at least in part contingent on the inability of our society to relieve women of their burden as our species' reproducers. In any case, Murphy's objection is too far reaching. Why should ExCG solve all gender inequalities? For the purpose of my argument, it is sufficient that it offers a solution to the specific inequalities associated with gestation and childbirth. It seems to me implausible that in achieving this, it would not also alleviate other gender inequalities, but this remains peripheral to the argument.

Comparing Risks between Different Groups

Murphy does agree that reproductive risks and burdens are unequally distributed and accepts that there are some reasons for attempting to mitigate some of the disadvantages suffered by women as a result. However, he denies that ExCG is the best approach. He lists five potential ways of tackling the problem:

> (1) bring the risks down for all women to the level faced by women who already enjoy the most advantages, (2) bring the risks down to the level faced by women who have never become pregnant, (3) reduce the risks of pregnancy to the risks of everyday life, (4) contain all risks to women from pregnancy by perfecting medical management for all pregnancy-related conditions, and (5) extinguish any and all risks to women by perfecting methods of ExCG.[40]

It is not clear here why in these options he compares risks only among women. The point of my argument is that the natural reproductive inequality between men and women is a prima facie injustice. Of course there are also injustices between women and women. The risks of pregnancy increase with socioeconomic deprivation, and this is an issue that deeply concerns Murphy. But however much we rejig social and financial arrangements, what cannot be addressed through socioeconomic means is the fact that it *has* to be women who have children, and the fact that being a woman is a matter of brute luck, rather than option luck.

Murphy's insistence that we compare the welfare of different women against each other is puzzling. We might equally compare, for example, the welfare of different cancer sufferers against each other or, indeed, that of sufferers of any disease. The experience of cancer or HIV will be worse if one is poor than if one is rich. But what

follows from this? Perhaps Murphy takes the view that socioeconomic inequalities should automatically have precedence over natural inequalities from behind the veil of ignorance. If he argued this explicitly, it would open a new and interesting angle to the debate. But as it is, he fails to push his reasoning this far. We are left with the hazy impression that he *does* think there are natural inequalities that could be prioritized from behind the veil of ignorance—it is just that pregnancy isn't one of them.

Separating Social and Natural Inequalities

Murphy is reluctant to consider that social injustices should be remedied through medical intervention. For this reason, he separates the physical disadvantages of reproduction from the social disadvantages and argues that they are unconnected. Social inequalities can be tackled through sociopolitical and economic redistribution rather than medical interventions. Let us apply Murphy's arguments to the case of contraception from behind the veil of ignorance. Women are disadvantaged relative to men because they risk becoming pregnant through intercourse. This inequality is a result of brute luck. Access to contraception would thus address the inequalities that result from the inability to control one's fertility. But because we live in unequal societies, inequalities between groups of women would not be addressed by the development of contraception.

Contraception *has* been developed. But, just as Murphy fears in the case of ExCG, contraception is not available to all women, because we live in a world in which inequalities abound. Yet if we had refused to develop contraception because it would not be available to all, this would not have helped those women who currently lack access to it. And for those who do have access, it is utterly unconvincing to argue that social or financial compensation for the burden of repeated pregnancies is a preferable means of redressing the natural/social inequalities involved in uncontrolled fertility. There are many conditions and inequalities that—although perhaps their effects could be ameliorated through provision of financial resources—we nevertheless prefer not to suffer.[41,42]

Murphy's separation of social and natural inequalities is at odds with the whole thrust of Dworkin's arguments. Dworkin explicitly urges the inclusion of natural inequalities among injustices that might merit restitution.[43,44] Because Dworkin does not insist on natural inequalities being "medical disorders," the scope of conditions that merit treatment is broadened.[45] This necessarily involves some degree of social involvement. For example, the fact that one person is attractive while another is not is a prima facie inequality. But is this inequality "natural" or "social"? Is the inequality between a right-handed and a left-handed person natural or social? Is the inequality between men and women natural or social? In all cases I would argue that it is both.

The beauty and strength of Dworkin's approach is his move beyond the limited and narrow view of medical need so that we can consider social and natural values and deficits from within a single framework. Murphy seems reluctant to accept this, which perhaps indicates that it is not my specific argument that he has a problem with, but Dworkin's. This is borne out by his reversion to Rawls.

Rawls, Dworkin, and the Maximin Principle

Murphy argues that we need to return to John Rawls as the originator of the veil-of-ignorance approach to questions of justice.[46] Murphy cites Rawls's difference

principle in the context of ExCG: it is acceptable for some members of society to hold greater advantages than others if:

1) The inequality confers some benefits on the worst off.
2) The advantages are open to all as a matter of equality of opportunity.[47]

Murphy considers that reproductive inequalities could be remedied, or at least ameliorated, through social and financial measures, in ways that satisfy the maximin principle, without resorting to ExCG. But as I argued previously, it is not clear why this would be better than medical restitution. And because Murphy does not argue that financial restitution would be cheaper than ExCG, it seems that he simply has an ideological preference for socioeconomic interventions for problems that—for him—are not really diseases. Moreover, Murphy's socioeconomic solution is problematic. He argues that we could tax men/fathers and use the revenue to redress the balance. But this also seems unjust. It is brute luck to be born a man. And the advantages that pertain to being male do not invariably map directly onto other advantages, such as financial well-being.

