"BEING HUMAN": CLONING AND THE CHALLENGES FOR PUBLIC POLICY

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INTRODUCTION

Ethicists, scientists, lawyers, theologians, and journalists responded with colorful scenarios when Dr. Ian Wilmut announced that he successfully cloned an adult mammal. In an effort to ethically fathom Dolly's significance, they imagined cloning as (1) a foreign despot's technique for creating a master race; (2) a greedy entrepreneur's technique for producing "celebrity" embryos for sale; (3) a bereft parent's technique for replacing a dying child; (4) a desperate patient's technique for creating organs or tissue to harvest; and (5) a narcissist's technique for ensuring his immortality.[1]

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1. *See generally* George J. Annas, *Human Cloning: A Choice or an Echo?*, 23 U. DAYTON L. REV. 247, 255 (1998) (discussing Ira Levin's fictional novel, *The Boys from Brazil*, which depicts an exiled Mengele creating 94 clones of Adolf Hitler); Declan Butler & Meredith Wadman, *Calls for Cloning Ban Sell Science Short*, 386 NATURE 8, 9 (1997) (quoting Richard Dawkins as saying that "it would be mind-bogglingly fascinating to watch a younger edition of myself growing up in the twenty-first century instead of the 1940s"); Dena S. Davis, *What's Wrong with Cloning?*, 38 JURIMETRICS 83, 87 (1997) (commenting on the common subject in celebrity cloning hypotheticals, basketball star Michael Jordan); John A. Robertson, *Liberty, Identity, and Human Cloning*, 76 TEX. L. REV. 1371, 1380-81 (1998) (stating that cloning embryos might also be used to provide tissue or organs for transplant to an already existing child); George J. Annas, *Human Cloning: Should the United States Legislate Against It?*, A.B.A. J., May 1997, at 80, 80 (discussing the popular suggestion that "parents of a dying child should be able to clone the child for a replacement"); Gina Kolata, *Scientist Reports First Cloning Ever of Adult Mammal*, N.Y. TIMES, Feb. 23, 1997, at A1 (announcing the birth of "Dolly").

While these scenarios may be fascinating, in the end they do not enrich our moral understanding of cloning for two reasons. First, they grow out of a reductionist "genetic myopia."[2] These scenarios assume that the genetic identity of a person constitutes the complete make up of that person, and that any person created by cloning would be identical in every respect to the adult that had been cloned. Clearly, we know this is not true. Genetically identical twins are distinct persons with individual personalities and individual legal rights. The same would be true of any person cloned. Second, the scenarios above confuse the abuse of a science with its aim. The abuses depicted in these scenarios were viewed as morally offensive long before cloning appeared on the scientific horizon; the creation of a genetically pure master race, the sale of human embryos, the sale of organs, the harvesting of organs or tissue without informed consent, are all repugnant and impermissible regardless of whether the persons, organs, and embryos involved were created by cloning. These scenarios, therefore, do little to instruct us on the moral problems raised uniquely by adult cell cloning.

Therefore, I suggest we step away from some of these more fantastic scenarios and instead delve more deeply into the unique moral problems presented by cloning. My comments here will first attempt to articulate the source of the shock, the unease, the queasiness, and the concern we feel about human cloning. To do this I will identify three features of adult cell cloning that distinguish it from previous innovations in reproductive technology, and I will examine how these three features specifically challenge concepts that are central to our understanding of ourselves as persons. Second, I will look at the ethical dilemmas presented by adult human cloning in relation to prior ethical reflection on cloning, most specifically that contained in the National Advisory Board on Ethics in Reproduction ("NABER") 1994 Report on Human Cloning Through Embryo Splitting.[3] Finally, I will conclude by describing the public policy questions raised distinctively by human cloning, noting those of special importance to the federal government.

2. "Genetic myopia" has been defined as a "condition that results from viewing everything from the perspective of genetics." Karen H. Rothenberg, *Breast Cancer, the Genetic "Quick Fix" and the Jewish Community*, 7 HEALTH MATRIX 97, 102 (1997).

3. *See* National Advisory Board on Ethics in Reproduction, *Report on Human Cloning Through Embryo Splitting: An Amber Light*, 4 KENNEDY INST. ETHICS J. 251 (1994) [hereinafter *An Amber Light*].

I. DISTINCTIVE FEATURES OF ADULT CELL CLONING

Dr. Wilmut's Dolly was cloned using an adult cell. News reports state that in Dr. Wilmut's technique, a spark of electricity causes an adult cell to fuse with an unfertilized egg from which the nucleus had previously been removed. Molecules in this egg then program genes in the adult cell to produce an embryo. The embryo is implanted into a surrogate mother and brought to term. The resulting offspring is a clone of the adult cell donor. It is thought that the cloning of humans may be possible through use of the same technique.[4] Although prior innovations in reproductive and genetic technology have challenged our basic understanding of "natural" processes, unique features of adult cell cloning radically test three concepts basic to our humanness.

