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Late-in-Life Motherhood: Ethico-Legal Perspectives on the Postponement of Childbearing and Access to Artificial Reproductive Technologies

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Abstract and Keywords

Many women postpone childbearing until later in life and face infertility as a result. Social attitudes are often critical of whether these women should receive assisted reproductive technologies. These attitudes include blame for choosing to "have it all" with a career and a family, ridicule of older women becoming mothers, and views about the inappropriate use of health resources in support of supposed lifestyle choices. Ethically speaking, however, there is little support for restricting such infertility treatment or for funding it for younger women while withholding it from others. Neither choice nor natural aging can be defended as a ground on which to distinguish between older and younger women with respect to the receipt of care.

Keywords: assisted reproductive technology, artificial reproductive technology, late in life parenthood, older parents, age discrimination, infertility, egg freezing, menopause, reproductive autonomy, in vitro fertilization

Women are regularly confronted with pronouncements on the "right" time to conceive children, which taken together present a confused, unrealistic message. Very young mothers face criticism, as do women who postpone childbearing until their late 30s and 40s. Those who choose to procreate postmenopausally face even greater censure and sometimes ridicule.[1] Women who cannot financially support their children are criticized, yet postponement decisions based on improving earning capacity often butt up against accusations of putting career first or wanting to "have it all," choices that are often regarded negatively. Into this mix of messages come warnings from the medical profession that women are incorrectly assuming that ART will help them conceive if they leave conception until the point when their fertility is on the decline, yet those who seek to address this via egg freezing are often considered to be foolishly relying on an insurance policy that will not pay out. It seems almost as though women are being told that there is some perfect age for conception, yet little account is taken in these messages of women's reasons for conceiving when they do and the rationality of their choices.

This chapter focuses on women who choose to delay reproduction, many of whom will require access to artificial reproductive technologies (ARTs) such as in vitro fertilization (IVF) to conceive. It analyzes the ethics of the choice to delay childbearing and how the state should respond to such a decision. It contextualizes this analysis by drawing on both the messages women receive and data about the reasons for their decisions to delay. Spanning the choices of women who are pre-, peri-, and postmenopausal (that is, from around 40 to 50 years of age), it is informed by data about the success of ARTs in assisting such women to conceive, as well as the risks of their doing so. It also questions whether social age limits, which often translate into legal age limits, should have the power they currently hold.

This analysis centers on one core question: Would it be ethical for the state to deny women suffering from age-related fertility decline access to technology that may enable them to conceive? This chapter could simply barrel into an often polarized debate between the argument that infertility, whatever the cause, is deeply harming and hence demands our aid based on the importance of reproductive autonomy, and the view that those who put off reproduction and then find

they cannot procreate have brought the harm (which is not a medical harm) on themselves and should face the consequences of their choice. In these terms, the matter seems irresolvable, or simply based on a difference of opinion about which harms are more important. This chapter avoids pitting arguments for reproductive autonomy directly and simplistically against those objections often raised against late motherhood. Rather than pitting choice against harm, it will provide a way of thinking into these broad questions by raising and then answering some subsidiary questions. In so doing, it offers an approach that avoids the impasse to a degree. There will still be disagreement, but in working through a series of questions and introducing relevant empirical data to answer them where possible, it at least focuses the debate on the key areas of contention, rather than reducing to a battle of harms, or of rights versus consequences.

Postponing Reproduction

There is some dispute over the point at which a woman's fertility seriously declines, but no doubt that for most women, at some point by the time they are in their mid-40s, they will be approaching infertility.[2] The prevalent lay view seems to be that fertility remains stable until a sharp drop in the mid-30s, but this may not be accurate. Some studies suggest instead that fertility declines gradually as women proceed through their 20s and 30s.[3] Very few women will conceive naturally after the age of 45, while cases of women conceiving after the age of 50 are exceptionally rare.[4] This occurs in large part because women are born with their full complement of ova, which declines over time.[5] Those eggs that remain are more likely to be chromosomally abnormal, resulting in higher rates of miscarriage even if a pregnancy is achieved.[6] As women age, their fertility is also more likely to decline as they have had more chances to contract infections or develop conditions that adversely affect fertility, such as endometriosis.[7] Male aging does seem to have some impact on the fertility of a couple, although far less than that of the woman.[8]

Despite this natural decline in fertility, in developed countries, women (and men) are increasingly having children later in life.[9] Across Europe, the average age of mothers at birth is close to or equal to 30 years old.[10] In the United States a similar trend can be observed, with the average age of mothers increasing in the same period from 21.4 years in 1970 to 25 years in 2006.[11] The number of children born to older mothers is also rising. In the United Kingdom, the number of children born to mothers aged 40 years or older has more than quadrupled, rising from 6,519 in 1982 to 29,158 in 2013.[12] The age at which women are bearing their first child is also increasing: Almost a quarter of live births to women over 40 years were firstborn children.[13] In the United States, between 1970 and 2006, the proportion of first births to women aged 35 years or older increased from 1% to 8.5% of all births.[14] In Canada, the rate for births to women over 35 years increased from 4% in 1987 to 11% in 2005.[15]

A consequence of this trend toward delaying is that women are increasingly turning to ARTs, particularly IVF, to help them conceive when they struggle to do so naturally. The availability of such technologies may also be a reason for some women's decision to delay. Some have also begun to have their eggs frozen, so they are ready for use if their fertility later declines. In some countries, they may have access to state-funded treatment (as in the United Kingdom), but in others, ARTs may be available only on a private basis. Age limits on ART are imposed in most jurisdictions, both on access generally (usually up to about 45 years of age) and as recommended limits on access to state-funded treatment.[16] This gives rise to the question: Would it be ethical to deny such women treatment? Relatedly, is it right that such women whose fertility has declined naturally are helped to conceive children they could not otherwise have borne? We might answer that they should be helped, that they should be denied help, or simply that they may seek help, but there is no duty on anyone (or the state) to assist them.

How Can We Decide Whether to Help Women Facing Age-Related Fertility Decline?

To answer the central question, we need to work through a number of subsidiary questions. The first is whether it is right that women who delay reproduction should bear the consequences of their decision. This question encompasses two objections to aiding such women—that their declining fertility is their own fault, and therefore they should bear the responsibility (and consequences) of it; and that it is natural that fertility declines with age, and that therefore they should not be helped when this befalls them. On this basis, a distinction might be made between infertility that is considered in some way unnatural or "medical" (which deserves treatment), and self-induced infertility (which does not). The second question is whether the possible harms that result from delaying reproduction are grounds for denying assistance to women who do so. These include harms to the mother herself, to the resulting child, and to others. The third is whether given that health resources are finite and scarce, they should be offered to women who have brought their infertility upon themselves, and hence diverted away from the treatment of other illnesses and conditions. Each is considered in turn,

drawing on both the ethical considerations that bear on them and empirical data that can support the ethical analysis.

Can We Make Moral Distinctions Between Cases of Infertility Based on Cause?

Infertility as a result of illness (such as infections that cause scarring of the fallopian tubes), or treatment for illness (such as chemotherapy), is largely accepted as something that should be treated. The same is true for infertility from which a woman suffers naturally. This includes premature menopause, follicle problems, anovulation and gland malfunctions, and endometriosis.[17] Call this "natural infertility." By contrast, what this chapter will refer to as "age-related infertility" occurs when an otherwise fertile woman delays reproduction, and then struggles to conceive due to the inevitable decrease in her fertility that accompanies aging. There is far less consensus on whether age-related infertility should be treated, whether with state-funded ARTs or at all.[18]

This raises the first subsidiary question: Can we make a moral distinction between cases of infertility based on cause? Put another way, would it be ethical to treat only some cases of infertility, where we distinguish based on the reason the woman cannot conceive? If we believe that only natural infertility should be treated (or be treated via state-funded services), this is the distinction that has been made. Even the most cursory glance of media portrayals of delayed motherhood demonstrates that such a distinction is readily made by many, both in the lay and scholarly literature. A cursory reading of the comments on most press articles about provision of state-funded fertility treatment will yield a slew of vituperative objections. The thrust of many such comments is that delay is a choice and one for which the chooser should bear the consequences, particularly given the shortage of resources for funding medical treatment generally. This view is not confined to the lay person; scholars, too, have made such arguments.[19]

Two main distinctions are usually offered to distinguish cases of infertility that are worthy of treatment and those that are not: choice and "naturalness." The first, choice, is based on the idea that where infertility arises due to the choices a woman has made (specifically the choice to delay reproduction), then that is her own fault and this renders her underserving of treatment. Call this the "she has made her own bed" argument. The second is that age-related infertility is natural. It happens to all women, and therefore to treat it is to "play God" or interfere with nature, which is considered wrong. Call this the "unnaturalness" argument. This argument applies to all cases of age-related infertility, but particularly to peri- and postmenopausal women.

If either position is convincing, it would provide a basis on which to treat natural infertility and age-related infertility differently. This does not necessarily justify refusing to treat the latter, only that differential treatment could be justified. However, as the following sections will demonstrate, neither distinction stands up to scrutiny, leading to the conclusion that there is no relevant moral distinction to be made between types of infertility based on their *cause*. Opponents of treating age-related infertility therefore need an alternative basis for their objection.

Relevance of Choice

To evaluate the "she has made her own bed" argument, we need to consider why a woman's choice might provide a morally relevant distinction between her age-induced infertility, and that of woman who suffers from natural infertility. It is a complex question, and there is not scope here to do it full justice, but we can consider a number of important aspects of the question: whether women are really making a free choice and the constraints they may face; the relevance of their personal goals; the nature of the risk/benefit calculation they make; and whether choice is a sufficiently good reason to leave people to suffer the consequences of their choices.

Are Women Really Choosing?

The "she has made her own bed" argument rests on the assumption that women who delay childbearing are choosing to do so freely and so (the argument runs) they should bear the consequences of that choice. This argument often accompanies a charge regularly leveled at women who postpone reproduction: that they are selfish and have chosen to delay childbearing for their own reasons regardless of the negative impact on others.[20] Shaw and Giles, in a media framing study of the representation of delayed motherhood, identified multiple instances of such attitudes, with older mothers variously referred to as "self-indulgent and rather vain" (Guardian, Wed), "wrong and selfish" (Sun, Tue), and to modern women as wishing "to have it all" (several sources).[21]

Shaw and Giles locate these sentiments toward women within a wider view of the current generation of fertile and

recently infertile women as an "indulgent generation."[22]

There are a number of implicit assumptions within such views, first and foremost that delayed childbearing is freely chosen. Claims of selfishness on the part of women also focus on the woman's agency alone, rather than taking account of the role (if any) played by the woman's partner in decisions about procreative timing. In doing so, as in many other areas of reproduction, men are devolved of responsibility for reproductive choices, with this burden (and hence the moral responsibility) resting largely on the woman despite the fact that in most cases two people will be involved in such reproductive decisions. Shaw and Giles's findings support this view; they identified a "general lack of a male perspective in these media portrayals," which they posit "implies their absence from the decision to have children and whether the process of conception progresses in a normalized way."[23]

Whether women *should* bear the consequences of their choice to delay is examined next, but before we do so, we need first to consider why women are postponing procreation (and increasingly doing so). Anna Smajdor makes the very salient point that "If treatment is denied on the basis of poor choices, it becomes supremely important to establish the nature of those choices."[24] An understanding of these women's motivations will cast doubt on just how freely many of them might be said to be choosing.[25] These women's choices need to be contextualized within the socioeconomic forces that drive many women to delay procreation, and numerous studies have tried to divine why women delay and risk childlessness.[26] Women's possible motivations for postponement are many and varied, but they can be divided into two broad groups: lack of knowledge about fertility problems, and the desire to maximize beneficial outcomes.

