

From Clones and Clones
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Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con

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The world of science and the public at large were both shocked and fascinated by the announcement in the journal *Nature* by Ian Wilmut and his colleagues that they had successfully cloned a sheep from a single cell of an adult sheep (Wilmut, 1997). But many were troubled or apparently even horrified at the prospect that cloning of adult humans by the same process might be possible as well. The response of most scientific and political leaders to the prospect of human cloning, indeed of Dr. Wilmut as well, was of immediate and strong condemnation.

A few more cautious voices were heard both suggesting some possible benefits from the use of human cloning in limited circumstances and questioning its too quick prohibition, but they were a clear minority. A striking feature of these early responses was that their strength and intensity seemed far to outrun the arguments and reasons offered in support of them—they seemed often to be “gut level” emotional reactions rather than considered reflections on the issues. Such reactions should not be simply dismissed, both because they may point us to important considerations otherwise missed and not easily articulated, and because they often have a major impact on public policy. But the formation of public policy should not ignore the moral reasons and arguments that bear on the practice of human cloning—these must be articulated in order to understand and inform people’s more immediate emo-

tional responses. This essay is an effort to articulate, and to evaluate critically, the main moral considerations and arguments for and against human cloning. Though many people's religious beliefs inform their views on human cloning, and it is often difficult to separate religious from secular positions, I shall restrict myself to arguments and reasons that can be given a clear secular formulation.

On each side of the issue there are two distinct kinds of moral arguments brought forward. On the one hand, some opponents claim that human cloning would violate fundamental moral or human rights, while some proponents argue that its prohibition would violate such rights. While moral and even human rights need not be understood as absolute, they do place moral restrictions on permissible actions that an appeal to a mere balance of benefits over harms cannot justify overriding; for example, the rights of human subjects in research must be respected even if the result is that some potentially beneficial research is more difficult or cannot be done. On the other hand, both opponents and proponents also cite the likely harms and benefits, both to individuals and to society, of the practice. I shall begin with the arguments in support of permitting human cloning, although with no implication that it is the stronger or weaker position.

Moral Arguments in Support of Human Cloning

IS THERE A MORAL RIGHT TO USE HUMAN CLONING?

What moral right might protect at least some access to the use of human cloning? A commitment to individual liberty, such as defended by J. S. Mill, requires that individuals be left free to use human cloning if they so choose and if their doing so does not cause significant harms to others, but liberty is too broad in scope

to be an uncontroversial moral right (Mill, 1859; Rhodes, 1995). Human cloning is a means of reproduction (in the most literal sense) and so the most plausible moral right at stake in its use is a right to reproductive freedom or procreative liberty (Robertson, 1994a; Brock, 1994), understood to include both the choice not to reproduce, for example, by means of contraception or abortion, and also the right to reproduce.

The right to reproductive freedom is properly understood to include the right to use various assisted reproductive technologies (ARTs), such as in vitro fertilization (IVF), oocyte donation, and so forth. The reproductive right relevant to human cloning is a negative right, that is, a right to use ARTs without interference by the government or others when made available by a willing provider. The choice of an assisted means of reproduction should be protected by reproductive freedom even when it is not the only means for individuals to reproduce, just as the choice among different means of preventing conception is protected by reproductive freedom. However, the case for permitting the use of a particular means of reproduction is strongest when it is necessary for particular individuals to be able to procreate at all, or to do so without great burdens or harms to themselves or others. In some cases human cloning could be the only means for individuals to procreate while retaining a biological tie to their child, but in other cases different means of procreating might also be possible.

It could be argued that human cloning is not covered by the right to reproductive freedom because whereas current ARTs and practices covered by that right are remedies for inability to reproduce sexually, human cloning is an entirely new means of reproduction; indeed, its critics see it as more a means of manufacturing humans than of reproduction. Human cloning is a different means of reproduction than sexual reproduction, but it is a means that can serve individuals' interest in reproducing. If it is not protected by the moral right to reproductive freedom, I believe that

must be not because it is a new means of reproducing, but instead because it has other objectionable or harmful features; I shall evaluate these other ethical objections to it later.