A. Interdependence

Adult cell cloning requires only one progenitor. Theoretically, a child could be conceived and carried by one person. A woman could have one of her adult cells fused with one of her own unfertilized eggs from which the nucleus had been removed. The resulting embryo could be implanted in her womb and carried to term.

This scenario is unique to adult cell cloning. It is disquieting because it undermines our concept of human beings as fundamentally interrelated, our concept of human interdependence. The fact that the propagation of the species takes two, whether in a test tube or a bedroom, humbles us because it means that practically and symbolically human survival is dependent upon human connectedness.

B. Indeterminateness

In adult cell cloning, we may choose which adult cell to clone based on knowledge of the "expression" of that cell's genetic material in a living, breathing person. Unlike reproductive technology involving only embryos, the cloning of adult cells permits us to see a grown manifestation of the genetic material cloned. That knowledge makes genetic selection possible. It creates a choice as to whether to clone the genetic

4. The process by which Ian Wilmut cloned the sheep known as "Dolly" is referred to as somatic cell nuclear transfer. *See* I. Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810, 812 (1997). *See generally* 1 NATIONAL BIOETHICS ADVISORY COMM'N, CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION 13-33 (1997) (outlining the science and application of cloning).

material of person A or person B, Mother Teresa or Madonna, Jesse Jackson or Jesse Helms.

Such choices seem impossible to fathom. Even if we are not genetic reductionists with knowledge that cloning a person's genetic material does not create that person *per se*, the knowing choice of A over B removes some measure of the miraculous variability of the procreative process. Adult cell cloning requires complete human control of conception and legitimizes judgments about the value of all genetically determined traits. It undermines our concept of human beings as diverse and created with indeterminate genetic possibilities.

C. Individuality

Adult cell cloning raises the possibility of creating an infinite number of genetically identical persons. Because the nucleus of every cell in a human body contains the same genetic material, this "raw material" is in infinite supply. Theoretically, the genetic material of any one person could be cloned virtually an infinite number of times.

While variations in gestational environment and upbringing ensure that the cloning of identical genetic material does not result in identical persons,[5] the theoretical possibility of creating hundreds of genetically identical humans is disquieting, if not downright creepy. While I still feel unique if I only have one twin sister, I do not if I have fifty or one hundred clones. I no longer understand myself as a creation, but as a copy. Thus, adult cell cloning undermines our conception of a human being's individuality.

Given these distinctive features of adult cell cloning, a discussion of the ethical implications must make sense of the challenges these features make to our humanity—our sense of interdependence, indeterminateness, and individuality.

II. ADULT CELL CLONING IN THE CONTEXT OF PRIOR ETHICAL ANALYSIS

Five years ago, the former NABER, a non-governmental, nonprofit organization of scientists, ethicists, theologians, and lawyers, investigated the ethical and public policy issues surrounding human

5. *See generally* Andrea L. Bonnicksen, *Creating a Clone in Ninety Days: In Search of a Cloning Policy*, 38 JURIMETRICS 23, 27 (1997) (commenting on the misconception that human cloning would produce an exact replica and discrediting the myth that through cloning, "person X would beget an identical person X' without having to go through gestation, infancy, and adolescence").

cloning through embryo splitting.[6] This investigation was spurred, in large measure, by the announcement that researchers at George Washington University had successfully formed multiple copies of human embryos from a single embryo using the technique of embryo splitting.[7] Unlike the adult cell cloning technique used by Dr. Wilmut and his colleagues, embryo splitting uses as its "raw material" an embryo, rather than an adult cell. In embryo splitting, clusters of cells of very early embryos are separated and grown into individual embryos. Cells at this state have not yet begun to differentiate into specific tissues, such as bone or muscle, and therefore carry their full genetic complement for development. Each separated embryo may therefore be implanted and carried to term. In effect, embryo splitting is an in vitro replica of the natural process by which identical twins are created.

Embryo splitting does not share the three features of adult cell cloning outlined above. First, embryo splitting requires human embryos which must have been created by the fertilization of an egg by a sperm. Second, because only embryos are used, embryo splitting does not provide those involved with the same knowledge of an adult expression of the genetic material. Finally, embryo splitting can produce only a limited number of duplicates to the original.[8] Arguably then, because embryo splitting mimics a natural biological process, it may not present the same challenge to the fundamental human concepts of interdependence, indeterminateness, and individuality.