Lack of Knowledge About Fertility Problems

It is often suggested that women who postpone reproduction do so because they do not fully appreciate the risk of infertility, or they are at least unaware of how early their fertility may decline.[27] Some surveys indicate that this may be true.[28] For example, Nichole Wyndham et al. cite another study from the United Kingdom in which only 75% of women who had not considered the issue of infertility realized that their chances of conceiving would decline between the ages of 30 and 40 years.[29] They comment: "It is only when these women experience infertility themselves and find themselves in the office of a fertility clinic that they begin to understand the reality of their situation."[30]

In another study, only just over half of women surveyed realized that age was the strongest risk factor for infertility.[31]

However, there is also considerable research that indicates that women are made very well aware of the risks of putting off childbearing by the media.[32] For example, the Tough survey demonstrated that both men and women are aware of the relationship between age and declining fertility, with over 70% of people of both genders surveyed aware that aging could compromise their chances of conceiving.[33] Another demonstrated that health care professionals underestimate the proportion of their patients that do understand the relationship between aging and fertility decline.[34] All that can be concluded, then, is that some women understand the risks they run, while others do not. Lack of awareness therefore might explain some postponement, but not all.

What does seem to be more widely the case is that women are less cognisant of the relationship between aging and risks to both the mother and fetus. The Tough survey found that less than half those surveyed knew that increased maternal age was associated with higher risks of stillbirth, caesarean delivery, and preterm delivery.[35] Another found that many did not realize that reproducing via intracytoplasmic sperm injection (ICSI) (a form of ART) may result in children with more long-term health problems.[36] Such findings suggest that it may be true that women are making a risk-benefit calculation about postponement without an accurate understanding of the nature of those risks.

Another, related, explanation is that women place undue faith in the capacity of ARTs to alleviate any fertility problems they will face if they attempt reproduction later in life.[37] For example, Daniluk et al. found in a survey of over 3,000 women, that 91% were "unrealistically confident about the ability of [ARTs] to assist most women to have a child using their own eggs until they reach menopause."[38] Benzies et al. found that:

> Women were confident that, if they needed it, reproductive technology would be available to assist with conception whenever they decided to bear a child. Sheila who was older than 30 years without children stated: "Women are having babies later because of technology, fertility technology that allows us to kind of extend our fertility period, where before we couldn't, you know?"[39]

They also found that these women had not considered the risks that attend late-in-life pregnancy, preferring to pursue

other personal goals first.

However, there are data that show that women are well aware that IVF is not a "magic bullet" for fertility decline, and often fails.[40] As Khalaf et al. put it, "there is an article on 'my IVF heartbreak' in almost every women's magazine in the newsagents."[41] That said, women appear not to understand *why* their fertility declines with age, with many seeming to believe that if they maintain good health and fitness, their own fertility is less likely to decline.[42] This view is, however, mistaken.

Overall, it seems that while some women fully appreciate the risks they run, others do not, meaning a denial of access amounts to a harsh declaration that they must bear the consequences of their ignorance. If the entire rationale is that people should be responsible for the choices they make, it cannot apply to those who have made choices based without information or understanding: They lack responsibility for the result. Perhaps they should have, or could have, done more to educate themselves, but requiring pursuit of knowledge about a risk of which you had no suspicion (particularly given the examples we see of women conceiving in their 40s, as Wyndham et al. note[43]) is probably too much to ask, and certainly insufficient to justify denying access to ARTs. This is particularly so when we consider, as we will, the harms women (and men) suffer in such situations.

For those women who do appreciate the risks they run, the argument has more bite. But as Khalaf argues:

> Delayed childbearing has social, financial and personal causes. To presume that improving women's education on the biology of their reproduction and the risks of delayed childbearing would solve this complex problem is clear, simple but, as such, may be wrong![44]

And indeed, focusing only on their knowledge of risks as determinative of how we should respond assumes their knowledge of those risks is perfect. This is not and cannot be the case. As women age, the number of eggs in ovaries declines, as does the "quality" of those eggs; that is, their viability decreases and they are also more likely to be chromosomally abnormal. It is possible to determine a woman's ovarian reserve—the quantity of eggs she has left—but not their quality. Therefore, as a woman ages, her ability to reproduce can be evaluated to some degree, but lack of knowledge about her egg quality will prevent a truly accurate evaluation.

Given all this, it is clear that if we focus only on their knowledge of the risks, we have considered only one half of the risk-benefit calculation they have made and one in which they may not even be able to make a perfect calculation. We turn now to the benefits side to consider what might motivate women to take such a risk with their fertility and why, in fact, they may be taking a reasonable and rational approach to decisions about reproduction.

Desire to Maximize Beneficial Outcomes

Assuming, then, that many women are aware of the risks they run, what else might be motivating their decisions? In reality, multiple reasons must motivate these decisions, some of them highly personal. There are numerous studies in which women are asked why they delayed childbearing, and three main reasons emerge.[45]

First, many women report wanting to be in a stable relationship with a person they see as a suitable co-parent who is likely to stay with them. In the Tough survey, 80.2% cited "partner suitability to parent" as reasons for delaying procreation.[46] Similarly, Berrington found that "a lack of a partner is a key variable affecting the chance of starting a family at older ages."[47] Such a rationale is indicative of a desire to ensure any child created is brought into a stable relationship. Women driven by such a motivation are weighing the risk of potentially no children as worth taking if the benefit is bringing any child who does result into the kind of loving, secure environment that is important to raising a happy, well-adjusted person. This seems a very rational and reasonable way of thinking about the decision to reproduce. To respond when the woman has achieved such stability and tries, but fails, to procreate by telling her she must bear the consequences when IVF might offer her a chance to avoid them seems perverse. If the concern is that it is somehow bad to produce children later in life, because of putative harms to that child, these potential harms should at least be weighed against the benefits the child will receive by being brought up in a family environment where that child is secure and wanted. We will return to the weighing of harms and benefits later.

The second reported reason women postpone childbearing is to pursue higher education. Higher rates of childlessness are correlated with the attainment of degree level qualifications,[48] and consequently income.[49] Increased age of first childbirth is correlated with women's increased participation in higher education.[50] One possible reason for this is that

both pursuits are time-consuming and hence may not be compatible for some women.[51] Childrearing can severely undermine a woman's capacity to undertake higher study, and so postponement is a rational strategy. This is particularly the case when we take account of the third, and highly related reason for postponement: the impact of childbearing on women's careers and therefore their income. There is substantial data supporting the thesis that women postpone childbearing for career-related reasons.[52] As higher education is often tied to employment in more highly paid careers, the two reasons are often interlinked. For example, women residents have been shown to intentionally postpone childbearing to avoid perceived threats to their career that might result from extending their training. These women were more likely to make this choice than their male counterparts (41% of men were prepared to have a child during residency, whereas only 27% of women were).[53]

It is clearly the case that women who delay childbearing experience economic benefits:

> A year of delayed motherhood is found to increase career earnings by 9%, work experience by 6%, and average wage rates by 3%. The effects are heterogeneous across women; those with college degrees and in professional and managerial occupations receive the greatest career returns to delay. Post-motherhood wages are also shown to vary with motherhood timing.[54]

The timing of a woman's exit from the workforce to have children has been said to account for as much as 12% of the gender wage gap due to its impact on work experience and the consequence depreciation in a woman's skills.[55] From the time they give birth, women experience reduced earnings and their wage profile "flattens," meaning their earnings increases will be smaller, although the impact differs across employment sectors. Women entering more highly skilled workforces are those who gain the most from delaying childbearing.[56] Some explanations for these phenomena offered by Miller are:

> On the supply side, mothers may reduce their hours in the labor market and invest less in skill development. From the demand side, employers may offer mothers fewer training and advancement opportunities.[57]

Wilde et al. suggest that one explanation is that wage growth is dependent on effort and that "if actual effort is hard to monitor, employers may rightly or wrongly perceive mothers as less committed to their jobs."[58]

Miller goes on to point out that the data show that

> Motherhood remains an obstacle to women's economic equality with men (Fuchs 1988); its deferral may constitute an important mechanism for reducing that inequality. On the other hand, if one considers equality the benchmark, the financial rewards to delay represent an effective penalty for early motherhood.[59]

As Wilde et al note, "professional women face sizable career costs and difficult trade-offs in deciding to become a mother."[60]

It might be replied that both men and women face the same choices about opting out of education or career to care for children. Both can be carers, but if women are postponing on this basis, it is their choice (as it is their partner's) to do so. This might suggest that women deserve the characterization that they want (unreasonably) to "have it all."[61] This needs some unpacking. First, this is rarely, if ever, a charge laid at the feet of men who have children yet seek to remain in the workplace. An explanation for this is that women still continue to take on the bulk of child care responsibilities, and if they wish to retain or progress in their careers, they must do so simultaneously. In doing so, they are not necessarily simply pursuing their own career interests (as the characterization goes), but actually seeking to achieve independence and financial stability: a reasonable goal both for themselves and the child they seek to bear. Indeed, as Khalaf comments, many women reported delaying reproduction in the interests of achieving a stable environment in which to raise a child, which encompasses both financial stability and the formation of a lasting relationship.[62] In one Canadian survey of over 1,500 people, 85.5% cited financial security as a reason to delay having children.[63]

Second, in the early days post birth, the woman often *has* to bear a greater share of the carer role if she is breastfeeding (and this is reinforced in jurisdictions where women receive more leave entitlements than men).[64] As Mills et al. argue, the result of this and in general as a response to the birth of a new child is

> often …. a crystallization of gender roles, with women increasing time spent in housework and childcare in comparison with men only after the birth of the first child.[65]

Furthermore, as Bewley rightly states

> [women's] delays may reflect disincentives to earlier pregnancy or maybe an underlying resistance to childbearing as, despite the advantages brought about by feminism and equal opportunities legislation, women still bear full domestic burdens as well as work and financial responsibilities. The reasons for these difficulties lie not with women but with a distorted and uninformed view from society, employers, and health planners.[66]

Women also report delaying childbearing until they feel they are emotionally ready, or because they wanted to achieve their personal goals before childbearing so that they were fully committed.[67]

As we have seen, opposition to assisting women who are motivated by these reasons for postponement often stigmatizes such women as "selfish"[68] and (unreasonably) wanting to pursue both a career and motherhood (while no such stigma attaches to similarly minded men). But what the data here reveal is that, in many cases, child welfare is the motivation. The woman is in fact weighing the risk of having no children against the risk of bringing children into a situation where she cannot fully provide for them, whether that means emotionally or financially. Far from being a morally unworthy rationale, such a balancing should be regarded as praiseworthy. To respond to such behaviour by refusing to assist her in bearing that child again seems perverse and poorly founded.

Where a woman has chosen to pursue her own personal goals, refusing assistance may be too harsh anyway: It is not unreasonable for people to want to achieve and experience many different things in their lives. Doing so is not morally wrong, and therefore probably does not deserve the severe impact of refusal to aid when that pursuit reduces fertility.

Furthermore, the data suggest that women's choices are often not really "choices" in the fullest sense. They are made against a backdrop of social and economic realities that place women in the role of carer, but restrict her from achieving the same degree of education, career success, and economic independence as men. A woman's choices are constrained by these conditions, as well as her own biological limitations. To say that she has simply chosen to postpone childbearing gives only a very shallow picture of the reality of how she arrived at the point of infertility. It is not surprising, then, that in a qualitative study of 18 women having their first child after the age of 35 or still without children, many reported that the view that the delay was by choice (a popular perception) was incorrect in their case.[69] It is rare that anyone makes a serious life choice in isolation from its context and impact, a fact that must bear on whether to leave them to bear the consequences of that choice.

