Cloning and Infertility

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Although there are important moral arguments against cloning[1] human beings, it has been suggested that there might be exceptional cases in which cloning humans would be ethically permissible.[2–3] One type of supposed exceptional case involves infertile couples who want to have children by cloning. This paper explores whether cloning would be ethically permissible in infertility cases and the separate question of whether we should have a policy allowing cloning in such cases. One caveat should be stated at the beginning, however. After the cloning of a sheep in Scotland, scientists pointed out that using the same technique to clone humans would, at present, involve substantial risks of producing children with birth defects.[4–6] This concern over safety gives compelling support to the view that it would be wrong to attempt human cloning now. Thus, we do not reach the debate about exceptional cases unless the issue of safety can be set aside. I ask the reader to consider the possibility that in the future humans could be cloned without a significantly elevated risk of birth defects from the cloning process itself. The remainder of this paper assumes, for sake of argument, that cloning technology has advanced to that point. Given this assumption, would cloning in the infertility cases be ethically permissible, and should it be legally permitted?

An example of the type of case in question is a scenario in which the woman cannot produce ova and the man cannot produce sperm capable of fertilizing ova.[7] Like many couples, they wish to have a child genetically related to at least one of them. One approach would use sperm and ova donated by family members, but suppose that no family donors are available in this case. Let us assume, in other words, that cloning is the only way they could have a child genetically related to one of them. Imagine the couple asking their infertility doctor to help them have a child by cloning. This would involve replacing the nucleus of a donated ovum with that of a cell taken from either member of the couple. Suppose that an ovum donor is available who is willing to participate in this process. The infertile couple would decide whether to duplicate genetically the woman or the man. They could try to have a girl or a boy or possibly a child of each sex—fraternal twins. They could use cloning again to have subsequent children: perhaps one the opposite sex of a first child; or another the same sex; or twins again, among other possibilities.

Many would consider cloning ethically unjustifiable in such cases. Following the birth of Dolly the sheep clone, the response from ethicists, politicians, and journalists was overwhelmingly against cloning human beings.[8–12] In fact, few issues in bioethics seem to have reached the high level of consensus found in our society's opposition to human cloning. This opposition rests on a number

Cambridge Quarterly of Healthcare Ethics (1998), **7**, 279–293. Printed in the USA.

of concerns, religious and secular. I will focus on the secular arguments, which include at least the following main ones. First, the persons produced would lack genetic uniqueness, and this might be psychologically harmful to them. Second, this reproductive method transforms babymaking into a process similar to manufacturing. Children would become products made according to specification; this would objectify children and adversely affect parental attitudes toward children and other aspects of parent–child relationships. Third, additional abuses might occur if this technology were obtained by totalitarian regimes or other unscrupulous persons.

My main thesis is that the ethics of cloning is not as clear-cut as many seem to think. Specifically, when the arguments against cloning are applied to infertility cases like the one described above, they are not as strong as they might initially appear. Such cases can reasonably move us away from the view that cloning humans is always wrong. Moreover, the arguments for legally prohibiting cloning in such cases are not strong enough to support such restrictions.

Whether cloning in the above case is ethically justifiable rests on the following question: Which is weightier, infertile couples' reproductive freedom to use cloning or the arguments against cloning humans? To address this question, we need to examine closely both the importance of the freedom of infertile couples to utilize cloning and the arguments against its use.

Freedom of Infertile Couples to Use Cloning

Let us begin by asking why the freedom of infertile couples to use cloning should be valued. Because a main reason to use cloning in the above case is to have children who are genetically related to at least one member of the couple, we need to ask whether reasons can be given to value the having of genetically related children. It is worth noting that studies[13–18] have identified a number of reasons people actually give for having genetically related offspring, some of which seem selfish and confused. For example, some people desire genetic children as a way to demonstrate their virility or femininity. The views on which these reasons seem to be based—that virility is central to the worth of a man, and that women must have babies to prove their femininity—are unwarranted. They stereotype sex-roles and overlook ways self-esteem can be enhanced other than by having genetic offspring. Another example involves desiring a genetic child in order to "save" a shaky marriage. This reason fails to address the sources of the marital problems, and the added stress of raising the child might make the marital relationship even more difficult. Some commentators seem to think that the desire for genetic offspring is always unreasonable, as in these examples.[19] Rather than make this assumption, we should consider whether there are defensible reasons that could be given for desiring genetic offspring.