Therefore, it is not surprising that NABER found human embryo splitting ethical in some contexts. NABER's ethical analysis of embryo splitting turned on the question of the specific motivation of a given clinical application. NABER members agreed that human embryo splitting was permissible to improve the chance of initiating pregnancy in in vitro fertilization ("IVF") by creating additional embryos for implantation, so long as no more than four identical embryos were produced. Similarly, NABER members found it permissible to use embryo splitting to create embryos to be frozen and implanted at a later date should the first IVF cycle fail. NABER members disagreed, however, over the acceptability of producing identical embryos for pre-implantation genetic screening.[9]

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6. *See An Amber Light*, *supra* note 3, at 251.

7. *See id.*; *see also* Boyce Rensberger, *The Frightful Invasion of the Body Doubles Will Have to Wait*, WASH. POST, Nov. 1, 1993, at A3 (highlighting the failures of the embryo splitting experiment).

8. *See An Amber Light*, *supra* note 3, at 252.

9. *See id.* at 266-68.

All other enumerated clinical applications were found ethically unacceptable by NABER. It was unacceptable to use embryo splitting solely to produce identical twins separated by a time interval, to provide an adult with an identical twin to raise as his or her own child, to provide an identical embryo as a potential replacement for a child who dies, to create embryos to save for future use should an already born twin need an organ or tissue transplant, to retain an identical embryo as a potential source of fetal tissue, organs, or ovaries, to produce embryos for donation to others and to produce embryos for sale to others. There was however, in many cases, disagreement as to whether embryos that were already created as part of IVF treatment could be used for some of these reasons.[10]

Regardless of whether NABER was correct concerning the morality of embryo splitting for use in fertility treatment, its analysis may not apply with equal force to adult cell cloning. These two cloning techniques, however, do draw into focus the core ethical question: On what grounds is the potential benefit of a scientific innovation outweighed by its potential injury to our concept of what it means to be human? Beyond the hyperbole and fantastic scenarios, that is the ethical dilemma Dolly presents.

III. PUBLIC POLICY QUESTIONS RAISED BY ADULT CELL CLONING

Fortunately, human cloning will not proceed for some time. Human cloning poses scientific and societal challenges that enable us to "take a deep breath" before we rush to judgment. First of all, the technology is just emerging in animals and we can only speculate on the effects of "aged" DNA and the risk of harm to future children. Nor is there any public support, even from the biotech industry, for moving forward with the cloning of *human beings* at this time. Thus, we should take advantage of this opportunity to examine rationally the various public policy questions posed by adult cell cloning.

1. The federal government has formulated policy responses to some emergent reproductive technologies and genetic therapies. For example, the 1994 Report by the National Institutes of Health's ("NIH") Human Embryo Research Panel[11] articulated ethical considerations to

10. *See id.* at 275-76.

11. *See* NATIONAL INSTITUTES OF HEALTH, REPORT OF THE HUMAN EMBRYO RESEARCH PANEL (1994). The report concluded that the separation of human blastomeres or the division of human blastocysts, followed by a transfer to the uterus and the transplantation of nuclei into an

determine what types of research, including cloning, were unacceptable for federal funding. Also, Congress condemned a market for human organs and fetal tissue as unethical. Federal law prohibits their purchase and sale through the National Organ Transplantation Act[12] and the Public Health Service Act.[13] In addition, non-governmental groups have developed important perspectives on related issues. What policy guidelines developed in these other contexts are applicable to cloning?

2. Prenatal genetic testing presents couples with difficult questions when serious genetic disorders are discovered in utero. Genetic testing may force a kind of "genetic accountability"[14] on women and devalue the lives of people with disabilities. Cloning escalates the genetic screening and genetic selectivity now available. How does cloning fit within the continuum of genetic selectivity already in practice?

3. Cloning presents particular ethical and policy dilemmas when combined with genetic engineering. Because cloning permits us to know a full grown "expression" of the genetic material, when combined with genetic engineering it allows us to "tinker" with perfecting a person to a degree not previously possible. How should policy decisions regarding adult cloning affect federal policy regarding genetic engineering and enhancement? What can be learned from the NIH Recombinant DNA Advisory Committee's role in ensuring accountability to the public regarding gene therapy?

4. Adult cloning affects men and women differently. Theoretically, men are not necessary to "conception" by cloning; women are. This fundamental reorientation of sex roles from procreation to replication has far reaching consequences for gender roles, and reproductive and parental rights. How should any proposed federal regulation take account of gender differences in how the cloning technique operates?

5. Adult cell cloning upsets our notion of familial relationships. Creation of a child by cloning requires the contribution of DNA material, an unfertilized egg, and a ready womb. What language will we use to describe this "family"? By what criteria will we determine the claim of parental status of each of the contributors to the cloning process?

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enucleated egg for the purpose of genome duplication, or to increase the number of embryos with the same genotype, were types of research unacceptable for federal funding. *See id.* at 80-81.

12. 42 U.S.C. §§ 273-74 (1994).

13. 42 U.S.C. §§ 201-300a-6 (1994).