When individuals have alternative means of procreating, human cloning typically would be chosen because it replicates a particular individual's genome. The reproductive interest in question then is not simply reproduction itself, but a more specific interest in choosing what kind of children to have. The right to reproductive freedom is usually understood to cover at least some choice about the kind of children one will have. Some individuals choose reproductive partners in the hope of producing offspring with desirable traits. Genetic testing of fetuses or preimplantation embryos for genetic disease or abnormality is done to avoid having a child with those diseases or abnormalities. Respect for individual self-determination, which is one of the grounds of a moral right to reproductive freedom, includes respecting individuals' choices about whether to have a child with a condition that will place severe burdens on them, and cause severe burdens to the child itself.

The less a reproductive choice is primarily the determination of one's own life, but primarily the determination of the nature of another, as in the case of human cloning, the more moral weight the interests of that other person, that is the cloned child, should have in decisions that determine its nature (Annas, 1994). But even then parents are typically accorded substantial, but not unlimited, discretion in shaping the persons their children will become, for example, through education and other childrearing decisions. Even if not part of reproductive freedom, the right to raise one's children as one sees fit, within limits mostly determined by the interests of the children, is also a right to determine within limits what kinds of persons one's children will become. This right includes not just preventing certain diseases or harms to children, but selecting and shaping desirable features and traits in one's children. The use of human cloning is one way to exercise that right.

Public policy and the law now permit prospective parents to conceive, or to carry a conception to term, when there is a significant risk or even certainty that the child will suffer from a serious genetic disease. Even when others think the risk or certainty of genetic disease makes it morally wrong to conceive, or to carry a fetus to term, the parents' right to reproductive freedom permits them to do so. Most possible harms to a cloned child are less serious than the genetic harms with which parents can now permit their offspring to be conceived or born.

I conclude that there is good reason to accept that a right to reproductive freedom presumptively includes both a right to select the means of reproduction, as well as a right to determine what kind of children to have, by use of human cloning. However, the specific reproductive interest of determining what kind of children to have is less weighty than are other reproductive interests and choices whose impact falls more directly and exclusively on the parents rather than the child. Even if a moral right to reproductive freedom protects the use of human cloning, that does not settle the moral issue about human cloning, since there may be other moral rights in conflict with this right, or serious enough harms from human cloning to override the right to use it; this right can be thought of as establishing a serious moral presumption supporting access to human cloning.

WHAT INDIVIDUAL OR SOCIAL BENEFITS MIGHT HUMAN CLONING PRODUCE?

LARGELY INDIVIDUAL BENEFITS

The literature on human cloning by nuclear transfer or by embryo splitting contains a few examples of circumstances in which individuals might have good reasons to want to use human cloning. However, human cloning seems not to be the unique answer to any great or pressing human need and its benefits appear to be limited at most. What are the principal possible benefits of human

cloning that might give individuals good reasons to want to use it?

1. *Human cloning would be a new means to relieve the infertility some persons now experience.* Human cloning would allow women who have no ova or men who have no sperm to produce an offspring that is biologically related to them (Eisenberg, 1976; Robertson, 1994b, 1997; LaBar, 1984). Embryos might also be cloned, by either nuclear transfer or embryo splitting, in order to increase the number of embryos for implantation and improve the chances of successful conception (NABER, 1994). The benefits from human cloning to relieve infertility are greater the more persons there are who cannot overcome their infertility by any other means acceptable to them. I do not know of data on this point, but the numbers who would use cloning for this reason are probably not large.

The large number of children throughout the world possibly available for adoption represents an alternative solution to infertility only if we are prepared to discount as illegitimate the strong desire of many persons, fertile and infertile, for the experience of pregnancy and for having and raising a child biologically related to them. While not important to all infertile (or fertile) individuals, it is important to many and is respected and met through other forms of assisted reproduction that maintain a biological connection when that is possible; that desire does not become illegitimate simply because human cloning would be the best or only means of overcoming an individual's infertility.

2. *Human cloning would enable couples in which one party risks transmitting a serious hereditary disease to an offspring to reproduce without doing so* (Robertson, 1994b). By using donor sperm or egg donation, such hereditary risks can generally be avoided now without the use of human cloning. These procedures may be unacceptable to some couples, however, or at least considered less desirable than human cloning because they introduce a third party's genes into their reproduction instead of giving their offspring only the genes of one of them. Thus, in some cases human cloning could be a rea-

sonable means of preventing genetically transmitted harms to offspring. Here too, we do not know how many persons would want to use human cloning instead of other means of avoiding the risk of genetic transmission of a disease or of accepting the risk of transmitting the disease, but the numbers again are probably not large.

