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THE ETHICS OF HUMAN CLONING AND THE FATE OF SCIENCE IN A DEMOCRATIC SOCIETY

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I. INTRODUCTION

In late February 1997, the world learned that Dr. Ian Wilmut and his colleagues at the Roslin Institute in Edinburgh, Scotland, had successfully cloned an adult sheep. The cloned offspring, called Dolly, immediately became the most famous sheep in the world. The ethics of human cloning soon became a popular topic for editorials and commentaries, most of which expressed opposition. On February 24, 1997, President Bill Clinton asked the National Bioethics Advisory Committee (NBAC or Commission) to "undertake a thorough review of the legal and ethical issues associated with the use of this technology."¹

As I followed news reports on Dolly, I was struck by two things. First, the judgments on the ethics of human cloning seemed to be poorly thought out and based on an inadequate understanding of the science involved. They often seemed to be responding to a preconceived notion of cloning, perhaps derived from science fiction, rather than a realistic assessment. In general, they had an air of instinctive revulsion rather than thoughtful objection. Second, I noticed a distinctly different approach to the issue in the scientific press, which was, of course, better versed in the science of cloning and also (perhaps not surprisingly) more likely to be in favor of continued research on human cloning. Upon closer inspection, I have concluded that the apparent disagreement between the popular press and the scientific press is *only* apparent.

The NBAC concluded that "at this time it is morally unacceptable for anyone . . . to create a child using somatic cell nuclear transfer cloning,"² and recommended the enactment of federal legislation to prohibit anyone from

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1. Letter from William J. Clinton, President of the United States, to Harold Shapiro, Chair, National Bioethics Advisory Commission (Feb. 24, 1997), *reprinted in* NATIONAL BIOETHICS ADVISORY COMMISSION, *CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION* (1997).

2. *Id.* at 108.

attempting to do so. The report adds, "It is critical, however, that such legislation include a sunset clause to ensure that Congress will review the issue after a specified time period (three to five years) in order to decide whether the prohibition continues to be needed."³

The NBAC's use of the phrase "*at this time*" and its insistence that legislation banning cloning include a sunset clause show quite clearly that the Commission believes that human cloning is not *intrinsically* unethical. Not everyone feels this way. Senator Christopher Bond (R-Mo.) was disappointed by the Commission's report, saying, "I had hoped that the commission would not be afraid to make a strong moral statement that human cloning is wrong, period, and should be banned."⁴

The temporary ban also shows that the NBAC believes there are strong *instrumental* reasons for caution with regard to such research. I disagree with Senator Bond's assertion that cloning is "wrong, period," and agree with the NBAC's conclusion that a moratorium on human cloning research is warranted. In this Article, I will argue that, although the technology that produced Dolly is new, the ethical issues raised by the possibility of human cloning are not. I will show that most secular objections to human cloning are based on instrumental concerns, that is, on concerns about how cloning *might be used* rather than about what cloning *is*. I will also briefly discuss some of the religious objections to cloning and suggest that the core concern about cloning—that human beings must not "play God"—is common to both secular and religious objections. Finally, I will argue that the published responses to the cloning research raise a serious concern about the ability of our populace to engage in meaningful debate over the morality of many forms of scientific research. Due to space constraints, I will not address peripheral issues, such as the morality of research on embryos and clearly off-the-wall warnings that clones would be used as organ banks.

II. SECULAR OBJECTIONS

Many secular objections to human cloning have been expressed, a good share of which are quite absurd. To give just one example, Michael Mautner, writing in *The Futurist*, argues that cloning would freeze evolution and destroy our chances for survival.⁵ While this argument shows some understanding of the science of cloning and genetics, it seems profoundly ignorant of economics, politics, and the size of the human population. How long would it take and how much would it cost to produce so many children via cloning that any impact

3. *Id.* at 109.

4. Charles Marwick, *Put Human Cloning on Hold, Say Bioethicists*, 278 JAMA 13, 14 (1997).

5. Michael Mautner, *Will Cloning End Human Evolution?*, FUTURIST, Nov.-Dec. 1997, at 68.

would be made on the human gene pool? We are more likely to eliminate hunger, poverty, and war than we are to endanger our species in this way.

There are also, however, some obvious objections that are not simply absurd but, when considered carefully, are not particularly strong. All objections to *in vitro* fertilization (IVF) clearly apply to cloning, including all of the issues raised almost twenty years ago by LeRoy Walters in the *Hastings Center Report*.⁶

One objection to IVF that clearly applies to cloning turns on "the naturalness or artificiality of laboratory-assisted reproduction."⁷ Walters cites arguments by Leon Kass and Pope Pius XII to the effect that "natural reproduction is inherently superior" to assisted reproduction.⁸ However well- (or ill-) founded, this objection has very little bite these days. We have decided, as a society, to allow technological interventions in just about every aspect of life—including reproduction.