I have explored this question elsewhere, focusing on a category of procreation commonly referred to as "having a child of one's own," sometimes stated simply as "having a child" or "having children."[20] Although these expressions can be interpreted in several ways, I use them to refer to begetting, by sexual intercourse, a child whom one rears or helps rear. This, of course, is the common type of procreation, in which parents raise children genetically their own. My strategy was to try to understand why having genetic offspring might be meaningful to people in this ordinary scenario, and then use this understand-

ing to address assisted reproductive technologies. For the common type of procreation, I identified six reasons people might give for valuing the having of genetic offspring. Briefly, they are as follows: having a child involves participation in the creation of a person; it can be an affirmation of a couple's mutual love and acceptance of each other; it can contribute to sexual intimacy; it provides a link to future persons; it involves experiences of pregnancy and childbirth; and it leads to experiences associated with child rearing. However, the above infertility case differs in several ways from the ordinary type of procreation, including the fact that children would not be created by sexual intercourse. Because of these differences, not all the reasons that might be given in justifying the desire for genetic offspring in the common scenario would be strong reasons in the cloning situation. Nevertheless, I believe that at least the following two reasons would be significant.

Participation in the Creation of a Person

When one 'has a child of one's own,' as defined above, a normal outcome is the creation of an individual with self-consciousness. Philosophers have regarded the phenomenon of self-consciousness with wonder, noting that it raises perplexing questions: What is the relationship between body and mind? How can the physical matter of the brain give rise to consciousness? It is ironic that although we have difficulty giving satisfactory answers to these questions, we can create self-consciousness with relative ease. Each of us who begets or gestates a child who becomes self-conscious participates in the creation of a person. One might say that in having children we participate in the mystery of the creation of self-consciousness. For this reason, among others, some might regard creating a person as an important event, perhaps one with metaphysical or spiritual dimensions (p. 114).[21] Perhaps not all who have children think about procreation in these terms, but this is a reason that can be given to help justify the desire for genetic offspring.

Similarly, the infertile couple might reasonably value the use of cloning because it would enable them to participate in the creation of a person. The member of the couple whose chromosomes are used would participate by providing the genetic material for the new person. Regardless of whose chromosomes are used, if the woman is capable of gestating, she could participate by gestating and giving birth to the child.

It might be objected that the infertile couple could participate in the creation of a person by using donor gametes or preembryos, in the sense that they would authorize the steps taken in an attempt to create a person. Also, if the woman were the gestational mother and used donor gametes or preembryos, then she would participate biologically in the creation of the person. In reply, although these would constitute types of participation, a more direct involvement would occur if one member of the couple contributed genetically to the creation of the child. From the body of one of them would come the makeup of the new person. Cloning would be the only way that the man, in fact, could participate biologically in the creation of the person. This more direct involvement would increase the degree to which the couple participates in the creation of a person, and for some this greater participation might be especially meaningful.

Affirmation of Mutual Love

In the ordinary type of procreation, intentionally having children can be an affirmation of a couple's mutual love and acceptance of each other. It can be a deep expression of acceptance to say to another, in effect, "I want a child to come forth from your body and mine." In such a context there might be an anticipation that the bond between the couple will grow stronger because of common children to whom each has a biological relationship. To intentionally seek the strengthening of their personal bond in this manner can be a further affirmation of mutual love and acceptance.

In the infertility case in question, if cloning is used, then the child would not receive genes from both parents. Nevertheless, a similar affirmation of mutual love is possible if the woman is capable of being the gestational mother and the man's genes are used. In that situation, it remains true that the child comes forth from their two bodies. Assuming mutual love, the woman bears a child having the genes of the man who loves her and is loved by her. Alternatively, suppose that the woman's genes are used. The man then can become the social father of a child having the genes of the woman who loves him and is loved by him; to seek to become social parents in this manner can also be an affirmation of mutual acceptance.

It might be objected that having children by donor gametes or preembryos—or even adopting children—can also be an affirmation of mutual acceptance, for each member of the couple selects the other to be a social parent of their children. These types of affirmation could enrich the couple's relationship with each other. In response, although these would indeed be forms of affirmation, they can be viewed as different from the affirmation involved in trying to have genetically related children. Intentionally to create a child having the partner's genes might be regarded by some as a special type of affirmation, one that would enrich the couple's relationship in its own distinctive way. For some couples, this type of affirmation might have special significance.

In stating these two reasons, I do not mean to imply that one *ought* to desire genetic offspring, much less that one ought to desire cloning if necessary to have genetically related children. Rather, the point is that the desire for genetic offspring—and hence the desire for cloning in the situation being considered—could be supported by reasons that deserve consideration. Although not everyone in the infertile couple's situation would want to pursue cloning, some might. These reasons also help explain why *freedom* to use cloning to have biological children might be considered valuable; namely, because some couples might value either the opportunity to participate directly in the creation of a person or an affirmation of mutual love that can be associated with that endeavor, or both.