Therefore, it can be seen that for many women there may not be enough of a choice for us to attribute the resultant infertility solely to their decisions and so attribute blame. Furthermore, given their context, women's motives for delaying childbearing are often rational (in the face of educational or economic penalties they otherwise face) and focused on ensuring a good environment into which to bring a child, namely one that is financially stable and sufficient, and in which the woman is in a secure relationship with a partner who is likely to make a good parent. The notion that such choices are made entirely freely is open to question, given that creating such an environment is affected by factors beyond a woman's control in many cases—she cannot simply procure an appropriate partner, nor can she entirely control the forces that shape her financial position.

Bearing the Consequences of Our Choices

It can be intuitively appealing to say that we should bear the consequences of our choices. We see this in the many epithets summing up the sentiment: "you reap what you sow"; "you have made your bed, now you must lie in it"; "what goes around, comes around"; and so on. This is particularly the case when someone else might be otherwise burdened by those consequences, whether it is the state (and therefore the community) who bears it in terms of cost of treatment, or the child who will bear the (arguable) detriments of being born to an older woman, such as stigma, risk of illness, or the premature death of a parent. These consequences are considered later in this chapter. For now, we must ask how committed we should be to this idea of responsibility.

Let us say, then, that people should bear the consequences of their own choices. If we take this position in response to one choice-induced disorder, to be morally consistent, we should take the same position toward all other choice-induced disorders unless there is a good reason to support differential treatment. So, if choice is relevant to whether someone receives health care resources for age-related fertility, it should be relevant to whether someone receives treatment for other conditions they might have avoided had they made other choices. It follows that the smoker with lung cancer should be denied treatment, as should the obese person who develops diabetes. The horse rider should be denied assistance

when she breaks a limb, having known the risks and decided to run them. So, too, the mountaineer who suffers a fall, or the rugby player whose cornea is detached. All should be turned away from the hospital, as they are the authors of their own destiny.

There are many reasons why we should reject such an approach. First, we should distinguish between choosing an outcome and running the risk of an outcome. Like the overeater or the smoker, it is not certain that delaying reproduction will result in infertility. It depends on the duration of that delay, the woman's underlying fertility and that of her partner, and numerous other factors. The longer she delays, the more likely it is that she will face infertility until it becomes almost a certainty in her late 40s or early 50s, but she cannot know exactly when her personal fertility will decline to the point of needing assistance. Delays into the late 30s and early 40s (usually) then only equate to running the risk of infertility; it is not equivalent to choosing it as a certainty and then demanding help, although as the woman ages (and continues to delay), that decision becomes increasingly similar. The extent to which we decide a woman should bear the consequences of her decision to delay should take account of the fact that they equate to the running of a risk, not the pursuit (usually) of a certainty. It should also take account of the reasons for the delay and factors that the woman may not have foreseen (or been able to foresee) when calculating the risk. These range from rejecting a partner (or being rejected herself) to losing employment to facing an illness, any of which might mean at the point at which the woman had intended to begin procreating, she finds the conditions unfavorable and must continue to postpone. It is probably fair to say people should bear the consequences of the risks they take, but we might also think some of those consequences are too harsh if the reasons for running the risk were reasonable (and we have seen earlier that women have many good reasons for delaying procreation), or unknowable, or simply unknown due to ignorance or misinformation. We all take risks in life, and doing so enriches that life. No one has perfect information or the capacity to always make perfect choices based on perfect evaluations of risk and benefit. For these reasons, it is often right to soften the impact of the consequences that result when someone runs a risk, and reproductive decision making always involves risk of some kind of another.[70] Infertility can be devastating for women (and men), and this is not a situation in which facing that consequence will lead them to choose differently next time: There is no next time. This, combined with the terrible impact infertility may have, is a good reason to soften the consequences through the provision of ARTs where we can, just as we treat the smoker or the horse rider when the risks they chose to run play out badly.

Second, and more compelling, is the fact that the choices we make in life are made for complex reasons. We are, after all, human. We may balance risks against benefits, or short-term pleasures against long-term goals. We each have different histories that shape the choices we make, and even how we approach choosing. Our choices are not made in isolation, but within complicated contexts, often with others in mind (whether voluntarily or because of our obligations to them). To respond to this balancing of goals by simply leaving all those whose choices lead to bad consequences to bear them takes no account of the variables involved that we cannot control. It assumes complete control (and hence responsibility), when in most cases this is not the reality. This is particularly true of decisions about reproduction, where women cannot have perfect knowledge of their reproductive capacity and how long it will last. This, taken together with the constraints on the choices before them, undermines the case for leaving them simply to bear the results of their choice to delay.

The complexity of making choices also means that it will be very difficult to determine in most cases whether someone's choice is one for which he or she should bear responsibility. This is particularly true in the context of lifestyle choices that affect health (and fertility) outcomes, because these choices are made up of multiple decisions over a long period of time. Just as the obese person does not instantly become overweight because he or she decides to overeat, so a woman rarely chooses to postpone childbearing until she is 40. Much more likely is that she puts it off for different reasons at different stages in her life. A new job opportunity may mean postponing for a year until she is secure in her employment and eligible for maternity leave. But then at the end of that year, perhaps her father becomes ill and she must take on the burden of his care, or her partner leaves her, or she falls ill. And so on. Just as there are epithets to express the idea that we should bear the consequences of what we choose, so to "the best laid plans of mice and (wo)men often go awry."[71]

Given this, and given the very sensible, reasonable motivations women generally cite for their delaying reproduction, and the fact that many of these are driven by a desire to be in the best position to do well by their child, the idea that these women deserve the consequence of childlessness seems rather hollow. It makes little sense to say someone who makes a constrained choice with the welfare of his or her future child in mind (that is, a constrained but morally well-motivated choice) deserves to suffer, particularly when that suffering could be alleviated without significant harm to others. Desert derives from having done something morally unworthy; women who delay reproduction for good reasons do not fall into this category.

Judging Choices, Calibrating Responses

Probably there are those women who delay for "selfish" reasons, or at least self-regarding reasons. It is very likely they exist, that there are women who wish to pursue their own personal goals before having children, knowing that once they do so, their ability to pursue other things in life that are important to them will be lessened. The arguments made in the previous section would not then apply. In such cases, however, proportionality of response becomes highly relevant. Let us accept that it may be ethical to leave someone to bear the consequences of his or her choices in some cases. We could ground this in arguments from autonomy and responsibility, that we treat people as moral agents by respecting their choices, but this brings with it the need for them to take responsibility for those choices.

But we then need to consider whether the consequences (which could in some cases be avoided by permitting access to ARTs) are proportionate to the responsibility they bear. We need to be clear, then, on what those consequences are. It is demonstrably the case that reproduction is an important aspect of the great majority of people's lives. This is evident from the ubiquity of childbearing: Almost everyone does it, and in fact those who do not face curiosity and sometimes censure precisely because their choice is unusual. There is considerable evidence that unwanted childlessness has deleterious impacts on both men and women's lives. Many women report that, with hindsight, they regret their decision to postpone motherhood (particularly those who then experience unwanted childlessness).[72] Others express feelings of guilt or failure when they discover that they face fertility problems related to age.[73] In one qualitative study, a participant stated she felt she had failed her husband, while another said: "You feel like you're not a woman, that is the worst thing … you can't do what you're put on earth to do" (Emma, age 37).[74]

Individuals who wish to have children but fail to do so experience higher levels of clinical depression, as well as feelings of lower self-esteem, guilt, and isolation.[75] It is not simply that they do not get what they want; in many instances the involuntarily childless suffer deeply precisely because they fail to participate in a human experience that so many find so enriching.

This is, in fact, precisely why respecting people's reproductive autonomy is considered so vital. As Anna Smajdor rightly notes: "Having children is important to women. Doing so when they feel ready, and in ways that suit them, is valuable."[76]

There is not the scope here to fully explain why reproductive autonomy is important, but we can point to a few expressions that encapsulate the value of respecting such choices. Nicky Priaulx argues that the value of such autonomy "lies in its instrumentality in fostering basic human needs and one's sense of self."[77] Such decisions operate at a deeply emotional and personal level, she argues, concurring with John Robertson that it is their very intimacy that captures what is so very important about procreative liberty.[78] Decisions about if, when, and how to have children go to the core of what it means to be human. They affect our sense of self, they are part of the core goals we may have in life, and therefore demand our respect. It is far from surprising that when those choices are thwarted, people (men and women) can suffer deep and lasting harms.

Furthermore, if we are to use choice as the basis for judging when someone will receive ARTs, then as Smajdor has argued, we put ourselves in the position of needing to be a perfect judge. To avoid being unfair, we must be sure that we can judge accurately. When we place legal limits, this means further that we must create a system by which such judgments can be made. It is unlikely that anyone can take on such a role and make no errors, and even less likely that the legal system can design mechanisms to ensure this is the case. In using choice as the basis for deciding whom to help, we run the risk of not helping those who actually (on this account) deserve it. Given the harms these people will suffer, it may be preferable to provide support and ARTs to all who want them rather than risk inadvertently denying those who are "deserving."

Finally, if we are to make such judgements about ART access based in choices, we should take account first of why it is important to allow people to make choices and then sometimes assist them if these lead to problematic consequences. We should promote people's capacity to live life according to their own values. Experimentation and making choices about which goals we pursue enrich our lived experience and, as Mill argued, are important in developing as persons.[79] Providing a safety net of care when this pursuit goes awry enables people to lead fulfilling lives: doing otherwise and restraining their choices potentially leads to a life lived less well. Additionally, not providing aid to people who harm themselves through their own choices is likely to create a society in which we are less sympathetic. The cancer-afflicted smoker or the horse rider with a broken leg will be left to suffer, and we as a community will therefore bear witness to that. Such a community would be far from pleasant to inhabit.

There is, of course, much more that could be said on these matters, but this section has demonstrated that the simplistic view that those women delay reproduction because they make selfish choices is far from accurate. Furthermore, it has shown that choice is a flawed basis on which to distinguish who deserves assistance with conception, and also a weak basis on which to leave people to bear the consequences of their own choices.

Naturalness

The second argument that often emerges in response to women seeking ART, particularly postmenopausal women who cannot conceive in any other way, is that it is "unnatural" for them to do so, and so they should not be assisted in their attempts to "fool nature." Older women, particularly those who use ARTs to conceive, are also often perceived as acting "unnaturally." Such women are often reminded of their "ticking biological clocks" and as Shaw and Giles found, referred to as trying to "cheat time" or avoid their "physical destiny," or even "bend nature to their will."[80] They also found examples where the unnaturalness charge itself was absent, but older motherhood (and parenting in general) was constructed as "freakish."[81]

Such constructions become increasingly common and judgmental when the woman involved is postmenopausal. For example, when 62-year-old Patti Farrant gave birth, the *Tuesday Express* ran a feature article on her in which her public breastfeeding was described by one onlooker as "a sight I'll never forget."[82] Older mothers, particularly those who conceive postmenopausally, are also warned of being "mistaken for granny at the school gate" (warned against in a British Medical Association manual),[83] a seemingly problematic consequence of older motherhood. This is asserted to be harmful to the child, who may face teasing. In one article cited by Shaw and Giles, a fertility expert claimed that children would fail to have a good quality of life "if its parents are older than its friend's grandparents."[84]

There are many reasons why such an objection to is untenable as a basis for denying such women access to treatment. First, and most obviously, such a claim in fact applies to all medical treatment. If we genuinely believe that we should simply let nature take its course, then we should reject any medical intervention. It is no more natural to put a pacemaker in someone's chest, or a donor kidney in their abdomen, or an IV drip of antibiotics in their arm, than it is to offer them ART to redress fertility decline. It might be countered that the *reason* these people need treatment is that they have fallen below normal functioning for persons, whereas being infertile is in fact normal for peri- and postmenopausal women. However, this does little to improve the argument. We could easily reply that it is normal for people to develop cancer—it happens every day, and therefore it must be a normal part of human life, even if the sufferer can no longer function *as normal*. If it is normal, and if (as the argument goes) we should leave nature (and normality) well alone, then we have no basis on which to interfere by using medicine. This is not the prevailing view, because treatment alleviates suffering and loss of life. It is driven by a desire to improve quality of life—precisely the same desire of those who seek ART to redress infertility. Their lives will go better if they have it, and they will suffer if they do not, just as the cancer patient will based on whether she receives treatment or not.