3. *Human cloning to make a later twin would enable a person to obtain needed organs or tissues for transplantation* (Robertson, 1994b, 1997; Kahn, 1989; Harris, 1992). Human cloning would solve the problem of finding a transplant donor whose organ or tissue is an acceptable match and would eliminate, or drastically reduce, the risk of transplant rejection by the host. The availability of human cloning for this purpose would amount to a form of insurance to enable treatment of certain kinds of medical conditions. Of course, sometimes the medical need would be too urgent to permit waiting for the cloning, gestation, and development that is necessary before tissues or organs can be obtained for transplantation. In other cases, taking an organ also needed by the later twin, such as a heart or a liver, would be impermissible because it would violate the later twin's rights.

Such a practice can be criticized on the ground that it treats the later twin not as a person valued and loved for his or her own sake, as an end in itself in Kantian terms, but simply as a means for benefiting another. This criticism assumes, however, that only this one motive defines the reproduction and the relation of the person to his or her later twin. The well-known case some years ago in California of the Ayalas, who conceived in the hopes of obtaining a source for a bone marrow transplant for their teenage daughter suffering from leukemia, illustrates the mistake in this assumption. They argued that whether or not the child they conceived turned out to be a possible donor for their daughter, they would value and love the child for itself, and treat it as they would treat any other member of their family. That one reason they wanted it, as a possible means to saving their daughter's life, did not preclude their

also loving and valuing it for its own sake; in Kantian terms, it was treated as a possible means to saving their daughter, but not *solely as a means*, which is what the Kantian view proscribes.

Indeed, when people have children, whether by sexual means or with the aid of ARTs, their motives and reasons for doing so are typically many and complex, and include reasons less laudable than obtaining lifesaving medical treatment, such as having someone who needs them, enabling them to live on their own, qualifying for government benefit programs, and so forth. While these are not admirable motives for having children and may not bode well for the child's upbringing and future, public policy does not assess prospective parents' motives and reasons for procreating as a condition of their doing so.

4. *Human cloning would enable individuals to clone someone who had special meaning to them, such as a child who had died* (Robertson, 1994b). There is no denying that if human cloning were available, some individuals would want to use it for this purpose, but their desire usually would be based on a deep confusion. Cloning such a child would not replace the child the parents had loved and lost, but would only create a different child with the same genes. The child they loved and lost was a unique individual who had been shaped by his or her environment and choices, not just his or her genes, and more importantly who had experienced a particular relationship with them. Even if the later cloned child could not only have the same genes but also be subjected to the same environment, which of course is impossible, it would remain a different child than the one they had loved and lost because it would share a different history with them (Thomas, 1974). Cloning the lost child might help the parents accept and move on from their loss, but another already existing sibling or a new child that was not a clone might do this equally well; indeed, it might do so better since the appearance of the cloned later twin would be a constant reminder of the child they had lost. Nevertheless, if human cloning enabled some individuals to clone a person who had special meaning to

them and doing so gave them deep satisfaction, that would be a benefit to them even if their reasons for wanting to do so, and the satisfaction they in turn received, were based on a confusion.

LARGELY SOCIAL BENEFITS

5. *Human cloning would enable the duplication of individuals of great talent, genius, character, or other exemplary qualities.* Unlike the first four reasons for human cloning which appeal to benefits to specific individuals, this reason looks to benefits to the broader society from being able to replicate extraordinary individuals—a Mozart, Einstein, Gandhi, or Schweitzer (Lederberg, 1966; McKinnell, 1979). Much of the appeal of this reason, like much support and opposition to human cloning, rests largely on a confused and false assumption of genetic determinism, that is, that one's genes fully determine what one will become, do, and accomplish. What made Mozart, Einstein, Gandhi, and Schweitzer the extraordinary individuals they were was the confluence of their particular genetic endowments with the environments in which they were raised and lived and the particular historical moments they in different ways seized. Cloning them would produce individuals with the same genetic inheritances (nuclear transfer does not even produce 100 percent genetic identity, although for the sake of exploring the moral issues I have followed the common assumption that it does), but it is not possible to replicate their environments or the historical contexts in which they lived and their greatness flourished. We do not know the degree or specific respects in which any individual's greatness depended on "nature" or "nurture," but we do know that it always depends on an interaction of them both. Cloning could not even replicate individuals' extraordinary capabilities, much less their accomplishments, because these too are the product of their inherited genes and their environments, not of their genes alone.