Arguments against Cloning

Let us turn to the considerations against cloning, beginning with the arguments based on lack of genetic uniqueness. What exactly are the adverse effects envisioned for persons who are genetically identical to others? Perhaps the most obvious concerns involve the possibility of being one of *many* genetically identical persons—perhaps one of hundreds of clones, or thousands, or even more. One argument is that the clones would be psychologically harmed, in that they

would feel insignificant and have low self-esteem. If I know that I am one of many who physically are exact duplicates, then I might easily believe that there is little or nothing special about me. Apart from what the clones would feel, objections to multiple cloning can also be made from a deontological perspective; it would be an affront to their human dignity to be one of so many genetic replicas. There would also be a serious violation of personal autonomy if the clones were under the control of those who produced them.

Lack of genetic uniqueness can raise concerns even if there are not many clones. Imagine, for example, being the single clone of a person 30 years older. There might be a tendency for the older person's life to be regarded as a standard to be met or exceeded by the younger one. If the clone feels pressured to accept that standard, this might be a significant impediment to freedom in directing one's own life. In addition, knowing that one is a clone might be psychologically harmful in this situation too. For example, self-esteem could be diminished; perhaps the child would regard herself as nothing more than a copy of someone who has already traveled the path ahead.

Although these arguments initially appear persuasive, we need to consider the conclusions reached when we apply them to the infertility case. To begin, the arguments based on large cohorts of clones would not be relevant. The couple might create only one or two children using cloning; thus, their use of cloning can be distinguished from scenarios in which large numbers of clones are produced.

The argument that the parent's life might be regarded as a standard would be relevant, but a response can be given. For one thing, parents' lives often are held up as standards, even in the absence of cloning. This can be either good or bad for the child, depending on how it is handled; it has the potential to promote as well as inhibit development of the child's talents, abilities, and autonomy. Similarly, a clone's being given a role model or standard is not necessarily bad. It depends on how the standard is used and regarded by those directly involved. If it is used by parents in a loving and nurturing manner, it can help children develop their autonomy, rather than inhibit it.

It might be objected that when the child is genetically identical to the parent, there will be a tendency for the parent to be less forgiving when the child fails to meet expectations. If so, the parental standard might tend to thwart rather than promote the child's developing autonomy. In reply, it should be noted that this concern is rather speculative. We do not know the extent, if any, to which the child's being genetically identical would tend to promote a domineering attitude on the part of the parent. Moreover, there is a way to address this concern other than forbidding the infertile couple to use cloning; in particular, the couple could be counseled about the possible psychological dimensions of parenthood through cloning. Psychological counseling already is widely accepted in preparing infertile couples for various noncoital reproductive methods, such as donor insemination and surrogate motherhood. Similarly, it would be appropriate to offer psychological counseling if cloning is made available to infertile couples. The aims of such counseling could include raising awareness about, and thereby attempting to prevent or reduce problems associated with, a possible tendency of parents to be too demanding.

With regard to the claim that cloning even a single child would be psychologically harmful, it can be replied that such claims misuse the concept of 'harm.' Specifically, there is a serious problem with the claim that it would *harm*

a child to bring her into being in circumstances where she would experience adverse psychological effects from being a clone. To explain this problem, we need to consider what it means to be harmed.

Harming versus Wronging

I shall draw upon Joel Feinberg's detailed and helpful discussions of what is involved in being harmed.[22–23] A key point is that persons are harmed only if they are caused to be worse off than they otherwise would have been. As Feinberg expresses it, one harms another only if the victim's personal interest is in a worse condition than it would have been had the perpetrator not acted as he did.[24] The claim that cloning harms the children who are brought into being, therefore, amounts to saying that the children are *worse off than they would have been if they had not been created*. Many readers will see problems with such an assertion. Some will say that it fails to make sense because it attempts to compare nonexistence with something that exists, and therefore it is neither true nor false. Others will maintain that it is *false*. Whether incoherent or false, it should be rejected. Because I have addressed the relative merits of these two criticisms elsewhere, I will not repeat that discussion, except to say that the better explanation of what is wrong with the statement seems to be that it is false.[25–26] To see its falsity, let us consider what a life would have to be like in order reasonably to say that it is worse for the person living it than nonexistence. I suggest that a life would have to be so filled with pain and suffering that these negative experiences greatly overshadow any pleasurable or other positive experiences the individual might have. If a neonate were born with a painful, debilitating, and fatal genetic disease, for example, we could reasonably make such a statement. However, the gap between such a neonate and a child cloned by an infertile couple is exceedingly great. Even if the cloned child experienced adverse psychological states associated with being a clone, that would not amount to a life filled with pain and suffering. Thus, the concept of harm is not appropriate for describing the cloned individual's condition.