Second, say we assume that helping peri- and postmenopausal women to bear children is unnatural. This does not, in and of itself, mean that this action is morally wrong: There is nothing inherently wrong with behaving unnaturally.[85] This is not only because in fact we behave unnaturally all the time in the medical sphere, or because we cannot really even define what is natural. It is because naturalness, if defined, is merely a description of a state, but the fact that something *is* natural does not mean that this thing *ought* to be the case. Perhaps a way to define naturalness is the state of the world unchanged by humans. On that view, when we say something is natural, we are simply saying this is how it is when we do not affect its state: Only the forces of nature (physics, chemistry, perhaps evolution) have made it thus. Those are not forces with moral weight. They do not proceed from any consideration of reasons for acting or other factors that have a bearing on the morality of an action or state. They are amoral. They cannot determine that a state is moral or otherwise. Therefore, to call something unnatural or natural tells us nothing about whether it is immoral or moral. We need to look for another way of determining this, and there are of course many. We might judge an action by its consequences and tendency to increase happiness, good, or utility. We might judge it by what has motivated it. We might wonder if it was what the virtuous person would do. We need not decide which is the most appropriate approach here; we need only realise that naturalness or otherwise cannot determine whether an action, like conceiving peri- or postmenopausally through the use of technology, is moral or not.

Conclusions

The argument from choice is often put forcefully in the media, but the foregoing analysis suggests that this cannot be a

basis on which to determine whether those who delay conception should be helped to have children (or prevented from doing so). Similarly, the argument from nature cannot be such a basis. Neither argument can tell us the answer to the question of whether such assisted reproduction is ethical. Therefore, we need to turn to other subsidiary questions to help us to do so, such as the following arguments based on harm.

Harm-Based Objections

An alternative basis on which arguments against assisting older women to conceive are made is that such efforts have harmful consequences: to the woman, to the child, or to others. Each argument is taken in turn.

Harms to the Woman

Women who conceive later in life face significantly higher risks: They are more likely to experience poor health outcomes post birth than younger mothers.[86] Some research suggests that a woman in her 20s faces a miscarriage risk of around 1 in 10, whereas a woman aged 45 faces a risk as potentially as high as 9 in 10.[87] There is some dispute about the accuracy of miscarriage rate data generally,[88] but what is clear is that the miscarriage rate for women who have undergone IVF and had the pregnancy confirmed by ultrasound *does* increase with age. The Centers for Disease Control in the United States data show a rise from a 10% for women aged 25–30 years, to a rate of 30% for woman aged 40 years, 42% for women aged 42 years, and 55% for women aged 44 years.[89] The main reason is the increased incidence of chromosomal abnormalities in the woman's eggs (although, as will be explained, paternal age also plays a role). Around 25% of the eggs of a woman aged 30 years will have chromosomal abnormalities, compared to 40% for women aged 38 years and close to 70% for women aged 44 years.[90]

Women aged over 40 years are also more likely to become hypertensive during pregnancy.[91] They also face a higher likelihood that they will develop gestational diabetes,[92] age increases the likelihood of caesarean delivery,[93] and older women, particularly those aged over 40, also face higher risks of placenta praevia and placental abruption.[94] Those who need to use IVF to conceive face the added risks associated with ovarian stimulation.[95]

Is this a basis on which to deny access to ARTs? Some, such as Art Caplan, would say that the risks are high enough that it would be immoral to allow access to treatment.[96] However, ethically, we can only respect such women's autonomy by allowing them to make free choices about the risks they are prepared to run in relation to their own health. If we see these as self-regarding harms, a Millian perspective would suggest we have no basis on which to constrain their choices. The common law would take a similar approach. For example, the law of England and Wales permits people to refuse treatment even if the decision will result in pain or the end of life.[97] That said, while we do not force treatment, people are not free to *demand* treatment that is not clinically indicated, but as such women are facing infertility, this objection would not apply. As long as women are informed, they should be free to make their own choices about which health care treatments they use.

We should also take account of the *benefits* women who conceive later in life may enjoy as a result of their choice. These include the economic and educational benefits noted earlier but also the fulfilment of their desire for a child and all the enrichment that will bring to their lives. This is particularly true of those who have postponed reproduction for considered reasons, as they will have their child at what they considered the optimal time, with many therefore likely to enjoy pregnancy and childrearing at the point they felt most ready to do so emotional or financially. Only the particular woman can determine whether the risks she runs are worth these benefits. To make that calculation for her would be unduly paternalistic. It is at this point that the reasons we should value and respect reproductive autonomy arise once more, for as Smajdor has pointed out:

> Having children is important to women. Doing so when they feel ready, and in ways that suit them, is valuable …. risk avoidance is not compatible with reproduction *at all* …. [and] medical values do not necessarily trump other values that patients may hold. Human wellbeing depends on more than good health.[98]

Finally, the view that all risks to the mother derive from her own advanced age is increasingly open to question. There are some data that suggest that paternal age is also an independent risk factor for miscarriage,[99] a finding that coincides with the fact that increased male age is correlated with higher rates of some fetal abnormalities. Paternal age also appears to be somewhat associated with higher rates of caesarean section delivery, preeclampsia, and placental abruption (but not placenta praevia).[100] Therefore, it is not only the mother's decision to delay that may harm her, but her partner's as well.

Harms to the Child

By contrast, welfare concerns about the health of the child who will result may have more purchase because they revolve around a vulnerable party who cannot have a say, despite the impact on its life. When women conceive later in life, the fetus they create also faces substantially higher risks. Babies born to women over the age of 40 years are also more likely to be low weight at birth or be born preterm (that is, earlier than 37 weeks).[101] Both outcomes are correlated with higher rates of neonatal and childhood morbidity and mortality,[102] and developmental difficulties (both physical and mental). The risk of some congenital abnormalities rises with maternal age: The link with conditions such as Down syndrome, neural tube defects, and abdominal wall defects are well established, and many of these are widely known to the public.[103]

Babies born to older women are more likely to be born as a result of ARTs, which carry their own risks. In some countries, where multiple embryos are implanted, ART use is associated with higher rates of multiple births, which in turn are associated with lower birth weight and preterm delivery. The risk of birth defects is higher where ICSI is used to achieve pregnancy,[104] but the data on IVF are not yet conclusive.[105] Twin pregnancies, which carry risks for both mother and the fetuses, are more likely to occur in older women using ARTs as they may be more inclined to choose to have more embryos implanted at one time to increase their chances of a success. In doing so, their choice to use ARTs potentially increases the risk of harm to the fetuses they hope to carry.[106]

As they go through life, such children are also arguably harmed if they experience stigmatization due to their mother's age (the "grandmother at the school gate" concern). It is also suggested that an older mother is likely to die while the child is still young, increasing the likelihood that the child will experience the grief of losing a parent[107] (and perhaps the problems of a lack of care) than those born to younger mothers. Such children may also face the burden of caring for an aging parent while still young themselves.[108] For example, in a recent Italian case a child born using ARTs was removed from the care of her parents in part because they were regarded as too old to care for her. The original judge commented:

> The couple did not seriously consider the fact that the child will be orphaned at a young age and, before that, she will be constrained to look after her old parents, who could present more or less invalidating pathologies, right at the moment when, as a young adult, she will need her parents' support.[109]

The mother was 57 years old, and the father was 70 years old. Other concerns about parental age and its impact on children include worries that they will lack the stamina to care for a young child, and that they will be unable to understand the child's perspective given the large generational gap.[110] Are any or all of these risks sufficient to deny women ARTs? Three responses are given here.

Balancing Harms

Even if it is true that a child born to an older mother might suffer harms, it is important to remember that he or she may also experience many benefits. Not least, the child will most likely be born to a woman who is committed to having a child (as few people would undergo ARTs without such commitment), and at the point she is best prepared to do so. Numerous studies note the positive aspects of motherhood late in life, such as financial stability, but especially commitment to the parenting experience and women being more prepared for it.[111] There is evidence that childbearing at a later age results in better family functioning and more stable familial structures.[112] One study demonstrated that such stability is correlated with greater self-sufficiency in adulthood,[113] and others show links with better educational and psychosocial outcomes.[114] This stands in contrast to the very many children who are conceived naturally and born into far from optimal conditions because one or both parents is not ready, was not intending to have a child, or does not have the financial or emotional capacity to provide adequate care. It is well established that unstable, stressful childhood environments have a lasting impact, while children who are removed from such contexts into care environments also experience many negative consequences.[115] It has also been suggested that these beneficial aspects might offset the biological disadvantages of late-in-life procreation.[116] Cooke et al. cite a range of studies that show correlations between increased maternal age and increased cognitive ability and intelligence, and lower rates of sudden infant death syndrome.[117]

We can note a range of responses to some of the specific harms listed. Mothers can expect to live until their early 80s based on average life expectancy; therefore, even a child born to a woman of 60 years (with a father of similar age) is unlikely to be rendered an orphan.[118] That said, a potential burden of care from having an older parent is not removed,

but this is only a risk, not a certainty. With modern medical care, most people in their 60s and 70s are fit and able, and it should be noted that ill health can strike at any time. A child born to a woman in her 20s who is afflicted with cancer or other illnesses in her 30s may be burdened, too, yet we do not deny her ARTs. Perhaps we might say the risk is higher if the parent is older, but age is not the only determination of health and so cannot alone be the reason to deny access to ARTs on the basis of this risk. Given that care burden is possible but not certain, a much more detailed and case-specific approach than a simple age-focused ban would be needed, one that takes account of other factors that affect ART success such as parental obesity. The same reasoning holds true for arguments about stamina and capacity to understand the child's perspective. A wider age gap alone does not necessarily imply an automatic inability to understand. It is also worth noting that there is little discussion (if any) of a *minimum* age limit for ART use based on parenting capacity, even though arguments might be made that younger adult women may be less well-placed financially to support a child or lack the life experience and maturity to raise it well. Similarly, there is little to no debate on the age at which men should be fathering children, even though we should hope that the male partner will take an equal role in the raising of the child.

Not All Harms Derive From Maternal Age

The harm argument against late-stage conception focuses on the impact of maternal age, but this leaves out the contribution of paternal age to harms. There is some (albeit conflicting) data on associations between paternal age and outcomes for offspring. Some studies suggest that children born to men over 40 years experience shorter life spans, birth defects, and a range of conditions such as various cancers, diabetes, and bipolar disorder. However, as Sartorius et al. point out in the survey of the literature, some of these associations are not well established and should be approached with caution.[119]

Paternal age is also increasingly being identified as a contributing factor to some congenital abnormalities that result in spontaneous abortion, but the impact on abnormalities that do not lead to fetal death is less clear due to a lack of data.[120] One study suggested that children born to fathers aged over 40 years faced a 20% higher risk of suffering an autosomal dominant disease than those born to 20-year-old fathers. As fathers approach 50 years of age, this risk continues to rise.[121] Another review from 2010 found that:

> despite contradictory reports, evidence suggests that increasing [paternal] age is associated with a higher frequency of aneuploidies and point mutations, more breaks in sperm DNA, loss of apoptosis, genetic imprinting and other chromosomal abnormalities.[122]

Harms that come later due to parental age, such as early parental death or a "grandfather at the school gate," should apply equally to older fathers. It is evident that they do not, with older fathers generally not facing the same degree of censure, but this is probably due in part to the assumption that the woman is the primary caregiver and so her age or her loss is more important. The lived experience for the child is probably quite contrary to this assumption, as the loss of either parent is heartbreaking, while it is as much the father's role to provide care as it is the mother's. There is, of course, more to it than this. It is not only that men face little censure when they choose to procreate late in life. In fact, men are positively lauded for this seeming sign of their enduring virility.[123] As Robert Edwards, one of the pioneers of IVF, once commented: "if a man of 60 fathers a baby, then we buy him a drink and toast his health at the pub. But it is totally different with a woman of the same age."[124]

Given this, it seems if we are to be consistent, older men should also not be permitted to conceive children later in life. The problem is that for the most part they cannot be prevented from doing so due to the incursion into their privacy and their bodies this would require. But we could say their contribution is equally morally problematic, and we could restrict them from contributing sperm when ARTs are used.