Another possible objection has to do with the allocation of scarce resources. Should medical and scientific resources be spent on cloning? Could not the time, money, and expertise thus expended be more fruitfully directed to reducing misery rather than to creating more children in an already overpopulated world? Again, the same objection applies to IVF, but we seem to have accepted the latter practice. Economic efficiency and justice clearly do not loom large as features of our scientific research and health care agendas.

Perhaps the most commonly stated objection to cloning in particular is that the clone would be deprived of a unique identity. Anyone who has met a pair of identical twins knows that this is an empty worry. Identical twins *are* clones of each other—natural clones, to be sure, but clones nevertheless—and they are distinct individuals. The fact that a clone would grow up as a member of a different generation than the donor would further reduce the already remote possibility that the clone's individuality would be somehow negated.

At core, legitimate concerns over identity are not about what a clone *is* so much as about what people *will take it to be*. A clone would not even be genetically identical to the donor—it would derive its mitochondrial DNA from the egg donor—and there is no reason to believe that a clone would be psychologically identical to the donor. It certainly would not have the same memories or experiences as the donor. However, people who clone themselves

6. LeRoy Walters, *Human in Vitro Fertilization: A Review of the Ethical Literature*, HASTINGS CTR. REP., Aug. 9, 1979, at 23-43.

7. *Id.* at 25.

8. *Id.*

in the hopes of creating a carbon copy of themselves would almost certainly have perverse expectations of their cloned offspring. It is not difficult to imagine an egocentric billionaire hiring rogue scientists to create the perfect heir to his financial empire—the billionaire himself!

Everyone seems to agree that creating a clone as a kind of attempt at immortality would be doing the child thus created a tremendous harm. But the harm is in the intention and actions of the donor, *not* in the technology of cloning itself. It is also possible to imagine a donor loving his cloned son as a unique human being as deeply as two identical twins can love each other as unique human beings. This seems the much more likely scenario.

People could produce clones for bad reasons and treat them badly once they were born, but there is nothing new in this either. People have been having children for bad reasons via natural sexual reproduction since time began, and certainly no technological intervention is needed for parents to abuse their children in any number of ways. Why are we so intent on preventing one specific mode of reproduction when we make no restrictions whatsoever on who can become a parent the old-fashioned way? If the government is going to meddle in reproduction, would it not be better to license prospective parents? Consider, to cite only one example, the case of Gail Baker, a 26-year-old woman who, on August 29, 1997, left her ten-day-old daughter inside a car for about seven hours while Mrs. Baker played video poker at a casino near Savannah, Georgia. The infant died of dehydration.⁹ Mrs. Baker was clearly not suited to be a mother.

A concern in regard to cloning that I have not seen addressed is what I call “genetic fetishism.” Adopted people often go to extreme lengths to learn the identities of their biological parents, heedless of the emotional and psychological harm such a search can inflict on the adoptive parents and the biological parents. People go to extreme measures these days to produce biological offspring, including fertility treatments, surrogacy, artificial insemination, and IVF. Cloning seems to fit in this family, and I find the drive toward biological parenthood at any cost extremely distasteful—but is it unacceptable? I am not so sure of that, and at any rate our society seems to have decided that it is not.

9. *Baby Dies While Mom Plays Poker in Casino*, FLA. TIMES UNION (Jacksonville), Sept. 4, 1997, at B3.

III. RELIGIOUS OBJECTIONS

Of course, there are also many religious objections to cloning. The NBAC invited the Program for Ethics, Science, and the Environment at Oregon State University to assist it in the development of a study of the religious issues and themes raised by human cloning. The Program published a special issue of its newsletter in May 1997, entitled *Human Cloning: Fact, Fiction, and Faith*, featuring seventeen short statements from a wide variety of faith traditions. Ten of the seventeen statements are clearly opposed to cloning; most of the others are, at best, cautious about the prospect and urge safeguards. Interestingly, the most common concern about cloning can be translated without difficulty into the secular realm. In the words of John Cardinal O'Connor, "the clone is reduced to the level of a *product* made, rather than a *person* begotten."¹⁰

Although the writers express this concern in a religious framework, it is easily accepted by any secular Kantian. Once again, though I accept this as a danger of cloning, I do not see why anyone would think it is an *inevitable* result. There is a significant difference between an absolute statement and a relative statement. If we believed that consumption of alcohol *always and inevitably* led to drunk driving, which *always and inevitably* led to automobile fatalities, we would be morally obliged to call for an outright ban on the sale, consumption, and manufacture of alcohol. But because the consumption of alcohol only *sometimes* leads to drunk driving and automobile fatalities, we are justified in being more circumspect about regulating alcohol. The reflexive call to ban human cloning is essentially a call to laziness by people who do not want to face the hard questions of how we might deal with technology that might be abused.