I have applied the usual concept of harm to situations involving cloning. However, there is an objection that should be considered. It might be asserted that applying this concept of harm to this type of situation leads to implausible conclusions. Specifically, it seems to imply that it is ethically justifiable knowingly to create a child who will suffer disadvantages—even serious ones—as long as those disadvantages are not so severe that the life will be worse than nonexistence. To illustrate, consider a hypothetical situation in which a person with cystic fibrosis asks to be cloned, and a cure for cystic fibrosis is not yet available. Suppose that a physician knows about the cystic fibrosis but nevertheless provides the cloning, and the child later suffers the adverse effects of cystic fibrosis. It seems wrong for the physician to carry out the cloning in this example. According to the usual concept of harm, however, the child in this scenario is not harmed by being cloned, given that her life is better than nonexistence. If we cannot say that the child is harmed, then how can we account for our view that the cloning is unethical?

In reply, we can account for cloning being unethical in such a case without inventing a new concept of harm. Although the child is not harmed by being cloned, we can say that she is *wronged*. In particular, we can say that a certain right of the child is violated. It has been suggested that there is a type of

birthright according to which people have a right to be born free of serious impediments to their well being.[27–30] It is important not to misunderstand this right; it is not a 'right to be born' but rather a right possessed by all persons who *are* born. Also, it is not what one might call a 'right against nature'; if a child is born with serious handicaps through the fault of no one, then the right in question is not violated. The right would only be violated if someone negligently or intentionally created a child with the requisite handicaps. I suggest that we can account for the wrongness of cloning in the cystic fibrosis example by positing such a birthright, a right that one's circumstances of birth be free of impediments that would seriously impair one's ability to develop in a healthy manner and to realize a normal potential. Negligently or intentionally creating a child who faces such severe impediments is a violation of that right, which I shall refer to as a right to a decent minimum opportunity for development. The handicaps imposed on the child with cystic fibrosis are not so severe that we could reasonably say that her life is worse than nonexistence, but they are severe enough to impair seriously her ability to develop.

An objection can be made against using the concept 'being wronged' to describe what is unethical about cloning in the cystic fibrosis example. Specifically, if the child were to claim that she was wronged by those who created her, it would commit her to the judgment that their duty had been to refrain from doing what they did; but if they had refrained, it would have led to her never being born, an even worse result from her point of view. Thus, it is argued, the child cannot reasonably claim that her creators should have acted otherwise, given that her life with cystic fibrosis is preferable to nonexistence. If she cannot make this claim, then she has no genuine grievance against them and cannot claim that they wronged her.[31–32]

However, this objection is mistaken. Perhaps we can see this more clearly by considering a similar type of situation. Instead of acts that cause a person to come into being, let us consider actions that cause an existing person to continue to live—that is, *life-saving* actions. Both types of acts have the result that a person exists who otherwise would not be in existence. Consider a patient who has suffered substantial bleeding because of a ruptured ulcer. Suppose that blood transfusions are necessary to save her life but she refuses transfusions on religious grounds and is considered mentally competent. Imagine that a physician provides transfusions despite her refusal, with the result that the patient's life is saved. Let us suppose, also, that the patient later states that she is better off having been kept alive. According to the objection in question, the patient cannot reasonably claim that the physician should have refrained from treating, given that her continued life is better than nonexistence. If she cannot make this claim, then she cannot claim that the physician wronged her.

But this conclusion is incorrect. Clearly, the patient can validly claim that she was wronged; her rights to informed consent and self-determination were violated. The benefits caused by the physician's act do not alter the fact that these rights were infringed. If a beneficial outcome removed all wrongness of the act, that would mean that paternalism, when successfully carried out, is ethically justifiable. This would be inconsistent with the view that competent patients have a right to refuse life-saving treatment. Similarly, the fact that the cloned child with cystic fibrosis has a life that is better than nonexistence does not mean that the child was not wronged. More generally, a child who is intentionally or negligently brought into being in circumstances where she lacks a

decent minimum opportunity for development is wronged, even if her life is better than nonexistence, just as a competent patient who is forced to receive life-saving treatment is wronged, even though her subsequent life is preferable to nonexistence.[33]

Assuming there is a right to a decent minimum opportunity for development, the question arises concerning how serious the impediments must be in order for the right to be violated. No doubt, there is room for disagreement concerning this issue, and a sharp line probably cannot be drawn. Nevertheless, a basic concept can be stated: the impediments must be severe, not minor. As examples, I would suggest that creating a clone who has cystic fibrosis or Down's syndrome would violate the right in question, but creating a clone with, say, nearsightedness would not in itself constitute violation of the right.