The Nonidentity Problem

The key reason why the harm argument fails is the nonidentity problem. A child born to an older mother would not have existed had she been prevented from using ARTs or other assistance to conceive in the face of her decreased or absent fertility. When a person is brought into existence who would not otherwise have existed, it arguably cannot be said that creating the person is morally wrong unless existence is worse for the person than never having existed at all. The older mother faces exactly this choice: bring a child into the world, or bring no child into the world. Unless the child she creates will live a life not worth living, her choice to do so cannot be morally wrong (assuming this choice harms no one else, a point we return to later). None of the harms listed earlier seem to be so bad that someone who experiences them would

consider one's life not worth having, and so it is difficult to see how absent other harms, the harm-based argument can be a grounds to denying women ARTs.[125]

Harms to Others

Given the implications of the nonidentity problem, the harm argument can bite only if the decision to enable a woman to conceive a child despite her age-related fertility causes harm to others. One major way in which this might be the case is the diversion of resources, which is considered separately later. Other ways in which others might be harmed are the costs if the child is taken into care, or if the mother needs extra support to care for the child as she ages. These arguments are potentially convincing: It may well be unreasonable to conceive a child likely to place burdens on others. But it is mere speculation that such costs will in fact arise, and we should be fine-grained about age here. The age difference between a woman of 30 years and a woman of 40 years is only 10 years, but both can expect to live until their 80s. Therefore, neither is especially likely to die before the child reaches adulthood. Unless that woman has conceived without a partner, there is also likely to be at least the child's father remaining to provide care. It is also true that a child may lose one or both parents for any number of reasons, not solely age, and therefore the concern that the child will be a burden applies across the board and so cannot be a basis on which to deny ARTs to older women.

It has also been suggested that those who are infertile (particularly through their own fault) should adopt. This argument is often joined with claims that the world is overpopulated, and therefore using ARTs to create children who would not otherwise exist contributes to this problem. This view is obviously flawed. Overpopulation affects everyone, and anyone who bears a child by whatever means contributes to the increase in world population. Therefore, any reproductive decision is open to this objection (perhaps rightly). That some need help to conceive which can be withheld from them does not alter the fact that it is not their responsibility alone to tackle the population problem. To use their need for technological assistance to make them take on that responsibility is simply unjustified discrimination.

Furthermore, the adoption argument assumes that adoption is an option available to all such women when in fact it is not. Age may be barrier to adoption, as in some jurisdictions older people are precluded from becoming adoptive parents. It also assumes that adoption is a reasonable substitute for the creation of one's own genetically related child, but this is again not the case for all women. For some, the genetic connection is important. Many parents want to be genetically related to their offspring for the understandable reason that they rejoice in seeing the traits of themselves and their partner in the product of their relationship.[126] Others may wish not to risk what they might see as a lottery in terms of such traits—they may not wish to take the risk of taking on a child who has unknown traits or potential genetically determined health problems of which they are not aware. However, these arguments are not especially strong because the genetic component is only one of the many factors that shape a human being's character, capacities, and future health outcomes. We know that these are affected also by upbringing, environment, diet, and other factors.

But indeed it is this cluster of other factors that mean adoption is not a perfect substitute for creating a genetically related child. Adopters often will not have the choice of obtaining a newborn, but will instead have to adopt an older child, whose background may be troubled. In the United Kingdom, for example, there has been recent discussion of the difficulties adoptive parents experience precisely because those children most likely to need adoption are ones who have come from a difficult background that precipitates behavioral problems.[127] This will not always be the case, but it is certainly not true that adoption is a simple option that provides a woman who wants a child with the perfect substitute for her own offspring. Finally, it should be noted that there are in fact far fewer children available for adoption since the advent of the contraceptive pill, so it is not certain that all who wish to adopt will be able to do so.

For these reasons, adoption is an alternative to the use of technology to offset infertility, but it is not a simple solution nor is it one that everyone would wish to pursue, and their reasons for rejecting it may well be legitimate. Given the importance of reproductive autonomy, and in fact the importance of people creating families to which they are committed, pressing people into adoption when they would prefer to have genetically related offspring may itself create problems. Furthermore, as with the environmental burdens of ARTs, if there are children in need of adoption, anyone who wishes to have a child has an equal responsibility to take them into their care. The fact that some people need technology to reproduce does not mean that the welfare of these children is their responsibility above that of everyone else.

The Resource Allocation Question

A different kind of objection to providing women who delay reproduction with ARTs is based on concerns about the use of scarce resources. This argument holds that these women should not be allowed to use up resources that might otherwise go to those with "real" illnesses. It is most commonly raised when women seek access to health care that is provided by the state, such as cycles of IVF provided on the British National Health Service (NHS). A woman who paid for IVF for herself in an attempt to conceive late in life articulates the concern well:

> What right did I have to bump an elderly lady with dementia off the waiting list for drugs to ease her suffering because of my maternal longings? Why is a woman's right to motherhood more worthy than a man with prostate cancer ?[128]

Such arguments are often raised in conjunction with overpopulation concerns, and the alternative generally put is that these infertile people should adopt.[129] The question is complex and has many aspects; only some of these are considered here for reasons of scope.

Provision of ARTs to Older Women Diverts Resources Away From Those More in Need

Within any health care budget, only a small proportion is likely to be spent on ARTs for older women, vastly less than that spent on emergency services, cancer treatments, heart disease medications, and so on, but the concern is whether any should be spent at all. We have already seen that the "she has made her bed" argument is not convincing, but we might think that resources can always be better spent on those who are ill rather than those who are merely infertile. This, however, presumes that any illness is worse than age-related infertility. This may not, in fact, be true. This view belittles the negative impact of infertility on those who suffer it. We have seen that men and women suffer greatly in some cases when faced with involuntary childlessness, and it may well be that these impacts are substantially worse than many minor illnesses or health conditions. On this reasoning, funding ARTs for older women might be at least as important as funding treatment for such conditions as both increase quality of life.

However, in the case of more serious illnesses, this argument will not convince. The depression, frustration, and emotional pain associated with childlessness are probably not commensurate with death, permanent disability, or chronic pain in most if not all cases. Perhaps we should always direct funds at these conditions over anything else. Two responses can be made. First, severity of illness is not the only factor that determines how we divide resources. Public funds (at least in the United Kingdom) are distributed based not on the severity of the condition per se, but on the targets likely to produce the most quality-adjusted life years (QALYs). So in funding, we account for length and quality of life. We have seen that childlessness affects quality of life—it may be in many cases that the relatively small spending needed for a few cycles of IVF is good value, in QALY terms, compared to the misery of childlessness. Second, the argument that we should fund only severe conditions works against not just ARTs for older women, but *any* less serious condition. Therefore, on this basis we should divert all funds from less serious illnesses toward only the most serious. And where those minor illnesses to cause less harm than involuntary childlessness, this would place older women *above* those with minor conditions with which someone might be able to tolerate. Perhaps this is what we should do, but we would then have to defend that decision to everyone whose quality of life is decreased by a minor illness who is denied public health care. This approach would also be open to criticism on the grounds that significant numbers of people will have their quality of life depleted for the sake of a few.[130]

Provision of ARTs to Help Older Women Conceive Is a Waste of Resources

It is true that ARTs will not help all older women conceive, and its ability to help them decreases as their age rises: The success of IVF using a woman's own eggs drops from around 50% in her 30s to less than a 5% chance in her early to mid-40s.[131] It may be that these higher rates at later life stages are due to causes other than maternal age, but the size of the decline and the fact that there is a significant difference in the success rates using donor eggs (with a rate fairly constant despite increasing maternal age) and the woman's own eggs (which decreases markedly with age) suggest that maternal aging affects fertility.[132] Women of "very advanced maternal age" (older than 44 years) using their own eggs may succeed with IVF and respond well to ovarian stimulation,[133] although many have insufficient ovarian reserve and more than 90% of women aged over 40 years will not achieve a live birth with IVF.[134] When using donor eggs, IVF success rates remain relatively constant, at around 50%–60%, even for women in their mid-40s.[135] However, once women reach their late 40s, even with donor eggs the success rate begins to decline, markedly once the woman is over 50 years old.[136]

With this in mind, there is a fair point to be made about whether resources used for ARTs in older women are a "good

spend." It is for this reason that some, such as Gleicher et al., argue that in women over advanced maternal age (over 42 years), access to IVF should be determined by chance of success as reflected by ovarian reserve and other measures.[137] Similarly, in the United Kingdom, state-funded IVF provision on the NHS is generally limited to women under the age of 40 years (subject to some regional variation).[138] When resources are limited, deploying them in the contexts where they will do the most good is rational. The appropriate cutoff point is difficult to determine, but there is a significant difference between helping a 40-year-old women using her own eggs, who has the same chance as many other "naturally" infertile women, and offering them to a woman of 55 years old, who has almost no chance of success.

We might reply that this should not apply to women who are willing to pay for ARTs themselves. Looked at narrowly, if she wants to spend her money in this way, then she should be free to do so. This takes a very capitalist approach, and in times of declining global resources, there may be valid arguments to be made about the approach generally. Cristina Richie has gone so far as to make the case against ART use on the grounds that it contributes unreasonably to carbon emissions. But even if these arguments are valid, given the small numbers of women who seek to use ARTs to offset natural fertility decline, and the significant benefits they obtain, the impact on resources and carbon emissions is comparatively small. There are many other reductions in consumption that produce much less happiness that we could pursue before asking these women to shoulder the burden of environmental concerns. Furthermore, if we take these concerns seriously (which we should), we should also be directing our energies at encouraging people *generally* to have fewer children; it is unreasonable and misplaced discrimination to suggest that only older women who need ARTs should take it on.

We might also reply by considering what the purpose of publicly funded health care is. If it were simply to cure disease or extend life, then many conditions currently funded would fall outside its remit. But a wider understanding, that it is to promote human flourishing by improving aspects of life that can be improved via medicine (which is probably more accurate) can certainly encompass ART provision for at least women in their 40s with some chance of success given the deleterious impact infertility may otherwise have on their lives. Even though we call it "health care," much of what is performed by medical practitioners, including ART providers, goes well beyond improving health in the narrow sense, and rightly so for, as Smajdor points out, "human well-being depends on more than good health."[139] If that well-being is promoted by treatments provided by health care providers, then that is a strong justification for its provision, regardless of the semantics of whether a problem is one of "health" or otherwise.