None of this is to deny that Mozart's and Einstein's extraordinary musical and intellectual capabilities, nor even Gandhi's and

Schweitzer's extraordinary moral greatness, were produced in part by their unique genetic inheritances. Cloning them might well produce individuals with exceptional capacities, but we simply do not know how close their clones would be in capacities or accomplishments to the great individuals from whom they were cloned. Even so, the hope for exceptional, even if less and different, accomplishment from cloning such extraordinary individuals might be a reasonable ground for doing so.

Worries here about abuse, however, surface quickly. Whose standards of greatness would be used to select individuals to be cloned? Who would control use of human cloning technology for the benefit of society or mankind at large? Particular groups, segments of society, or governments might use the technology for their own benefit, under the cover of benefiting society or even mankind at large.

6. *Human cloning and research on human cloning might make possible important advances in scientific knowledge, for example, about human development* (Walters, 1982; Smith, 1983). While important potential advances in scientific or medical knowledge from human cloning or human cloning research have frequently been cited, there are at least three reasons for caution about such claims. First, there is always considerable uncertainty about the nature and importance of the new scientific or medical knowledge to which a dramatic new technology like human cloning will lead; the road to new knowledge is never mapped in advance and takes many unexpected turns. Second, we do not know what new knowledge from human cloning or human cloning research could also be gained by other means that do not have the problematic moral features to which its opponents object. Third, what human cloning research would be compatible with ethical and legal requirements for the use of human subjects in research is complex, controversial, and largely unexplored. Creating human clones solely for the purpose of research would be to use them solely for the benefit of others without their consent, and so unethical. But if and when human cloning was established to be

safe and effective, then new scientific knowledge might be obtained from its use for legitimate, nonresearch reasons.

Although there is considerable uncertainty concerning most of human cloning's possible individual and social benefits that I have discussed, and although no doubt it could have other benefits or uses that we cannot yet envisage, I believe it is reasonable to conclude at this time that human cloning does not seem to promise great benefits or uniquely to meet great human needs. Nevertheless, despite these limited benefits, a moral case can be made that freedom to use human cloning is protected by the important moral right to reproductive freedom. I shall turn now to what moral rights might be violated, or harms produced, by research on or use of human cloning.

Moral Arguments Against Human Cloning

WOULD THE USE OF HUMAN CLONING VIOLATE IMPORTANT MORAL RIGHTS?

Many of the immediate condemnations of any possible human cloning following Wilmut's cloning of Dolly claimed that it would violate moral or human rights, but it was usually not specified precisely, or often even at all, what rights would be violated (WHO, 1997). I shall consider two possible candidates for such a right: a right to have a unique identity and a right to ignorance about one's future or to an open future. Claims that cloning denies individuals a unique identity are common, but I shall argue that even if there is a right to a unique identity, it could not be violated by human cloning. The right to ignorance or to an open future has only been explicitly defended, to my knowledge, by two commentators, and in the context of human cloning, only by Hans Jonas; it supports a more promising, but in my view ultimately unsuccessful, argument that human cloning would violate an important moral or human right.

Is there a moral or human right to a unique identity, and if so would it be violated by human cloning? For human cloning to violate a right to a unique identity, the relevant sense of identity would have to be genetic identity, that is, a right to a unique unrepeatable genome. This would be violated by human cloning, but is there any such right? It might be thought that cases of identical twins show there is no such right because no one claims that the moral or human rights of the twins have been violated. However, this consideration is not conclusive (Kass, 1985; NABER, 1994). Only human actions can violate others' rights; outcomes that would constitute a rights violation if deliberately caused by human action are not a rights violation if a result of natural causes. If Arthur deliberately strikes Barry on the head so hard as to cause his death, he violates Barry's right not to be killed; if lightning strikes Cheryl, causing her death, her right not to be killed has not been violated. Thus, the case of twins does not show that there could not be a right to a unique genetic identity.