Can we say, in the infertility case, that the cloned child would experience psychological problems of such magnitude that the right to a decent minimum opportunity for development would be violated? I suggest that the answer would depend largely on the approach taken by the parents in raising the child. Consider a hypothetical world in which the parents of cloned children always undermine their self-esteem. Then we might reasonably say that being a clone is associated with such serious impediments that the act of cloning violates the child's right to a decent minimum opportunity for development. Consider another hypothetical world in which many but not all parents of cloned children undermine their self-esteem. Then we might reasonably say that cloning puts a child at risk of experiencing obstacles severe enough to constitute a violation of the right in question. Depending on the level of risk involved, we might decide that cloning is wrong because the risk is unacceptably high. In yet another hypothetical world, the parents of cloned children are no more likely to undermine their self-esteem than the parents of other children. In that world it would not be reasonable to say that cloning in itself violates the right in question. If we were to allow infertile couples to use cloning, then which of these hypothetical worlds would the real world be most like? The fact is, we do not know. And this is the problem with the argument that cloned children would experience severe psychological obstacles to well-being; it is based on empirical assumptions concerning how cloned children would generally be treated by parents and others, and we lack evidence supporting those assumptions.

The Argument from Parent–Child Relationships

Let us consider the argument that children would be objectified and parent–child relationships generally would be adversely affected. This argument arises from reflection on what it would be like if there were a widespread practice of controlling the characteristics of our offspring. This practice might involve the insertion and deletion of genes in human preembryos, as well as cloning and other laboratory techniques not yet envisioned. In some cases, such manipulations might have a therapeutic goal; perhaps disease-causing genes would be replaced by normal ones. Objections to such therapeutic manipulations have been based mainly on concerns about whether they can be performed safely. But other forms of genetic control might have the much different goal of enhancing offspring nondisease characteristics, such as height, intelligence, and body build, and it is especially this type of control that raises concerns about

undesirable changes in the attitudes and expectations of parents toward their children.[34–35] The specific concerns can be expressed by a number of questions: If a child failed to manifest the qualities she was designed to have, would the parents be less inclined to accept the child's weaknesses? Would children be regarded more as objects and less as persons? Would less tolerance for imperfection result in less compassion toward the handicapped? Would children who recognize their own shortcomings blame their parents for failing to design them better? Would such feelings sometimes disrupt family relationships? Would knowledge of being designed make a child feel more controlled by parents? Would this result, for example, in greater adolescent rebelliousness? These and other questions suggest a number of ways in which disharmony could enter into parent–child relationships.

However, a reply can be made. Although these are important concerns, their bearing on infertility cases is tangential. Because cloning does not involve inserting and deleting genes, concerns over whether these particular manipulations can be done safely are not directly applicable. Also, cloning in the infertility cases does not involve efforts to enhance the child's genetic makeup. Thus, the concerns expressed above that are specific to enhancement do not directly apply, either; these include the concern that modifying children in order to enhance their characteristics objectifies them. The claim that cloning in the infertility case objectifies the child is weakened by the fact that the purpose is not to design the child but to have a genetically related child, in the only way that is possible. In addition, the number of cases like the one being considered—those in which there is both male and female infertility and use of family donors has been ruled out—would be relatively small. Thus, it is difficult to argue that cloning restricted to such cases would result in widespread changes in parent–child relationships. For these reasons, the arguments in question do not succeed in showing that cloning in the infertility cases would be wrong.

The Argument Based on Abuses

The third argument is that abuses might occur if the technology of cloning is used by unscrupulous persons. A paradigm of such envisioned abuse is found in Aldous Huxley's *Brave New World*, in which multiple genetically identical persons are produced and conditioned to fill defined social roles.[36] Other variations of such abuse could be imagined, in which cloning plays a role in the systematic control of persons by determining their genetic makeup and upbringing.

In reply, it seems clear that we can distinguish such abuse from the infertility case in question; the couple's trying to have a child would not constitute such abuse or even remotely approach it. Perhaps it will be objected that permitting cloning in the infertility cases would facilitate development of the technology, thereby making it more likely that unscrupulous persons could use it. In reply, this objection assumes that human preembryos would not be created by cloning as part of research. In the future it might become useful to create such preembryos, not for the purpose of transferring them to a woman's uterus, but for studies in any of a number of scientific areas, perhaps including preembryo development, cell differentiation, immunologic properties of cells, or the creation of cell lines using stem cells. Some of these scientific areas—or others not mentioned here—might be considered important enough in the future to justify creating human preembryos by cloning for purposes of laboratory studies.[37]

Thus, the technology of cloning humans might go forward, even if use of that technology to produce babies is proscribed.