Some Further Considerations

A few further points remain to be made about how we should think about the issue of assisting women to conceive late in life. One is what the overall impact of providing such assistance would be. Will it be a large impact? Probably not, as most women will not face these issues, and many who do choose not to go through the stress and heartache of using ARTs to try to conceive. Assisting those who want help is unlikely to have substantial demographic implications or a huge impact on resources. One possible consequence, however, is a shift in current stereotypes about women's role as primary carer, as providing assistance can enable women to delay reproduction as men do. John A. Robertson goes further when he argues that a technology like egg freezing "may provide some women with reassurance that they can commit themselves to education and work without losing their fertility." It may also remove some of the pressure to find a suitable partner or to ensure they are psychologically and emotionally ready for children. Providing access to ARTs for older women may hence expand female choices and, as such, promotes female empowerment.[140]

I have also argued elsewhere that permitting women to freeze their eggs to postpone motherhood may also have the welcome effect of enabling those women to pursue education and employment such that they attain positions of power and influence. In doing so, there is the hope that they will have greater capacity to push for change to promote workplace conditions more conductive to earlier childbearing (if a woman prefers it), while continuing to break down the traditional male dominance in higher level positions.[141]

There are benefits of providing ARTs to women with age-related fertility issues. There are also problems. While ARTs may help some women, those women will be in the minority, particularly if they must use donor eggs. Many will be disappointed. If women are already unaware that their fertility will drop, and already placing undue hope in ARTs, it could be argued that providing them and offering examples of successful conceptions fuel hopes that are more than likely to be dashed. However, this is not a sufficient reason to refuse access. Rather, it is a reason to offer ARTs in conjunction with increased education to better inform women about the implications of delaying.

As I have also argued elsewhere, we should continue to work to improve the social, employment, and educational conditions that lead women to delay. If we deny women the capacity to delay childbearing in the manner in which they choose, we may see the emergence of unsafe practices such as privately arranged ART use in less regulated jurisdictions. Denying women treatment is unlikely to prevent all from seeking treatment, and some may well take risks with their health to achieve their goal. Given that this chapter has demonstrated the lack of well-established harm stemming from conception later in life, we should try to avoid placing women into the position where their choices are limited to those that prevent achievement of important life goals or harm them. More important, we might well address the challenges that prevent women conceiving at the physically optimal time in the future, but this will not help those women who currently face pressures that lead them to delay. If we can help them now, we should, while still working toward a future where fewer women will need to delay unless they truly wish to do so.

Conclusion

At first blush, it appears that there are many strong arguments in support of denying older women access to ARTs. But when we take the time to unpack the reasons why women delay, the conditions in which they do so, and the constraints on their choices, some of these arguments begin to fall away. We may have intuitions about the best time to conceive a child, but life is unpredictable and in most cases women who delay will do so with the best of intentions. In fact, before we criticize, we should notice that a woman who is prepared to take on the burden of having a child late in life and to go through the far from pleasant process of using ARTs to do so is likely to have made a committed, considered decision to be a parent. Many of us are free to simply fall into parenthood, and then make of it what we can. In the case of those who pursue that goal with commitment and care, whatever the challenges that prevent them, they deserve at least a reasoned consideration of their motivations and some attempt at understanding the impact of missing out of one of life's great experiences, rather than knee-jerk judgment and poorly founded objections.

Notes:

(1.) See, e.g., J. Berryman, "Perspectives on Later Motherhood" in A. Phoenix, A. Woollett, and E. Lloyd (eds.), *Motherhood: Meanings, Practices and Ideologies* (London: Sage, 1991) as cited in R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221.

(2.) See, e.g., J. W. McDonald, A. Rosina, E. Rizzi, and B. Colombo, "Age and Fertility: Can Women Wait Until Their Early Thirties to Try for a First Birth?" *Journal of Biosocial Science* 43 (2011): 685; but compare J. Twenge, "How Long Can You Wait to Have a Baby?" *The Atlantic* (June 19), www.theatlantic.com/magazine/archive/2013/07/how-long-can-you-wait-to-have-a-baby/309374.

(3.) J. W. McDonald, A. Rosina, E. Rizzi, and B. Colombo, "Age and Fertility: Can Women Wait Until Their Early Thirties to Try for a First Birth?" *Journal of Biosocial Science* 43 (2011): 685.

(4.) See variously Advanced Fertility Center of Chicago, "Fertility After Age 40—IVF in the 40s," http://www.advancedfertility.com/fertility-after-age-40-ivf.htm; accessed October 14, 2014; D. Dunson, B. Colombo, and D. Baird, "Changes With Age in the Level and Duration of Fertility in the Menstrual Cycle," *Human Reproduction* 17 (2002): 1399; Reproductive Endocrinology and Infertility Committee, Family Physicians Advisory Committee, Maternal-Fetal Medicine Committee, Executive and Council of the Society of Obstetricians, K. Liu, and A. Case, "Advanced Reproductive Age and Fertility," *Journal of Obstetrics and Gynaecology Canada* 33 (2011): 1165; American Society for Reproductive Medicine, *Age and Fertlity: A Guide for Patients* (Birmingham, Alabama, 2012).

(5.) Faddy, M. J., R. Gosden, A. Gougeon, S. Richardson, and J. Nelson, "Accelerated Disappearance of Ovarian Follicles in Mid-life: Implications for Forecasting Menopause," *Human Reproduction* 7 (1992): 1342.

(6.) Note that J. Twenge, "How Long Can You Wait to Have a Baby?" *The Atlantic* (June 19), www.theatlantic.com/magazine/archive/2013/07/how-long-can-you-wait-to-have-a-baby/309374 disputes whether the statistics on miscarriage rates rising with age are entirely accurate.

(7.) S. Bewley, M. Davies, and P. Braude, "Which Career First: The Most Secure Age for Childbearing Remains 20-35," *British Medical Journal* 331 (2005): 588.

([8].) One extensive review study concluded that the main impact is seen when both partners are older, wherein increased paternal age is associated with fertility decline in couples where the woman is at least 35 and the man older than 40: G. A. Sartorius and E. Nieschlag, "Paternal Age and Reproduction," *Human Reproduction Update* 16 (2010): 65, 71. This appears to be the case even where donor eggs are used, where the average donor age is 25 years, but both male sperm provider and the recipient woman are aged over 39 years: I. Campos, E. Gómez, A. L. Fernández-Valencia, J. Landeras, R. González, P. Coy, and J. Gadea, "Effects of Men and Recipients' Age on the Reproductive Outcome of an Oocyte Donation Program," *Journal of Assisted Human Reproduction* 25 (2008): 445.

([9].) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks Among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189; M. Mills, R. R. Rindfuss, P. McDonald, E. Velde, and on behalf of the ESHRE Reproduction and Society Task Force, "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives," *Human Reproduction Update* 17 (2011): 848.

([10].) Office for National Statistics (UK), *Births in England and Wales, 2013* (2014), 1; T. Mathews and B. E. Hamilton, "Delayed Childbearing: More Women Are Having Their First Child Later in Life," *National Center for Health Statistics* 21 (August 2009): 1, 6.

([11].) Ibid., 2.

([12].) Office for National Statistics (UK), *Birth Summary Tables, England and Wales 2013* (2014), table 2a.

([13].) Office for National Statistics (UK), *Birth Summary Tables: Characteristics of Mother 2012* (2013), table 2a.

([14].) Ibid., 1.

([15].) Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17, citing SoOaGo Canada, "Society of Obstetricians and Gynaecologists of Canada: Opinion Committee, Delayed Childbearing," *Journal of Obstetrics and Gynaecology Canada* 34 (2012): 80.

([16].) See, e.g., National Institute for Health and Care Excellence, *Fertility: Assessment and Treatment for People With Fertility Problems* (Manchester, 2013).

([17].) R. Cook-Deegan, "What Causes Female Infertility?" (Stanford University, Stanford in Washingtom Seminar and Tutorial), https://web.stanford.edu/class/siw198q/websites/reprotech/New%20Ways%20of%20Making%20Babies/Causefem.htm, accessed September 23, 2014.

([18].) This is evidenced by the breadth of approaches across jurisdictions. See variously: F. Shenfield, J. Mouzon, G. Pennings, A. Ferraretti, A. Andersen, G. Wert, V. Goossens, and ESHRE Taskforce on Cross Border Reproductive Care, "Cross Border Reproductive Care in Six European Countries," *Human Reproduction* 25 (2010): 1361 (surveys policies across Europe, demonstrating that some limit funding or ban access to certain technologies, such as oocyte donation, or refused treatment based on age); M. P. Connolly, S. Hoorens, and Georgina M. Chambers on behalf of the ESHRE Reproduction and Society Task Force, "The Costs and Consequences of Assisted Reproductive Technology: An Economic Perspective," *Human Reproduction Update* 16 (2010): 603 (on the United States and Australia); M. Peterson, "Assisted Reproductive Technologies and Equity of Access Issues," *Journal of Medical Ethics* 31 (2005): 280.

([19].) See variously R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221: fertility expert Bill Ledger claimed that a child would have poor quality of life if its parents are older than its friends' grandparents; on the "granny at the school gate" argument see discussion in J. Berryman, "Perspectives on Later Motherhood" in A. Phoenix, A. Woollett, and E. Lloyd (eds), *Motherhood: Meanings, Practices and Ideologies* (London: Sage, 1991).

([20].) R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221.

([21].) Ibid., 226.

([22].) Ibid., 230.

([23.]) Ibid., 227.

([24.]) A. Smajdor, "The Ethics of IVF Over 40," *Maturitas* 69 (2011): 37, 38.

([25.]) See further Ibid. and also G. Pennings, "Postmenopausal Women and the Right of Access to Oocyte Donation," *Journal of Applied Philosophy* 18 (2001): 171.

([26.]) Men also postpone childbearing, but as they are able to reproduce well into later life (albeit, with some fertility decline), they are not making the same risk/benefit calculation as women in the same position.

([27.]) See discussion in J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420; K. L. Bretherick, N. Fairbrother, L. Avila, S. H. Harbord, and W. P. Robinson, "Fertility and Aging: Do Reproductive-Aged Canadian Women Know What They Need to Know?" *Fertility and Sterility* 93 (2010): 2162. N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,"' *Fertility and Sterility* 97 (2012): 1044.

([28.]) N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 92 (2012): 1044.

([29.]) Ibid., 1045, citing A. Maheshwari, M. Porter, A. Shetty, and S. Bhattacharya, "Women's Awareness and Perceptions of Delay in Childbearing," *Fertility and Sterility* 90 (2008): 1036.

([30.]) N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 97 (2012): 1044, 1045.

([31.]) K. L. Bretherick, N. Fairbrother, L. Avila, S. H. Harbord, and W. P. Robinson, "Fertility and Aging: Do Reproductive-Aged Canadian Women Know What They Need to Know?" *Fertility and Sterility* 93 (2010): 2162.

([32.]) See, e.g., J Twenge, "How Long Can You Wait to Have a Baby?" *The Atlantic* (June 19), www.theatlantic.com/magazine/archive/2013/07/how-long-can-you-wait-to-have-a-baby/309374; Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17.

([33.]) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks Among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189. The investigators interviewed 1,006 women and 500 men.

([34.]) Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17.

([35.]) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks Among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189.

([36.]) J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420, 424 and studies cited therein. See also K. L. Bretherick, N. Fairbrother, L. Avila, S. H. Harbord, and W. P. Robinson, "Fertility and Aging: Do Reproductive-Aged Canadian Women Know What They Need to Know?" *Fertility and Sterility* 93 (2010): 2162; M. J. Davies, V. M. Moore, K. J. Willson, P. V. Essen, K. Priest, H. Scott, E. A. Haan, and A. Chan, "Reproductive Technologies and the Risk of Birth Defects," *New England Journal of Medicine* 366 (2012): 1083.

([37.]) J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420, 424 and studies cited therein. N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 97 (2012): 1044, 1045.

([38.]) J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps" *Fertility and Sterility* 97 (2012): 420, 424. See also A. Cooke, T. A. Mills, and T. Lavender, "Informed and Uninformed Decision Making—Women's Reasoning, Experiences and Perceptions With Regard

to Advanced Maternal Age and Delayed Childbearing: A Meta-synthesis," *International Journal of Nursing Studies* 47 (2010): 1317, 1325.