These religious statements on cloning also include some of the unsupportable presuppositions about human cloning that have characterized coverage in the popular press. For example, John Cardinal O'Connor writes, "A clone technically has no human parents, not by accident, but by design."¹¹ Until an artificial uterus is created (a prospect long into the future), any clone brought to term would certainly have one parent—a mother—and would have two parents if the mother were not also the donor.

IV. PLAYING GOD

If, as I have argued, our real concerns about cloning are all instrumental, the answer is easy, assuming that we are optimistic that we can achieve what we set out to achieve: go ahead, but be careful. Caution advises us to ask whether

10. John Cardinal O'Connor, *Diminished Humanity*, REFLECTIONS (Program for Ethics, Sci., & the Env't, Oregon State University), May 1997, at 13, 13.

11. *Id.*

we are capable of devising adequate regulations, but I will beg that question. Even if we do manage to devise the right policies, another question remains: do we trust our mechanisms for regulating research and the applications of research? Even with perfect regulations, could we really ensure that cloning would not be abused in the ways that I have outlined, and perhaps in others that I have not even imagined?

Perhaps this is too high a standard. We are opposed to murder and have laws against it, but we cannot prevent it. Perhaps it is too much to ask that we prevent all abuses; perhaps developing good regulations is sufficient. Perhaps that is what we have managed to do with regard to IVF. Perhaps making reproductive technology ethical *most of the time* is the best we can hope for. Perhaps we can devise regulations with the knowledge that abuses will occur, with the hope that abuses will be minimized, and with the confidence that the abuses that do occur will be discovered and sanctioned.

Consider, for example, that we have been unable to ensure that IVF does not lead to abuse. The lawsuits against the University of California fertility clinics that apparently used stored eggs without the consent of the donors, implanting them in women who thought they were being implanted with their own eggs.¹² But perhaps this is a level of abuse we are willing to risk, and perhaps lawsuits are an adequate response.

As I said, this is a scenario for those who are optimistic enough to think we can achieve what we set out to achieve. But that begs another question: are we likely to choose our aims wisely? To quote Cardinal O'Connor again, "[i]s any serious person that sanguine about the state of our external environment that he or she is positively anxious now to 'engineer' our internal human evolution?"¹³ Do we, in general, have the wisdom to recognize technology that we cannot adequately control, to recognize real limits on our aspirations? Should we not know better than to play God?

This is the Faustian concern, the concern of the over-reacher. Is there some knowledge that will destroy us? It is an ancient concern, older than Faust, for it is also the Promethean question: Prometheus, the Titan who dared to steal fire from the gods for the use of human beings and who was chained by Zeus to the mountainside for this deed and doomed to have his self-regenerating liver ripped out daily by an eagle. The instinctive revulsion to the prospect of cloning has a Promethean air to it. At some level, we fear the vengeance of a higher

12. See 2 *UCI Fertility Clinic Cases Are Settled for \$1.1 Million*, PRESS-ENTERPRISE (Riverside, Cal.), Oct. 24, 1996, at A4; Julia Marquis et al., *Egg Misuse May Have Involved 30 More Patients, UCI Reports Scandal*, L.A. TIMES, July 6, 1995, A (Metro Desk), at 1.

13. O'Connor, *supra* note 10, at 13.

power—whether God or fate—or our own invariable inability to take account of all factors and foresee all consequences.

However, Prometheus is not the only fire-bringer. The Shasta Indians of southwestern Oregon tell a similar tale. In this tale, Coyote, like Prometheus, takes pity on humankind and decides to steal fire for humans. Like Prometheus, he succeeds in the face of grave danger. But unlike Prometheus, Coyote gets away with it. He is not punished.¹⁴

In the Shasta myth, seeking and winning technology—fire—is dangerous, but not tragic. There is no hierarchy of power, no Zeus to exact vengeance for Coyote's crime. Coyote is not radically separated from nature and the powers of nature, and neither, at least in the myth, are the Shasta. In the Greek tale, the gods are more powerful than the Titans, who are more powerful than human beings. The limits on what we humans are allowed to achieve are set by higher powers, and if we exceed those limits, the higher powers exact punishment. If we have limits (and who can say we do not?), these are the two logical possibilities: either something outside of us, alien to us, sets our limits, or our limits are part and parcel of what we are.