Although the main arguments against cloning are not persuasive when applied to the infertility cases, at least two additional arguments can be presented that focus more directly on those cases. First, consider a son who is, as we might put it, genetically identical to his mother's husband. Some might be concerned by the somewhat oedipal nature of this situation. Would knowing that one's mother is sexually attracted to someone genetically identical to oneself cause special psychological problems for the child? Would the ill effects be great enough to make life worse than nonexistence? Would the right to a decent minimum opportunity for development be violated? Second, consider a father whose daughter is genetically identical to his wife. Would there tend to be a higher incidence of sexual abuse in this type of situation? These questions raise legitimate concerns, but because the answers are highly speculative at present, these concerns do not constitute definitive arguments against the particular use of cloning in question. However, they suggest possible topics for inclusion in preimplantation counseling, if such counseling is provided.

In summary, some main reasons have been identified supporting freedom to use cloning in the type of infertility case being considered. Also, each of the main arguments against cloning has been shown to involve substantial difficulties when applied to the infertility cases. It seems reasonable to conclude that the arguments against cloning are not compelling enough, either singly or collectively, to support the conclusion that cloning is wrong in such cases.

Cloning versus Collaborative Reproduction

It might be objected that it would be ethically preferable for the couple to have children who are not genetically related to them. Adoption would be a possibility, or donor gametes or preembryos could be used. If the woman is capable of gestating using donor gametes or preembryos, then at least she could be biologically related to the child. In reply, some infertile couples prefer not to adopt, even if that is the only way they can have children to raise. Moreover, if the couple tried to adopt, there would be a significant chance that their attempt would be unsuccessful because of the difficulties involved in adoption.

The claim that using donated gametes or preembryos would be ethically preferable to cloning overlooks the problems associated with third-party collaborative reproduction. Such arrangements raise a number of difficult issues because of the separation of genetic and social parenthood: What should the children be told about their origins? When and how should any informing take place? What if the child later wants to meet the genetic parents?

For example, when there is male-factor infertility, the man often prefers secrecy concerning his inability to beget. As a result, couples often choose not to reveal the fact of gamete donation to the child and others. This creates the problem of there being a significant deception at the center of the family relationship. Maintaining this deception can take its toll, including a substantial emotional burden on the couple. Also, such deception is at odds with the values of honesty and trust that should bind families together. On the other hand, children who are told the truth about their origins might develop strong desires to meet their genetic parents. If these wishes are frustrated, the result might be substantial emotional distress for the child. Thus, depending on how

these various issues are handled, adverse psychological consequences are possible for the child and family. It would be reasonable for the couple to prefer not to encounter these problems, and cloning would provide a way to avoid them. The existence of these problems calls into question the claim that third-party collaborative reproduction would be less ethically problematic for the couple than cloning.

It might be objected that cloning would also raise difficult issues for the couple. For example, should the fact of cloning be revealed to the child, and if so, when and how? If the child is not told, then she will not suffer any psychological ill effects arising from knowledge of being a clone. But if such children were never told, then they would be deprived of important information about their background. Should family and friends be told about the cloning? Or should they be led to believe that the child simply "looks like" one of the parents?[38] There might be disagreements between husband and wife over whom, when, and how to tell. In reply, although these too are difficult issues, their existence seems to indicate that the two approaches to reproduction are at a standoff in this regard; both raise issues that carry the potential for interpersonal conflict within the family. Because of this parity, it is not obvious that third-party collaborative reproduction is ethically preferable to cloning.

I have been discussing a situation in which cloning is the only way for a couple to have a child genetically related to one of them. However, the arguments I have stated in support of cloning are applicable to other infertility cases in which the alternative is third-party collaboration. Suppose the woman cannot produce ova, but donor ova and the husband's sperm could be used. The couple might nevertheless prefer cloning in order to avoid the complications associated with third-party gamete donation discussed above.[39] Alternatively, suppose the man cannot produce sperm but the woman's ova could be used with donor insemination. A preference for cloning might be based, not solely on male ego, but also on a desire to avoid the problems associated with third-party reproduction. Moreover, the three main arguments against cloning do not fare better when applied to these types of infertility cases. Again, cloning does not harm the child, nor is it clear that the right to a decent minimum opportunity for development would be violated. The argument that parent–child relationships generally would be adversely affected continues to be unpersuasive because enhancement is not involved and, although we now are dealing with a larger class of infertile couples, the number still is relatively small compared to the general population. These scenarios also would be distinguishable from *Brave New World* abuses. Thus, the arguments against cloning do not constitute compelling reasons to override the freedom of infertile couples to use cloning in these cases either.

Cloning as a Bridge to Future Remedies for Infertility

Research in gene therapy is resulting in the discovery of ways to insert genes into human cells. This is increasing the plausibility of the view that in the future it might be possible to insert, and perhaps delete, a variety of chosen genes. Such modifications could be performed on cells prior to using them for cloning. By means of such techniques, a child created with cloning technology could have genes from both parents. Starting with a cell from one parent, one

might change hair color, skin complexion, and eye color, using genes from the other parent. Perhaps genetic defects causing infertility and susceptibilities to other diseases would also be corrected. The child then would be genetically unique. Thus, the argument against cloning based on lack of genetic uniqueness would no longer be applicable. Prohibiting cloning in the future might prevent us from helping infertile couples in these ways.