14. *See* Rothenberg, *supra* note 2, at 104; *see also* R. Alta Charo & Karen H. Rothenberg, *"The Good Mother": The Limits of Reproductive Accountability and Genetic Choice, in* WOMEN AND PRENATAL TESTING: FACING THE CHALLENGES OF GENETIC TECHNOLOGY 105, 107-14 (Karen H. Rothenberg & Elizabeth J. Thomson eds., 1994) (discussing a woman's burden of personal accountability with regard to unborn children).

6. Cloning may involve the use of a surrogate. Surrogacy is unregulated on the federal level and remains subject to a confusing patchwork of state statutes and contract principles.[15] Given that the absence of uniform regulation of new reproductive technologies has resulted in such confusion, do the particular features of adult cloning call for federal guidance?

7. In addressing public health matters, federal and state governments may choose to criminalize behavior or subject it to a regulatory scheme, or both.[16] If cloning is subject to governmental control, what criteria would be used to determine the most effective approach?

8. While Congress has prohibited federal funding in many areas of reproductive technology and human embryo research,[17] private research and much clinical practice proceeds without regulation. Unfortunately, this ban has resulted in an inability to monitor the state of research and safeguard the quality of clinical practice in the private arena. Does cloning present particular issues that require regulatory activity in the private sphere beyond the current voluntary moratorium? Should we develop an interdepartmental, federal body authorized to draft guidelines concerning cloning and to evaluate whether any human cloning research or clinical applications should go forward?

9. Complex constitutional questions are raised by any congressional attempt to completely ban all human cloning. They include the

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15. *See generally* Johnson v. Calvert, 851 P.2d 776 (Cal. 1993) (holding that the gestational surrogate was not considered the legal mother); *In re* Baby M, 537 A.2d 1227 (N.J. 1988) (holding the surrogacy contract invalid as against public policy and instead focusing on the best interests of the child).

16. California, Michigan, and Rhode Island have since criminalized human cloning. *See* CAL. BUS. & PROF. CODE §§ 16004, 16105, 2260.5 (West 1997 & Supp. 1998); CAL. HEALTH & SAFETY CODE §§ 24185, 24187, 24189 (West 1997 & Supp. 1998); H.R. 4846, 89th Leg., Reg. Sess. (Mich. 1998); H.R. 4962, 89th Leg., Reg. Sess. (Mich. 1998); H.R. 5475, 89th Leg., Reg. Sess. (Mich. 1998); R.I. GEN. LAWS §§ 23-16.4-1 to -4 (1999); *see also* Ira H. Carmen, *Should Human Cloning Be Criminalized?*, 13 J.L. & POL. 745, 746 (1997) (exploring the "assumptions and values that should guide us in determining whether such proposed legislation is consistent with the public interest and the Constitution of the United States"). Currently there are several federal bills pending in both the United States House of Representatives and the Senate prohibiting human cloning. *See* Human Cloning Prohibition Act, S. 1601, 105th Cong. (1998); Human Cloning Prohibition Act, H.R. 923, 105th Cong. (1997). A competing Senate bill has been introduced by Senators Dianne Feinstein (D-CA) and Ted Kennedy (D-MA) which prohibits human cloning through somatic cell nuclear transfer, but allows embryo cloning for infertility research. *See* Prohibition on Cloning of Human Beings Act of 1998, S. 1611, 105th Cong. The House bills, proposed by Vernon Ehlers (R-MI), supports a complete ban on all human cloning. *See* Human Cloning Research Prohibition Act, H.R. 922, 105th Cong. (1997); H.R. 923.

17. *See* H.R. 4328, 105th Cong. (1998), *reprinted in* 144 CONG. REC. H11,044, 11,147 (daily ed. Oct. 19, 1998) (prohibiting, in section 511, federal funding for "the creation of a human embryo . . . for research purposes").

extent of congressional power under the Commerce Clause, as well as First and Fourteenth Amendment issues. Although Congress can, within it's discretion, deny federal funding for cloning research under its spending power, what is the extent of its power to regulate cloning in the private arena?

10. The United States operates within a global economy. Dr. Wilmut already has patented his technique for its commercial potential. Any solution the United States adopts regarding adult cloning must be international in perspective. What mechanisms and models are present to work toward an international consensus on issues related to adult cloning? What can the United States learn from the regulation of reproductive and genetic technologies in other countries?

CONCLUSION

There are significant moral issues about "being human" that distinguish adult cell cloning from other reproductive and genetic technologies. The ethical implications of adult cell cloning offend our conception of human interdependence, indeterminateness, and individuality.

Due to these fundamental differences, adult cell cloning raises serious policy questions which do not offer easy answers. Essentially, any ethical discussion of cloning must weigh the potential benefits of this technology against the perceived injury to our notion of humanity. Until the moral and legal issues are more fully examined, a careful balance should be considered as government defines its regulatory scheme toward a technology with such far reaching implications.