What is the sense of identity that might plausibly be what each person has a right to have uniquely, that constitutes the special uniqueness of each individual (Macklin 1994; Chadwick 1982)? Even with the same genes, homozygous twins are numerically distinct and not identical, so what is intended must be the various properties and characteristics that make each individual qualitatively unique and different from others. Does having the same genome as another person undermine that unique qualitative identity? Only on the crudest genetic determinism, according to which an individual's genes completely and decisively determine everything else about the individual, all his or her other nongenetic features and properties, together with the entire history or biography that constitutes his or her life. But there is no reason whatever to believe that kind of genetic determinism. Even with the same genes, differences in genetically identical twins' psychological and personal characteristics develop over time together with differences in their life histories, personal relationships, and life choices;

sharing an identical genome does not prevent twins from developing distinct and unique personal identities of their own.

We need not pursue whether there is a moral or human right to a unique identity—no such right is found among typical accounts and enumerations of moral or human rights—because even if there is such a right, sharing a genome with another individual as a result of human cloning would not violate it. The idea of the uniqueness, or unique identity, of each person historically predates the development of modern genetics. A unique genome thus could not be the ground of this long-standing belief in the unique human identity of each person.

I turn now to whether human cloning would violate what Hans Jonas called a right to ignorance, or what Joel Feinberg called a right to an open future (Jonas, 1974; Feinberg, 1980). Jonas argued that human cloning in which there is a substantial time gap between the beginning of the lives of the earlier and later twin is fundamentally different from the simultaneous beginning of the lives of homozygous twins that occur in nature. Although contemporaneous twins begin their lives with the same genetic inheritance, they do so at the same time, and so in ignorance of what the other who shares the same genome will by his or her choices make of his or her life.

A later twin created by human cloning, Jonas argues, knows, or at least believes she knows, too much about herself. For there is already in the world another person, her earlier twin, who from the same genetic starting point has made the life choices that are still in the later twin's future. It will seem that her life has already been lived and played out by another, that her fate is already determined; she will lose the sense of human possibility in freely and spontaneously creating her own future and authentic self. It is tyrannical, Jonas claims, for the earlier twin to try to determine another's fate in this way.

Jonas's objection can be interpreted so as not to assume either a false genetic determinism, or a belief in it. A later twin might

grant that he is not determined to follow in his earlier twin's footsteps, but nevertheless the earlier twin's life might always haunt him, standing as an undue influence on his life, and shaping it in ways to which others' lives are not vulnerable. But the force of the objection still seems to rest on the false assumption that having the same genome as his earlier twin unduly restricts his freedom to create a different life and self than the earlier twin's. Moreover, a family environment also importantly shapes children's development, but there is no force to the claim of a younger sibling that the existence of an older sibling raised in that same family is an undue influence on the younger sibling's freedom to make his own life for himself in that environment. Indeed, the younger twin or sibling might gain the benefit of being able to learn from the older twin's or sibling's mistakes.

A closely related argument can be derived from what Joel Feinberg has called a child's right to an open future. This requires that others raising a child not so close off the future possibilities that the child would otherwise have as to eliminate a reasonable range of opportunities for the child autonomously to construct his or her own life. One way this right might be violated is to create a later twin who will believe her future has already been set for her by the choices made and the life lived by her earlier twin.

The central difficulty in these appeals to a right either to ignorance or to an open future is that the right is not violated merely because the later twin is likely to *believe* that his future is already determined, when that belief is clearly false and supported only by the crudest genetic determinism. If we know the later twin will falsely believe that his open future has been taken from him as a result of being cloned, even though in reality it has not, then we know that cloning will cause the twin psychological distress, but not that it will violate his right. Jonas's right to ignorance, and Feinberg's right of a child to an open future, are not not violated by human cloning, though they do point to psychological harms that a later twin may be likely to experience and that I will take up later.

Neither a moral or human right to a unique identity, nor one to ignorance and an open future, would be violated by human cloning. There may be other moral or human rights that human cloning would violate, but I do not know what they might be. I turn now to consideration of the harms that human cloning might produce.