Such modifications would not necessarily include changes that constitute 'enhancement,' such as higher intelligence, better body build, or greater height; the goal could be to make the child genetically different from either parent, rather than to produce a 'superior' child. In that event, objections to genetically enhancing our offspring would not be applicable. Moreover, this particular use of genetic technology—to help an infertile couple have a child—would also be distinguishable from *Brave New World* abuses.

This type of reproduction would not be cloning, strictly speaking. The term "cloning" in both scientific and lay usage, implies the production of a genetically identical copy. In fact, we lack a common term to refer specifically to the type of reproduction being envisioned.

It might be objected that we could not ethically create children in this manner because developing the technology would involve experimenting on unconsenting subjects. It might be claimed, for example, that it would be unethical to try to alter genetically a child's hair color because some unintended adverse genetic modification might occur. It might be argued that altered hair color is not a significant enough benefit to justify the risks involved. In reply, it is conceivable that our technology might advance to the point where the risks involved in such an attempt would be low. Moreover, if being a clone exposes one to the risk of adverse psychological effects, as opponents of cloning maintain, then alterations that prevent one from being a clone might have benefits significant enough to outweigh the risks. Therefore, I do not believe we can reasonably claim that such genetic modifications could never ethically be done. If such modifications could be performed safely, this type of reproduction might be ethically *preferable* to reproduction using donor gametes or preembryos because the problems associated with third-party collaboration would be avoided.

Should Exceptional Cases Be Permitted?

I have argued that cloning humans could sometimes be ethically defensible in cases of infertility. It might be objected that cloning should not be permitted even in those cases in which it is ethically justifiable. One argument supporting this objection begins by claiming that a general prohibition of human cloning is warranted, based on the reasons against cloning discussed above. Legal restrictions are needed to prevent the creation of cohorts of multiple clones, as well as other clear abuses of cloning technology. Restrictions also are needed to prevent a widespread practice of cloning, thereby avoiding the feared ill effects on parent–child relationships. Moreover, it is claimed that practical problems involved in attempting to enforce a general policy against human cloning while permitting exceptions provide grounds for not allowing the exceptions.[40] In particular, it would be difficult for authorities to gather the evidence needed to distinguish allowable from nonallowable cases. For example, fertile couples might have children by cloning, yet claim that they

are infertile. Prosecution could not reasonably proceed unless evidence ruling out infertility were obtained. Assuming that an infertility doctor assisted the couple in the cloning, often that doctor's testimony and records would be crucial evidence. However, such confidential records are protected in the absence of a court order, and establishing 'reasonable cause' for such court orders might be difficult in many cases. Moreover, the couple could refuse to release the records voluntarily, claiming (perhaps disingenuously) that the information is too personal and sensitive. The legal protection of medical records behind which such couples could hide is itself important and based on constitutional guarantees against unreasonable invasions of privacy. It can be argued that relaxing such protections in order to distinguish permitted from nonpermitted cloning would be too intrusive of reproductive privacy. Thus, if we permit cloning in the infertility cases, in effect we open the door for anyone to use cloning and get away with it.

In reply, it is possible to have widespread compliance with a law even though there are difficulties in detecting violations. If we were to make cloning except in infertility cases illegal not only for the couples using it but also for the physicians carrying it out, I believe that we would see widespread compliance. Most physicians will choose to avoid illegal activity, even if authorities would face difficulties in detecting violations. This tendency could be reinforced if the penalties for being convicted of the violation are high, even though the likelihood of detection is relatively low. Although a few cases of cloning might occur outside the allowed exceptions, it is doubtful that we would see the sort of widespread practice that the policy in question would attempt to prevent. Reproductive privacy can be protected while having a generally effective policy that prohibits cloning except in cases of infertility.

Another objection is that it would be inconsistent to permit cloning for infertile couples but not fertile ones. If reproductive freedom is important enough to permit infertile couples to use cloning, then why shouldn't all couples be allowed to use it, if that is their desire? According to this argument, if permitting the infertile to clone children commits us logically to allowing everyone to do so, then we should not allow the infertile to clone.