Aside from this, Murphy's application of the maximin principle here is flawed. If unequal advantages can be justified, according to Rawls, it is only if there is no particular class of people who are systematically debarred from these advantages simply by virtue of who they are. As Norman Daniels notes, "because democratic equality permits some inequalities and condemns others, it must include a method of determining when groups are equal or unequal in the relevant ways. For Rawls, the relevant inequalities are between the representative members of social groups, such as low-skilled workers or corporate managers, or members of different ethnic or racial groups."[48]

This is what precludes a system such as slavery, which might plausibly benefit a certain group of people very much, and another group a little.[49] The maximin principle is not satisfied by slavery, because the advantages of slave ownership are not open to all. Likewise, in Murphy's application of the maximin principle to reproduction, the advantages are not open to all. Women are systematically debarred from accessing the reproductive advantages that men enjoy. But Murphy does not seem to see women as he does people of different races or socioeconomic classes, as a group that might be disadvantaged solely by virtue of their membership of that group. Or, to use Daniels's terminology, Murphy seems not to regard men and women as being "unequal in relevant ways." This may stem from Murphy's adherence to Rawls, whose approach has been criticized for its failure to address gender injustices satisfactorily.[50]

Conclusion

There is a fundamental and inexorable conflict between the demands of gestation and childbirth and the social values we share as human beings: independence, equality of opportunity, autonomy, education, and career and relationship fulfillment.[51] When women achieve greater power and choice in their societies, they have fewer children and have them later in life. Or they have none. But if our species is to survive, children must be born.

Currently women assume all the risks involved in reproduction, as well as all its burdens. Improvements in maternal/fetal medicine will not solve the problem.

Indeed, they can compound it. Developments in fetal surgery, in which fetuses are operated on through the mother's abdomen;[52] increased prenatal testing and diagnosis; and discoveries about the effects of mothers' behavior on the uterine environment all contribute to the vast pressure and constraint to which pregnant women, and potentially pregnant women, are subjected.

Changes to financial and social structures may improve things marginally, but a better solution needs to be found. Either we view women as baby carriers who must subjugate their other interests to the well-being of their children or we acknowledge that our social values and level of medical expertise are no longer compatible with "natural" reproduction.

Notes

1. Murphy prefers the term "extracorporeal gestation," abbreviated to ExCG. For brevity and clarity I will adhere to his terminology throughout the rest of this article.
2. Smajdor A. The moral imperative for ectogenesis. *Cambridge Quarterly of Healthcare Ethics* 2007;16:336–45.
3. Murphy T. Research priorities and the future of pregnancy. *Cambridge Quarterly of Healthcare Ethics* 2011;21, under the heading "The Case against Pregnancy."
4. See, for example, http://surveycentral.org/survey/16156.html (last accessed 19 Sept 2011).
5. See note 3, Murphy 2011.
6. Ibid., under the heading "The Case against Pregnancy."
7. Hebert PR, Reed G, Entman SS, Mitchel EF, Jr., Berg C, Griffin MR. Serious maternal morbidity after childbirth: Prolonged hospital stays and readmissions. *Obstetrics and Gynecology* 1999;94(6):942–7.
8. Schutte JM, Steegers EAP, Schuitemaker NWE, Santema JG, de Boer K, Pel M, et al. Rise in maternal mortality in the Netherlands. *BJOG: An International Journal of Obstetrics & Gynaecology.* 2010;117(4):399–406.
9. See, e.g., Mathers CD, Lopez AD, Murray CJL. The burden of disease and mortality by condition: Data, methods, and results for 2001. In Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL, eds. *Global burden of disease and risk factors*. Washington DC: The International Bank for Reconstruction and Development/The World Bank. 2006:45–234 (see in particular the table on p.71).
10. See World Health Organisation. *Working for Health: An Introduction to the World Health Organisation*, 2007; available at http://www.who.int/about/brochure_en.pdf (last accessed 6 Mar 2011).
11. National Health Service (unspecified authors). *Measles—Don't Let Your Child Catch It*, 2009; available at http://www.kingstonpct.nhs.uk/Downloads/Publications%20folder/Leaflets/Protect%20your%20child%20against%20measles.pdf (last accessed 6 Mar 2011).
12. Marino BS, Tomlinson RS, Drotar D, Claybon ES, Aguirre A, Ittenbach R, et al. Quality-of-life concerns differ among patients, parents, and medical providers in children and adolescents with congenital and acquired heart disease. *Pediatrics* 2009 Apr;123(4):708–1.
13. Ibach F, Dyer RA, Fawcus S, Dyer SJ. Knowledge and expectations of labour among primigravid women in the public health sector. *South African Medical Journal* 2007;97(6):461–4.
14. Mullin A. *Reconceiving pregnancy and childcare*. Cambridge: Cambridge University Press; 2005.
15. See note 14, Mullin 2005, at 66.
16. Ceballo R, Lansford JE, Abbey A, Stewart AJ. Gaining a child: Comparing the experiences of biological parents, adoptive parents, and stepparents. *Family Relations* 2004;53(1):38–48, at 38.
17. See note 16, Ceballo et al, 2004, at 38.
18. See note 3, Murphy 2011, under the heading "Pain and Suffering."
19. See note 3, Murphy 2011, under the heading "Pain and Suffering."
20. Smajdor A. Between fecklessness and selfishness: Is there a biologically optimal time for motherhood? In: Simonstein F ed. *Reprogen-Ethics and the Future of Gender*. Dordrecht: Springer; 2009.
21. See note 14, Mullin 2005.