([39].) K. Benzies, S. Tough, K. Tofflemire, C. Frick, A. Faber, and C. Newburn-Cook, "Factors Influencing Women's Decisions About Timing of Motherhood," *Journal of Obstetric, Gynecologic and Neonatal Nursing* 35 (2006): 625, 628.

([40].) A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice. A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30.

([41].) Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17.

([42].) J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420 and various studies referred to therein. See also A. Cooke, T. A. Mills, and T. Lavender, "Informed and Uninformed Decision Making—Women's Reasoning, Experiences and Perceptions With Regard to Advanced Maternal Age and Delayed Childbearing: A Meta-Synthesis," *International Journal of Nursing Studies* 47 (2010): 1317, 1325.

([43].) N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 97 (2012): 1044, 1045. See also J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420, 421; K. L. Bretherick, N. Fairbrother, L. Avila, S. H. Harbord, and W. P. Robinson, "Fertility and Aging: Do Reproductive-Aged Canadian Women Know What They Need to Know?" *Fertility and Sterility* 93 (2010): 2162.

([44].) Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17, 18.

([45].) As Robert Winston has said: "The nature of our society is that women are leaving child-bearing until later and later in life, and there are good reasons for it, too": A. Grant, "I'm an 'older' mum whose son was conceived by IVF—so why am I uneasy about the NHS offering more women like me the same chance of motherhood?" *The Telegraph* (May 23, 2012).

([46].) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks Among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189.

([47].) A. Berrington, "Perpetual Postponers? Women's, Men's and Couple's Fertility Intentions and Subsequent Fertility Behaviour," *Population Trends* 117 (2004): 9, 116, and see also as cited therein: F. McAllister and L. Clarke, *Choosing Childlessness: Family & Parenthood, Policy & Practice* (London: Family Policy Studies Centre, 1998); T. Fahey and Z. Spéder, *Fertility and Family Issues in an Enlarged Europe* (Luxembourg, European Foundation for the Improvement of Living and Working Conditions; Office for Official Publications of the European Communities, 2004); R. Schoen, N. M. Astone, Y. J. Kim, and C. A. Nathanson, "Do Fertility Intentions Affect Fertility Behavior?" *Journal of Marriage and the Family* 61 (1999): 790. A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice: A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30, 34–35; K. Benzies, S. Tough, K. Tofflemire, C. Frick, A. Faber, and C. Newburn-Cook, "Factors Influencing Women's Decisions About Timing of Motherhood," *Journal of Obstetric, Gynecologic and Neonatal Nursing* 35 (2006): 625, 628.

([48].) A. Berrington, "Perpetual Postponers? Women's, Men's and Couple's Fertility Intentions and Subsequent Fertility Behaviour," *Population Trends* 117 (2004): 9. See also A. Cooke, T. A. Mills, and T. Lavender, "Informed and Uninformed decision Making—Women's Reasoning, Experiences and Perceptions With Regard to Advanced Maternal Age and Delayed Childbearing: A Meta-Synthesis," *International Journal of Nursing Studies* 47 (2010): 1317, 1323.

([49].) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189 and as cited therein: J. Hansen, "Older Maternal Age and Pregnancy Outcome: A Review of the Literature," *Obstetrics and Gynecology Survey* 41 (1986): 726; P. Mansfield and W. McCool, "Toward a Better Understanding of the 'Advanced

Maternal Age' Factor," *Health Care Women International* 10 (1989): 395.

(50.) M. Mills, R. R. Rindfuss, P. McDonald, E. Velde, and on behalf of the ESHRE Reproduction and Society Task Force, "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives," *Human Reproduction Update* 17 (2011): 848, 852.

(51.) Ibid., 852.

(52.) N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 97 (2012): 1044 and studies cited therein.

(53.) L. L. Willett, M. F. Wellons, J. R. Hartig, L. Roenigk, M. Panda, A. T. Dearinger, J. Allison, and T. K. Houston, "Do Women Residents Delay Childbearing Due to Perceived Career Threats?" *Academic Medicine* 85 (2010): 640.

(54.) A. R. Miller, "The Effects of Motherhood Timing on Career Path," *Journal of Population Economics* 24 (2011): 1071, 1073. Similar results are reported in E. T. Wilde, L. Batchelder, and D. T. Ellwood, "The Mommy Track Divides: The Impact of Childbearing on Wage of Women of Differing Skill Levels," *National Bureau of Economic Research Working Paper Series* 16582 (2010).

(55.) A. R. Miller, "The Effects of Motherhood Timing on Career Path," *Journal of Population Economics* 24 (2011):1071, 1073–1074.

(56.) Ibid. See also E. T. Wilde, L. Batchelder, and D. T. Ellwood, "The Mommy Track Divides: The Impact of Childbearing on Wage of Women of Differing Skill Levels," *National Bureau of Economic Research Working Paper Series* 16582 (2010).

(57.) A. R. Miller, "The Effects of Motherhood Timing on Career Path," *Journal of Population Economics* 24 (2011): 1071, 1097.

(58.) E. T. Wilde, L. Batchelder, and D. T. Ellwood, "The Mommy Track Divides: The Impact of Childbearing on Wage of Women of Differing Skill Levels," *National Bureau of Economic Research Working Paper Series* 16582 (2010): 8.

(59.) A. R. Miller, "The Effects of Motherhood Timing on Career Path," *Journal of Population Economics* 24 (2011): 1071, 1098.

(60.) E. T. Wilde, L. Batchelder, and D. T. Ellwood, "The Mommy Track Divides: The Impact of Childbearing on Wage of Women of Differing Skill Levels," *National Bureau of Economic Research Working Paper Series* 16582 (2010): 5.

(61.) S. Bewley, M. Davies, and P. Braude, "Which Career First: The Most Secure Age for Childbearing Remains 20-35," *British Medical Journal* 331 (2005): 588, 589; R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221, 226 citing several media sources.

(62.) See Y. Khalaf, "Cassandra's Prophecy and the Trend of Delaying Childbearing: Is There a Simple Answer to This Complex Problem?" *Reproductive Biomedicine Online* 27 (2013): 17.

(63.) S. Tough, K. Benzies, N. Fraser-Lee, and C. Newburn-Cook, "Factors Influencing Childbearing Decisions and Knowledge of Perinatal Risks among Canadian Men and Women," *Maternal and Child Health Journal* 11 (2007): 189. See also various studies cited in N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 92 (2012): 1044.

(64.) For example, until 2015, in the United Kingdom men received only two weeks paternity leave entitlement, while women could take up to one year while retaining job security.

(65.) M. Mills, R. R. Rindfuss, P. McDonald, E. Velde, and on behalf of the ESHRE Reproduction and Society Task Force, "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives," *Human Reproduction Update* 17 (2011): 848, 855 citing S. Bianchi, M. Milkie, L. Sayer, and J. Robinson, "Is Anyone Doing the Housework? Trends in the Gender Division of Household Labor," *Social Forces* 79 (2000): 191; J. Gershuny, *Changing Times: Work and Leisure in Postindustrial Society* (Oxford: Oxford University Press, 2000); J. Hook, "Care in Context: Men's Unpaid Work in 20 Countries, 1965–2003," *American Sociological Review* 71 (2006): 639.

(66.) S. Bewley, M. Davies, and P. Braude, "Which Career First: The Most Secure Age for Childbearing Remains 20-35," *British Medical Journal* 331 (2005): 588, 589.

(67.) K. Benzies, S. Tough, K. Tofflemire, C. Frick, A. Faber, and C. Newburn-Cook, "Factors Influencing Women's Decisions About Timing of Motherhood," *Journal of Obstetric, Gynecologic and Neonatal Nursing* 35 (2006): 625, 628.

(68.) N. Wyndham, P. G. M. Figueira, and P. Patrizio, "A Persistent Misperception: Assisted Reproductive Technology Can Reverse the 'Aged Biological Clock,'" *Fertility and Sterility* 92 (2012): 1044.

(69.) A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice. A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30, 33.

(70.) A. Smajdor, "The Ethics of IVF Over 40," *Maturitas* 69 (2011): 37, 38.

(71.) Robert Burns, *To a Mouse, On Turning Her Up in Her Nest With the Plough*.

(72.) J. C. Daniluk, E. Koert, and A. Cheung, "Childless Women's Knowledge of Fertility and Assisted Human Reproduction: Identifying the Gaps," *Fertility and Sterility* 97 (2012): 420 refs 11, 21–24, 25. See also A. Cooke, T. A. Mills, and T. Lavender, "Informed and Uninformed Decision Making—Women's Reasoning, Experiences and Perceptions With Regard to Advanced Maternal Age and Delayed Childbearing: A Meta-Synthesis," *International Journal of Nursing Studies* 47 (2010): 1317, 1325.

(73.) A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice. A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30, 35.

(74.) Ibid., 35.

(75.) M. Mills, R. R. Rindfuss, P. McDonald, E. Velde, and on behalf of the ESHRE Reproduction and Society Task Force, "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives," *Human Reproduction Update* 17 (2011): 848, 849. W. Meller, L. Burns, S. Crow, and P. Grambsch, "Major Depression in Unexplained Infertility," *Journal of Psychosomatic Obstetrics and Gynecology* 23 (2003): 27.

(76.) A. Smajdor, "The Ethics of IVF Over 40," *Maturitas* 69 (2011): 37, 38.

(77.) N. Priaulx, "Rethinking Progenitive Conflict: Why Reproductive Autonomy Matters," *Medical Law Review* 16 (2008): 169, 173.

(78.) Ibid., 174 referencing J. A. Robertson, *Children of Choice: Freedom and the New Reproductive Technologies* (Princeton, NJ: Princeton University Press, 1994), 24.

(79.) J. S. Mill, *On Liberty* (1869), Ch III.

(80.) R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221, 227.

(81.) Ibid., 227.

(82.) Ibid., 227.

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(84.) Ibid., 228.

(85.) Compare the position of the Canadian Royal Commission in opposing postmenopausal IVF: Royal Commission on New Reproductive Technologies, *Proceed with care: final report of the Royal Commission on New Reproductive Technologies* (Ottawa, 1993).

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([93].) A. Treacy, M. Robson, and C. O.'Herlihy, "Dystocia Increases with Advancing Maternal Age," *American Journal of Obstetrics and Gynecology* 195 (2006): 760; J. Cleary-Goldman, F. Malone, J. Vidaver, R. Ball, D. Nyberg, C. Comstock, G. Saade, K. Eddleman, S. Klugman, L. Dugoff, I. Timor-Tritsch, S. Craigo, S. Carr, H. Wolfe, D. Bianchi, and M. D'Alton, "Impact of Maternal Age on Obstetric Outcome," *Obstetrics and Gynecology International* 105 (2005): 983; W Gilbert, T. Nesbitt, and B. Danielsen, "Childbearing Beyond Age 40: Pregnancy Outcome in 24,032 cases," *Obstetrics & Gynecology* 93 (1999): 9 as cited in A. Cooke, T. A. Mills and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice: A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30.

([94].) W. Gilbert, T. Nesbitt, and B. Danielsen, "Childbearing Beyond Age 40: Pregnancy Outcome in 24,032 Cases," *Obstetrics & Gynecology* 93 (1999): 9. As cited in A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice. A Qualitative Study of Women's Views and Experiences" *International Journal of Nursing Studies* 49 (2012): 30; and see S Bewley, M Davies and P Braude, "Which Career First: The Most Secure Age for Childbearing Remains 20-35," *British Medical Journal* 331 (2005): 588, 589 on risks generally.