WHAT INDIVIDUAL OR SOCIAL HARMS MIGHT HUMAN CLONING PRODUCE?

There are many possible individual or social harms that have been posited by one or another commentator and I shall only try to cover the more plausible and significant of them.

LARGELY INDIVIDUAL HARMS

1. *Human cloning would produce psychological distress and harm in the later twin.* No doubt knowing the path in life taken by one's earlier twin might often have several bad psychological effects (Callahan, 1993; LaBar, 1984; Macklin, 1994; McCormick, 1993; Studdard, 1978; Rainer, 1978; Verhey, 1994). The later twin might feel, even if mistakenly, that her fate has already been substantially laid out, and so have difficulty freely and spontaneously taking responsibility for and making her own fate and life. The later twin's experience or sense of autonomy and freedom might be substantially diminished, even if in actual fact they are diminished much less than it seems to her. She might have a diminished sense of her own uniqueness and individuality, even if once again these are in fact diminished little or not at all by having an earlier twin with the same genome. If the later twin is the clone of a particularly exemplary individual, perhaps with some special capabilities and accomplishments, she might experience excessive pressure to reach the very high standards of ability and accomplishment of the earlier twin (Rainer, 1978). These various psychological effects might take a heavy toll on the later twin and be serious burdens to her.

While psychological harms of these kinds from human cloning are certainly possible, and perhaps even likely in some cases, they

remain at this point only speculative since we have no experience with human cloning and the creation of earlier and later twins. Nevertheless, if experience with human cloning confirmed that serious and unavoidable psychological harms typically occurred to the later twin, that would be a serious moral reason to avoid the practice. Intuitively at least, psychological burdens and harms seem more likely and more serious for a person who is only one of many identical later twins cloned from one original source, so that the clone might run into another identical twin around every street corner. This prospect could be a good reason to place sharp limits on the number of twins that could be cloned from any one source.

One argument has been used by several commentators to undermine the apparent significance of potential psychological harms to a later twin (Chadwick, 1982; Robertson, 1994b, 1997; Macklin, 1994). The point derives from a general problem, called the nonidentity problem, posed by the philosopher Derek Parfit, although not originally directed to human cloning (Parfit, 1984). Here is the argument. Even if all these psychological burdens from human cloning could not be avoided for any later twin, they are not harms to the twin, and so not reasons not to clone the twin. That is because the only way for the twin to avoid the harms is never to be cloned, and so never to exist at all. But these psychological burdens, hard though they might be, are not so bad as to make the twin's life, all things considered, not worth living. So the later twin is not harmed by being given a life even with these psychological burdens, since the alternative of never existing at all is arguably worse—he or she never has a worthwhile life—but certainly not better for the twin. And if the later twin is not harmed by having been created with these unavoidable burdens, then how could he or she be wronged by having been created with them? And if the later twin is not wronged, then why is any wrong being done by human cloning? This argument has considerable potential import, for if it is sound it will undermine the apparent moral importance of any bad consequence of human cloning to the later twin that is not so

serious as to make the twin's life, all things considered, not worth living.

I defended elsewhere the position regarding the general case of genetically transmitted handicaps, that if one could have a *different* child without comparable burdens (for the case of cloning, by using a different method of reproduction which did not result in a later twin), there is as strong a moral reason to do so as there would be not to cause similar burdens to an already existing child (Brock, 1995). Choosing to create the later twin with serious psychological burdens instead of a different person who would be free of them, without weighty overriding reasons for choosing the former, would be morally irresponsible or wrong, even if doing so does not harm or wrong the later twin who could only exist with the burdens. These issues are too detailed and complex to pursue here and the nonidentity problem remains controversial and not fully resolved, but at the least, the argument for disregarding the psychological burdens to the later twin because he or she could not exist without them is controversial, and in my view mistaken. Such psychological harms, as I shall continue to call them, are speculative, but they should not be disregarded because of the nonidentity problem.

2. *Human cloning procedures would carry unacceptable risks to the clone.* There is no doubt that attempts to clone a human being at the present time would carry unacceptable risks to the clone. Further research on the procedure with animals, as well as research to establish its safety and effectiveness for humans, is clearly necessary before it would be ethical to use the procedure on humans. One risk to the clone is the failure to implant, grow, and develop successfully, but this would involve the embryo's death or destruction long before most people or the law consider it to be a person with moral or legal protections of its life.