A reply to this objection can be based on the fundamental reasons we give in explaining why procreative freedom is worthy of protection. I identified six reasons that can be given in helping explain why freedom to have children is important. It is worth noting that the goals and values reflected in those six reasons can be achieved by fertile couples without resorting to cloning. By having a child through sexual intercourse, they can: participate in the creation of a person; affirm their mutual love through procreation; deepen their sexual intimacy; obtain a link to future persons; and have experiences associated with pregnancy, childbirth, and child rearing. Therefore, in prohibiting those who are fertile from using cloning, we do not deprive them of the ability to pursue what is valuable about having children. However, when we forbid the infertile to use cloning, we force them to choose either not to realize any of those valued goals or to pursue collaborative reproduction with its associated difficulties. This is the morally relevant difference, I would suggest, that can justify differing policies for fertile and infertile couples. In conclusion, there do not appear to be good reasons to disallow exceptions to cloning for infertile couples.

Notes

1. In this paper, the term "cloning" refers to creating a child by transferring the nucleus of a somatic cell into an enucleated egg cell. This method should be distinguished from blastomere separation, which involves the division of a preembryo when its cells are totipotent. Although both produce individuals with identical chromosomes, the two methods have different ethical implications. For example, cloning by nuclear transfer involves the possibility of creating numerous duplicates of the original individual, but in blastomere separation only a few copies can be produced, as explained in Cohen J, Tomkin G. The science, fiction, and reality of embryo cloning. *Kennedy Institute of Ethics Journal* 1994;4:193–203.
2. National Bioethics Advisory Commission. *Cloning Human Beings: Report and Recommendations of the National Bioethics Advisory Commission*. Rockville, Maryland: National Bioethics Advisory Commission, 1997:79–81. World Wide Web: http://www.nih.gov/nbac/nbac.htm.
3. Winston R. The promise of cloning for human medicine: not a moral threat but an exciting challenge. *British Medical Journal* 1997;314:913–4.
4. See note 2, National Bioethics Advisory Commission 1997:ii-iii,13,23–4.
5. The researchers who produced Dolly used nuclei from three sources: late embryos, fetal cell cultures, and cell cultures derived from the mammary gland of an adult sheep. Of 277 preembryos created using mammary cells, only one developed into a live lamb. Sixty-two percent of fetuses from all three sources failed to survive until birth, compared to an estimated 6% fetal loss rate after natural mating. This high rate of fetal loss suggests an increased incidence of genetic anomalies. For data on the total number of preembryos and live births, see Wilmut I, Schnieke AE, McWhir J, Kind AJ, Campbell KHS. Viable offspring derived from fetal and adult mammalian cells. *Nature* 1997;385:810–3.
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7. This situation could result from various medical conditions: the woman's ovaries might have been surgically removed, or she might suffer from premature ovarian failure—the inability of ovaries to produce ova; the man could have testes that produce no sperm, or perhaps a small number of sperm are produced but attempts to perform intracytoplasmic sperm injection (ICSI) using donor ova have been unsuccessful, among other possibilities. For a discussion of the uses and limitations of ICSI, see Silber SJ. What forms of male infertility are there left to cure? *Human Reproduction* 1995;10:503–4.
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19. Kahn A. Clone mammals . . . clone man? *Nature* 1997;386:119. Kahn states, "the debate has in the past perhaps paid insufficient attention to the current strong social trend towards a fanatical desire for individuals not simply to have children but to ensure that these children also carry their genes."
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24. See note 23, Feinberg 1987:149. Feinberg's discussion is more extensive; this is only one of six conditions he identifies as necessary and sufficient for harming, pp. 150–53.
25. See note 20, Strong 1997:90–92.
26. Also see note 23, Feinberg 1987:158–9.
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28. Also see note 22, Feinberg 1984:99.
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30. Also see note 20, Strong 1997:92–5.
31. This type of objection is put forward by Feinberg. See note 23, Feinberg 1987:168.
32. A similar objection is stated by Brock DW. The non-identity problem and genetic harms—the case of wrongful handicaps. *Bioethics* 1995;9:269–75.
33. For this response to the objection in question see note 20, Strong 1997:93–4.
34. Botkin JR. Prenatal screening: professional standards and the limits of parental choice. *Obstetrics and Gynecology* 1990;75:875–80.
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36. The method of genetic duplication that Huxley described did not involve replacement of the nucleus of an egg cell. In his fictional account, the fertilized egg was described as "budding" when "Bokanovsky's Process" was applied to it; the result could be as many as "ninety-six identical twins."
37. See note 3, Winston 1997.
38. We can imagine friends saying, for example, "He's the spitting image of his father," but not realizing, because of the age difference, that they are genetically identical.
39. Cloning in such a case would involve an ovum donor, but the chromosomes would be removed from the ovum. Although mitochondrial DNA in the ovum would be inherited by the child, the ovum donor would not be a "genetic mother" in the ordinary sense of that term. Thus, although there would be third-party collaboration, it would not involve the difficulties typically associated with third-party genetic parentage.
40. This type of objection is suggested in *Cloning Human Beings*. See note 2, National Bioethics Advisory Commission 1997:81–2.