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([99].) G .A. Sartorius and E. Nieschlag, "Paternal Age and Reproduction," *Human Reproduction Update* 16 (2010): 65, 71.

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"Pregnancy at or Beyond Age 40 Years Is Associated With an Increased Risk of Fetal Death and Other Adverse Outcomes," *American Journal of Obstetrics and Gynecology* 196 (2007): e11.

([103.]) J. Rychtarikova, C. Gourbin, A. Sipek, and G. Wunsch, "Impact of Parental Ages and Other Characteristics at Childbearing on Congenital Anomalies: Results for the Czech Republic, 2000–2007" *Demographic Research* 28 (2013): 137, 139. See also A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice: A Qualitative Study of Women's Views and Experiences," *International Journal of Nursing Studies* 49 (2012): 30.

([104.]) M. J. Davies, V. M. Moore, K. J. Willson, P. V. Essen, K. Priest, H. Scott, E. A. Haan, and A. Chan, "Reproductive Technologies and the Risk of Birth Defects," *New England Journal of Medicine* 366 (2012): 1083.

([105.]) See, e.g., M. J. Davies, V. M. Moore, K. J. Willson, P. V. Essen, K. Priest, H. Scott, E. A. Haan, and A. Chan, Ibid.,1803.

([106.]) This harm arises only in jurisdictions where it is permissible to implant multiple embryos in one cycle, a practice some jurisdictions have limited due to the risks doing so poses. Where no such regulatory limits are in place, clinics' interests in publishing high success rates may also affect a woman's decision about how many embryos to implant.

([107.]) Numerous studies have demonstrated the negative psychological impact of the loss of a parent in early childhood. Early parental death has been associated with suicide, substance abuse, difficulties with establishing and sustaining intimacy, and anger-management issues (K. Mack, "Childhood Family Disruptions and Adult Well-Being: The Differential Effects of Divorce and Parental Death" *Death Studies* 25 (2001): 419) as well as social withdrawal, anxiety, and low self-esteem in children suffering childhood grief (J. Worden and P. Silverman, "Parental Death and the Adjustment of School-Age Children" *Journal of Death and Dying* 33 (1996): 91). Dowdney suggests that as many as one in five children who lose a parent develop a psychiatric disorder (L. Dowdney, "Annotation: Childhood Bereavement Following Parental Death" *Journal of Child Psychology and Psychiatry* 41 (2000): 819), and other studies show that parental death during childhood is associated with risks of psychological illness in offspring and of later substance abuse, PTSD and health risk behaviours (C. Tennant, P. Bebbington, and J. Hurry, "Parental Death in Childhood and Risk of Adult Depressive Disorders: A Review" *Psychological Medicine* 10 (1980): 289; D. A. Brent, N. M. Melhem, A. S. Masten, G. Porta, and M. W. Payne, "Logitudinal Effects of Parental Bereavement on Adolescent Developmental Competence" *Journal of Clinical Child & Adolescent Psychology* 41 (2012): 778). However, other studies suggest that parental loss in childhood is not an independent risk factor for adult depression (C. Tennant, "Parental Loss in Childhood: It's Effect in Adult Life," *Archives of General Psychiatry* 45 (1988): 1045).

([108.]) See, e.g., discussion in M. Peterson, "Assisted Reproductive Technologies and Equity of Access Issues" *Journal of Medical Ethics* 31 (2005): 280.

([109.]) Minors' Court of Piemonte and Valle d'Aosta, Sentence n 133, August 16, 2011, 251. It is important to note that there were other bases for the decision, most particularly failures in care of the child unrelated to the parents' age, but the matter is complex and the case was appealed twice. Alice Margaria and Sally Sheldon provide a very useful analysis of the reasoning in all three courts here: A. Margaria and S. Sheldon, "Parenting Post IVF: Is Age Not So Relevant After All?" *Reproductive Biomedicine Online* 29 (2014): 10.

([110.]) See further on these arguments: S. A. Jayson, '"Loving Infertile Couple Seeks Woman Age 18–31 to Help Have Baby. $6,500 plus Expenses and a Gift: Should We Regulate the Use of Assisted Reproductive Technologies by Older Women?' *Albany Law Journal of Science and Technology* 11 (2001): 287.

([111.]) See, e.g., R. Shaw and D. Giles, "Motherhood on Ice? A Media Framing Analysis of Older Mothers in the UK News," *Psychology and Health* 24 (2009): 221.

([112.]) M. Mills, R. R. Rindfuss, P. McDonald, E. Velde, and on behalf of the ESHRE Reproduction and Society Task Force, "Why Do People Postpone Parenthood? Reasons and Social Policy Incentives" *Human Reproduction Update* 17 (2011): 848, 849.

([113.]) Ibid., 849.

([114.]) Ibid., 849.

([115.]) K. Bos, C. Zeanah, N. Fox, S. Drury, K. McLaughlin, and C. Nelson, "Psychiatric Outcomes in Young Children With a History of Institutionalization" *Harvard Review of Psychiatry* 19 (2011): 15; J. Windsor, J. P. Benigno, C. Wing, P. Carroll, S. Koga, C. N. III, N. Fox, and C. Zeanah, "Effect of Foster Care on Young Children's Language Learning," *Child Development* 82 (2011): 1040.

([116.]) F. C. Billari, A. Goisis, A. C. Liefbroer, R. A. Settersten, A. Aassve, G. Hagestad, and Z. Speder, "Social Age Deadlines for Childbearing for Women and Men," *Human Reproduction* 26 (2010): 616, 621.

([117.]) A. Cooke, T. A. Mills, and T. Lavender, "Advanced Maternal Age: Delayed Childbearing Is Rarely a Conscious Choice. A Qualitative Study of Women's Views and Experiences" *International Journal of Nursing Studies* 49 (2012): 30, 31.

([118.]) For example, Banh et al. demonstrate that given the current life expectancy for women, the cutoff for a woman using IVF should be 68 years if the basis on which to restrict access is concerns that the child will not reach adulthood before the mother dies: D. Banh, D. L. Havemann, and J. Y. Phelps, "Reproduction Beyond Menopause: How Old Is Too Old for Assisted Reproductive Technology?" *Journal of Assisted Reproduction and Genetics* 37 (2010): 366. On this basis, they suggest that when IVF is offered to patients over the age of 50, one consideration should be whether the patient has a remaining life expectancy of 18 years or more.

([119.]) G. A. Sartorius and E. Nieschlag, "Paternal Age and Reproduction," *Human Reproduction Update* 16 (2010): 65, 74.

([120.]) J. Rychtarikova, C. Gourbin, A. Sipek, and G. Wunsch, "Impact of Parental Ages and Other Characteristics at Childbearing on Congenital Anomalies: Results for the Czech Republic, 2000–2007," *Demographic Research* 28 (2013): 137, 139, 152. Plas et al. make the same observation about lack of data: E. Plas, P. Berger, M. Herman, and H. Pfluger, "Effects of Aging on Male Fertility?" *Experimental Gerontology* 35 (2000): 543, 545. Paternal age does not appear to be associated with Down syndrome (p. 151).

([121.]) E. Plas, P. Berger, M. Herman, and H. Pfluger, "Effects of Aging on Male Fertility?" *Experimental Gerontology* 35 (2000): 543.

([122.]) G. A. Sartorius and E. Nieschlag, "Paternal Age and Reproduction" *Human Reproduction Update* 16 (2010): 65, 69.

([123.]) See further on this point: I. Goold and J. Savulescu, "In Favour of Freezing Eggs for Non-Medical Reasons," *Bioethics* 23 (2009): 47, 52.

([124.]) B. Hewitt, "Turning Back the Clock," *People* (January 24, 1994), 36.

([125.]) See further on this point in the context of postmenopausal women's reproduction in particular: J. Harris, "Rights and Reproductive Choice" in ed. J. Harris and S. Holm, *The Future of Human Reproduction: Ethics, Choice, and Regulation* (Oxford: Oxford University Press, 1998), 19–21.

([126.]) Compare Bayles (1984) who argues that this view is irrational: W. Dondorp and G. D. Wert, "Fertility Preservation for Healthy Women: Ethical Aspects," *Human Reproduction* 24 (2009): 1779.

([127.]) See, e.g., M Henderson, "Adoption: Why the System Is Ruining Lives," *Guardian* (October 31, 2012) and references cited therein.

([128.]) A Platell, "I endured the trauma of IVF. Giving it to the over-40s on the NHS isn't just wasteful …. it's cruel," *Daily Mail* (May 24, 2012).

([129.]) A. S. Daar and Z. Merali, "Infertility and Social Suffering: The Case of ART in Developing Countries" in E. Vayena, P. Rowe, and P. Griffin (eds), *Current Practices and Controversies in Assisted Reproduction* (Geneva, Switzerland: World Health Organization, 2002). The question of adoption also arises frequently in feminist jurisprudence. In E. Bartholet, *Family Bonds* (Boston: Houghton Mifflin, 1993), 24, the argument is made against use of reproductive technologies because they detract from the appeal of adoption, leaving it as a "choice of last resort for infertile ….women"; R. Colker, "Pregnant Men Revisited or Sperm Is Cheap, Eggs Are Not," *Hastings Law Journal* 47 (1996): 1063, 1080, muses: "I wonder why people engage in IVF at all, because it is such a difficult, painful, expensive, and not very successful procedure. There are always children available to be adopted …. Does the use of IVF express a

disrespect for the lives of the poor, disabled, and often minority children who are available for adoption?"; and see also MA Field, "Surrogacy Contract—Gestational and Traditional: The Argument for Non-enforcement," *Washburn Law Journal* 31 (1991): 6, in which it is suggested that we should restrict access to reproductive technologies to encourage people to adopt hard to place children.

(130.) For a further discussion of some of these arguments, see W. Dondorp and G. D. Wert, "Fertility Preservation for Healthy Women: Ethical Aspects," *Human Reproduction* 24 (2009): 1779.

(131.) Centers for Disease Control, "ART National Summary Report Presentations" (2010), http://www.cdc.gov/art/artreports.htm#p5, accessed October 13, 2014, 31.

(132.) Ibid., 44.

(133.) S. D. Spandorfer, K. Bendikson, K. Dragisic, G. Schattman, O. K. Davis, and Z. Rosenwaks, "Outcome of In Vitro Fertilization in Women 45 Years and Older Who Use Autologous Oocytes," *Fertility and Sterility* 87 (2007): 74.

(134.) S. Bewley, M. Davies, and P. Braude, "Which Career First: The Most Secure Age for Childbearing Remains 20-35," *British Medical Journal* 331 (2005): 588, fn 6.

(135.) Advanced Fertility Center of Chicago, "IVF and Age—Impact of Female Aging on In Vitro Fertilization Statistics" <http://www.advancedfertility.com/ivf-age.htm> accessed July 10, 2012.

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(137.) N. Gleicher, V. A. Kushnir, A. Weghofer, and D. H. Barad, "The 'Graying' of Infertility Services: An Impending Revolution Nobody Is Ready for," *Reproductive Biology and Endocrinology* 12 (2013): 63.

(138.) See further National Institute for Health and Care Excellence, *Fertility: Assessment and Treatment for People with Fertility Problems* (Manchester, 2013); NHS Choices, "IVF: Introduction" (National Health Service) <http://www.nhs.uk/conditions/IVF/pages/introduction.aspx> accessed October 15, 2014.

(139.) A. Smajdor, "The Ethics of IVF Over 40" (2011), *Maturitas* 69: 37, 38.

(140.) J. A. Robertson, *Children of Choice: Freedom and the New Reproductive Technologies* (Princeton, NJ: Princeton University Press, 1994), 120.

(141.) I. Goold and J. Savulescu, "In Favour of Freezing Eggs for Non-Medical Reasons," *Bioethics* 23 (2009): 47, 49.

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