Other risks to the clone are that the procedure in some way goes wrong, or unanticipated harms come to the clone; for example, Harold Varmus, director of the National Institutes of Health,

raised the concern that a cell many years old from which a person is cloned could have accumulated genetic mutations during its years in another adult that could give the resulting clone a predisposition to cancer or other diseases of aging (Weiss, 1997). Risks to an ovum donor (if any), a nucleus donor, and a woman who receives the embryo for implantation would likely be ethically acceptable with the informed consent of the involved parties.

I believe it is too soon to say whether unavoidable risks to the clone would make human cloning forever unethical. At a minimum, further research is needed to better define the potential risks to humans. But we should not insist on a standard that requires risks to be lower than those we accept in sexual reproduction, or in other forms of ART.

LARGELY SOCIAL HARMES

3. *Human cloning would lessen the worth of individuals and diminish respect for human life.* Unelaborated claims to this effect were common in the media after the announcement of the cloning of Dolly. Ruth Macklin explored and criticized the claim that human cloning would diminish the value we place on, and our respect for, human life because it would lead to persons being viewed as replaceable (Macklin, 1994). As I have argued concerning a right to a unique identity, only on a confused and indefensible notion of human identity is a person's identity determined solely by his or her genes, and so no individual could be fully replaced by a later clone possessing the same genes. Ordinary people recognize this clearly. For example, parents of a child dying of a fatal disease would find it insensitive and ludicrous to be told they should not grieve for their coming loss because it is possible to replace him by cloning him; it is *their child who is dying* whom they love and value, and that child and his importance to them is not replaceable by a cloned later twin. Even if they would also come to love and value a later twin as much as they now love and value their child who is dying, that would be to love and value that *different child* for its own sake, not as a replace-

ment for the child they lost. Our relations of love and friendship are with distinct, historically situated individuals with whom over time we have shared experiences and our lives, and whose loss to us can never be replaced.

A different version of this worry is that human cloning would result in persons' worth or value seeming diminished because we would come to see persons as able to be manufactured or "hand-made." This demystification of the creation of human life would reduce our appreciation and awe of human life and of its natural creation. It would be a mistake, however, to conclude that a person created by human cloning is of less value or is less worthy of respect than one created by sexual reproduction. At least outside of some religious contexts, it is the nature of a being, not how it is created, that is the source of its value and makes it worthy of respect. For many people, gaining a scientific understanding of the truly extraordinary complexity of human reproduction and development increases, instead of decreases, their awe of the process and its product.

A more subtle route by which the value we place on each individual human life might be diminished could come from the use of human cloning with the aim of creating a child with a particular genome, either the genome of another individual especially meaningful to those doing the cloning or an individual with exceptional talents, abilities, and accomplishments. The child then comes to be objectified, valued only as an object and for its genome, or at least for its genome's expected phenotypic expression, and no longer recognized as having the intrinsic equal moral value of all persons, simply as persons. For the moral value and respect due all persons to come to be seen as resting only on the instrumental value of individuals and of their particular qualities to others would be to fundamentally change the moral status properly accorded to persons. Individuals would lose their moral standing as full and equal members of the moral community, replaced by the different instrumental value each has to others.

Such a change in the equal moral value and worth accorded to persons should be avoided at all costs, but it is far from clear that such a change would result from permitting human cloning. Parents, for example, are quite capable of distinguishing their children's intrinsic value, just as individual persons, from their instrumental value based on their particular qualities or properties. The equal moral value and respect due all persons simply as persons is not incompatible with the different instrumental value of different individuals; Einstein and an untalented physics graduate student have vastly different value as scientists, but share and are entitled to equal moral value and respect as persons. It is a confused mistake to conflate these two kinds of value and respect. If making a large number of clones from one original person would be more likely to foster it, that would be a further reason to limit the number of clones that could be made from one individual.