Prometheus, Faust, and Frankenstein are our tradition, not the Shasta Coyote. Of course, not everyone would accept the proposition that Promethean fears are at the base of the concerns about cloning. Many people, including, one supposes, most scientists, do not credit the idea of a higher power setting limits on our activities. Most non-religious people, I assume, would find the phrase "playing God" meaningless or silly and would see our situation as more like that of Coyote than Prometheus. Of course, we face challenges when we undertake difficult tasks—but challenges are different from cosmic prohibitions. Challenges can (sometimes) be overcome. Trying to overcome nature will lead to success or failure, not to a tragic fall or cosmic punishment. To scientists, our limits are set only by our own abilities and natural laws, and, of course, our abilities themselves stem from nature. Scientists cannot do anything that is unnatural; they can only harness and direct nature. From this point of view, there is no Zeus to knock us down; there is only nature, as there was for the Shasta of the myth.

Unfortunately, our relationship to nature is not understood in the same way as the relationship between nature and the Shasta of the myth, who are essentially in harmony with nature. We Westerners have never been in harmony with nature. We think of it and experience it as alien, outside of ourselves,

14. Jarold Ramsey, *The Theft of Fire, in COYOTE WAS GOING THERE: INDIAN LITERATURE OF THE OREGON COUNTRY*, 216-17 (1977).

separate. Furthermore, in many ways, “we” are separate from “ourselves.” I wrote above that instrumental concerns can be answered “go ahead, but be careful,” if we are optimistic that we can achieve what we set out to do. Unfortunately, we have to recognize that the “we” who set out to do something are not always the “we” who are around to complete the task.

I commented above that it seemed to me that many responses to the prospect of human cloning have had an air of instinctive revulsion rather than thoughtful objection. It is often dangerous and unwise to act on the basis of instinctive revulsion, but it is also unwise to simply ignore or deny our moral instincts. Moral instincts are not an endpoint, but they do provide a beginning, and we should inspect them closely. Although I do not think that cloning is intrinsically immoral (thus, I disagree with many people’s moral instincts), I do think there are many significant instrumental reasons for caution, possibly even for avoiding this line of research entirely.

V. RESPONSES BY SCIENTISTS

I have been talking about popular responses to cloning. At first glance, it may seem that scientists are out of sync with the populace. A typical title of an article on the topic appearing in a scientific journal is *Threatened Bans on Human Cloning Research Could Hamper Advances*.¹⁵ From this and other headlines, one gets a sense that scientists celebrate Wilmut’s achievement and defend cloning. Are scientists in favor of creating babies through cloning while the public is against it? No—appearances are deceiving. In order to explain the difference, it is important to get terminology straight.

“Cloning” simply means using the genetic material of a donor cell to create a genetically identical daughter cell—the clone. We typically think of cloning as the creation of a whole organism rather than a single cell, but a cloned cell is still a clone, even if it never develops into a whole organism.

The scientific and technological breakthrough represented by Dolly has to do with “differentiation.” Cells that have taken on specific functions are said to be “differentiated.” Differentiated cells can only create cells of their type—skin cells can only create skin cells, kidney cells can only create kidney cells, and so forth. One method for creating clones involves splitting the cells of an early, multi-celled embryo before the cells have begun to differentiate. When this happens naturally, identical twins (or triplets, etc.) are the result. The first step toward creating human clones via this method, sometimes called

15. Joan Stephenson, *Threatened Bans on Human Cloning Research Could Hamper Advances*, 277 JAMA 1023 (1997).

"blastomere separation," was taken in 1993 at the George Washington University Hospital.¹⁶

A second method of creating a clone involves taking genetic material from the nucleus of an adult cell—a differentiated cell—and implanting it in an egg. Dolly was the first mammal ever created using this form of cloning, typically called "somatic cell nuclear transfer cloning" ("somatic cloning" for short). A key difference between these two methods is that cloning an embryo through blastomere separation is as chancy as normal sexual reproduction, whereas with somatic cloning, you can have a better idea of what you are going to get—you know the genetic (and other) qualities of the adult you clone. In other words, if your goal is to create certain kinds of people, whether great athletes or ruthless killers, and the only cloning technique available to you were blastomere separation, your best strategy would be to clone and freeze hundreds or thousands of embryos, track the development of the original through adulthood, and then bring to term the frozen clones of people with the desired characteristics. Obviously, this is a chancy and expensive procedure. With somatic cloning, however, you could simply find a living person with the qualities you want to reproduce and clone only that individual.