22. Petrou S, Cooper P, Murray L, Davidson LL. Economic costs of post-natal depression in a high-risk British cohort. *British Journal of Psychiatry* 2002;181:505–12.
23. Stein A, Gath DH, Bucher J, Bond A, Day A, Cooper PJ. The relationship between post-natal depression and mother–child interaction. *British Journal of Psychiatry* 1991;158:46–52.
24. Lakha F, Glasier A. Unintended pregnancy and use of emergency contraception among a large cohort of women attending for antenatal care or abortion in Scotland. *The Lancet* 2009;368(9549):1782–7.
25. Rothman BK. *The tentative pregnancy: Prenatal diagnosis and the future of motherhood*. London: Unwin and Hyman; 1988.
26. Taylor JS. Image of contradiction: Obstetrical ultrasound in American culture. In: Franklin S, Ragoné H, eds. *Reproducing Reproduction: Kinship, Power, and Technological Innovation*. Philadelphia: University of Pennsylvania Press; 1998.
27. Smajdor A. Ethical challenges in foetal surgery. *Journal of Medical Ethics* 2011;37:88–91.
28. See note 3, Murphy 2011.
29. See note 14, Mullin 2005.
30. See note 3, Murphy 2011, under the heading ''The Case against Pregnancy.''
31. See note 2, Smajdor 2007.
32. See note 3, Murphy 2011, under the heading ''Forcing Choices.''
33. Thorngren-Jerneck K, Herbst A. Perinatal factors associated with cerebral palsy in children born in Sweden. *Obstetrics & Gynecology* 2006;108(6):1499–1505.
34. Gilbert WM, Nesbitt TS, Danielsen B. Childbearing beyond age 40: Pregnancy outcome in 24,032 cases. *Obstetrics & Gynecology* 1999;93(1):9–14.
35. Ecker JL, Frigoletto FD. Cesarean delivery and the risk-benefit calculus. *New England Journal of Medicine* 2007;356:885–8.
36. Talge NM, Neal C, Glover V. Translational research and prevention science network: Fetal and neonatal experience on child and adolescent mental health. Antenatal maternal stress and long-term effects on child neurodevelopment: how and why? *Journal of Child Psychology and Psychiatry* 2007;48(3–4):245–61.
37. Kass L. The wisdom of repugnance. In: Kass L, Wilson JQ, eds. *The Ethics of Human Cloning*. Washington, DC: American Enterprise Institute Press; 1998:3–61.
38. Harris J. *On Cloning*. London: Routledge; 2004:109.
39. See note 3, Murphy 2011, under the heading ''Beyond Pain and Suffering.''
40. See note 3, Murphy 2011, under the heading ''Parity between Men and Women.''
41. Burley JC. The price of eggs: Who should bear the cost of fertility treatments? In: Harris J, Holm S, eds. *The Future of Human Reproduction*. Oxford: Clarendon Press; 1998:127–49.
42. Farrelly C. Equality and the duty to retard human ageing. *Bioethics* 2010;24(8):384–94.
43. Dworkin R. The foundations of liberal equality. In: Peterson GB, ed. *The Tanner Lectures on Human Values*. Salt Lake City: University of Utah Press; 1990:XI:3–119.
44. Dworkin R. Justice in the distribution of health care. *McGill Law Journal* 1993;38(4):883–98, at 886.
45. See, for example, note 41, Farrelly 2010. Farrelly applies Dworkin to the question of aging, arguing that age is brute luck, and that therefore governments should work to reduce the negative effects that this has.
46. Rawls J. *Justice as Fairness*. Cambridge: Belknap Press; 1971, at 42–3.
47. See note 45, Rawls 1971.
48. Daniels N. Democratic equality: Rawls's complex egalitarianism. In: Freeman SR, ed. *The Cambridge Companion to Rawls*. Cambridge: Cambridge University Press; 2003:231–76, at 242.
49. Slaves might be benefited a little if, for example, society was so rich through their labor that their health and life spans were increased.
50. Okin S. *Justice, Gender and the Family*. New York: Basic Books; 1989.
51. See note 20, Smajdor 2009.
52. See note 27, Smajdor 2011.