4. *Human cloning might be used by commercial interests for financial gain.* Both opponents and proponents of human cloning agree that cloned embryos should not be able to be bought and sold. In a science fiction frame of mind, one can imagine commercial interests offering genetically certified and guaranteed embryos for sale, perhaps offering a catalogue of different embryos cloned from individuals with a variety of talents, capacities, and other desirable properties. This would be a fundamental violation of the equal moral respect and dignity owed to all persons, treating them instead as objects to be differentially valued, bought, and sold in the marketplace. Even if embryos are not yet persons at the time they would be purchased or sold, they would be being valued, bought, and sold for the persons they will become. The moral consensus against any commercial market in embryos, cloned or otherwise, should be enforced by law whatever the public policy ultimately is on human cloning.

5. *Human cloning might be used by governments or other groups for immoral and exploitative purposes.* In *Brave New World*, Aldous Huxley imagined cloning individuals who have been engineered with lim-

ited abilities and conditioned to do, and to be happy doing, the menial work that society needed done (Huxley, 1932). Selection and control in the creation of people was exercised not in the interests of the persons created, but in the interests of the society and at the expense of the persons created; nor did it serve individuals' interests in reproduction and parenting. Any use of human cloning for such purposes would exploit the clones solely as means for the benefit of others, and would violate the equal moral respect and dignity they are owed as full moral persons. If human cloning is permitted to go forward, it should be with regulations that would clearly prohibit such immoral exploitation.

Fiction contains even more disturbing or bizarre uses of human cloning, such as Mengele's creation of many clones of Hitler in Ira Levin's *The Boys from Brazil* (Levin, 1976), Woody Allen's science fiction cinematic spoof *Sleeper* in which a dictator's only remaining part, his nose, must be destroyed to keep it from being cloned, and the contemporary science fiction film *Blade Runner*. These nightmare scenarios may be quite improbable, but their impact should not be underestimated on public concern with technologies like human cloning. Regulation of human cloning must assure the public that even such far-fetched abuses will not take place.

Conclusion

Human cloning has until now received little serious and careful ethical attention because it was typically dismissed as science fiction, and it stirs deep, but difficult to articulate, uneasiness and even revulsion in many people. Any ethical assessment of human cloning at this point must be tentative and provisional. Fortunately, the science and technology of human cloning are not yet in hand, and so a public and professional debate is possible without the need for a hasty, precipitate policy response.

The ethical pros and cons of human cloning, as I see them at this

time, are sufficiently balanced and uncertain that there is not an ethically decisive case either for or against permitting it or doing it. Access to human cloning can plausibly be brought within a moral right to reproductive freedom, but its potential legitimate uses appear few and do not promise substantial benefits. It is not a central component of the moral right to reproductive freedom and it does not uniquely serve any major or pressing individual or social needs. On the other hand, contrary to the pronouncements of many of its opponents, human cloning seems not to be a violation of moral or human rights. But it does risk some significant individual or social harms, although most are based on common public confusions about genetic determinism, human identity, and the effects of human cloning. Because most potential harms feared from human cloning remain speculative, they seem insufficient to warrant at this time a complete legal prohibition of either research on or later use of human cloning, if and when its safety and efficacy are established. Legitimate moral concerns about the use and effects of human cloning, however, underline the need for careful public oversight of research on its development, together with a wider public and professional debate and review before cloning is used on human beings.

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Religious Perspectives

National Bioethics Advisory Commission

Religion and Human Cloning: An Historical Overview

It is possible to identify four recent overlapping periods in which theologians and other religious thinkers have considered the scientific prospects and ethics of the cloning of humans. The first phase, which began in the mid-1960s and continued into the early 1970s, was shaped by a context of expanded choices and control of reproduction (e.g., the availability of the birth control pill), the prospects of alternative, technologically-assisted reproduction (e.g., *in vitro* fertilization [IVF]), and the advocacy by some biologists and geneticists of cloning "preferred" genotypes, which, in their view, would avoid overloading the human gene pool with genes that are linked to deleterious outcomes and that could place the survival of the human species at risk.

Several prominent theologians engaged in these initial discussions of human genetic manipulation and cloning, including Charles Curran, Bernard Häring, Richard McCormick, and Karl Rahner within Roman Catholicism, and Joseph Fletcher and Paul Ramsey within Protestantism. The diametrically opposed positions staked out by the last two theologians gave an early signal of the wide range of views that are still expressed by religious thinkers.

Joseph Fletcher advocated expansion of human freedom and control over human reproduction. He portrayed the cloning of hu-