I want to introduce one last term which I have coined: "somatic cell nuclear transfer cloning to term" or, as a shorthand, "term cloning." One can create a somatic clone that is never implanted in a uterus and will therefore never come to term. Up to this point, I have been using the word "cloning" as if it were synonymous with "somatic cell nuclear transfer cloning to term." For the most part, this is how it is used in the popular press. Without understanding the distinction between cloning in general and term cloning, a glance at the scientific literature on cloning seems to fulfill the popular fear that scientists are incipient Franksteins.

A good example is the above-mentioned article in the *Journal of the American Medical Association (JAMA)*, *Threatened Bans on Human Cloning Research Could Hamper Advances*, which makes it appear that "research advances" are all that matter to scientists. But even this article comments on the "complexity of the ethical and legal issues related to reproduction, genetic manipulation, [and] rights to privacy," and notes that "Wilmut and many other investigators have few objections to laws forbidding the actual cloning of a human being" ¹⁷ In fact, it appears that scientists share the general revulsion to the idea of term cloning. For example, Hiroshi Nakajima, director-general of the World Health Organization, has called cloning human beings

16. John A. Robertson, *The Question of Human Cloning*, 24 HASTINGS CTR. REP., Mar.-Apr. 1994, at 6-14.

17. Stephenson, *supra* note 15, at 1023.

"ethically unacceptable,"¹⁸ and Harold Varmus, director of the National Institutes of Health, told Congress that he found the idea of making clones of human beings for scientific purposes "an offensive idea."¹⁹

However, what worries Varmus and other scientists is that "a broadly worded ban would block basic and applied research using cloning techniques on human cells."²⁰ The *JAMA* article goes on to quote scientists speculating about avenues of research that would capitalize on Wilmut's demonstration that "the genome is malleable enough to permit formerly quiescent genes to be switched on and active genes to be switched off."²¹ Such research might lead to the regeneration of nerve cells for trauma victims and patients with degenerative neurological disorders, the regeneration of skin cells for burn patients, and the regeneration of bone marrow.

In other words, to many scientists, the promise of cloning research has nothing whatever to do with term cloning. Rather, it has to do with the possibility of enticing the body to heal itself, an attractive combination of high-tech and natural therapies. Unfortunately, it seems that this aspect of cloning research is not part of the public debate or the public understanding of cloning.

VI. THE FATE OF SCIENCE

Looking at the case of cloning, and remembering the case of IVF, I wonder whether this, then, is the fate of science in a democracy: an important breakthrough is announced in a sensitive field, and the general public reacts instantly with fears of abuse. Scientists respond by saying that the research is important and should go forward—but the scientists' arguments are based on aspects of the research that are lost on the public and reported only sporadically, or not at all, in the popular press. To the public, the scientists sound like Frankenstein or Faust, eager to pursue research without regard to consequences. To scientists, the general public seems scientifically illiterate. Time marches on, and the ferment dies down. Research is quietly pursued with no more headline-grabbing breakthroughs. This has happened with IVF: IVF becomes an accepted, noncontroversial part of life, and important ethical questions remain unanswered—perhaps even unasked. Or, as it may be in the case of cloning, policy is formed either on the basis of misinformed public opinion or on the basis of a scientific perspective that leaves public opinion out of consideration. Strains between science and the public grow, as we have seen in research using animal subjects.

18. Rebecca Voelker, *The World in Medicine*, 277 JAMA 1105, 1105 (1997).

19. See Stephenson, *supra* note 15, at 1025.

20. *Id.* at 1023.

21. *Id.* at 1025.

I think that research on human cloning, though not on human cloning to term, is morally acceptable. I do not sufficiently understand the science involved to know whether the one will inadvertently lead to knowledge about the other. Scientists are working on genetic therapies designed to strengthen the heart muscle, and concerns have recently been raised that such a therapy could also be used to make athletes stronger. Many people find this kind of genetic enhancement for non-therapeutic reasons immoral. But would such a technology be essentially like steroids, useful and acceptable for some applications but outlawed for others? Or should it, and should cloning to term, become legally forbidden knowledge? I feel certain that there are some areas of research where we should have the courage and wisdom to say, at some point, "We stop here." I am uncertain, though, whether term cloning—and research on human cloning more broadly if it would lead to term cloning—and therapeutic genetic enhancements are beyond that point, or only perilously close to it.

