WHY HUMAN REPRODUCTIVE CLONING SHOULD NOT IN ALL CASES BE PROHIBITED

*John A. Robertson**

INTRODUCTION

The dominant reaction to recent advances in cloning technology has been a strong desire to prohibit all human reproductive cloning. A frequently mentioned concern of those who would ban all such cloning is the high rate of waste of oocytes, embryos, and fetuses.[1] While this concern is valid, these remarks will focus on potential uses of human reproductive cloning after research with animals and human embryos provides reasonable scientific assurance that, if attempted in humans, it will efficiently produce healthy human offspring. Once the scientific community reaches that level of certainty, society should permit human reproductive cloning as an alternative or supplement to the services and techniques currently available to deal with infertility, such as in vitro fertilization, egg donation, and artificial insemination.[2]

I
THE CLONING DEBATE

The cloning debate arose fundamentally as a result of technology's recently demonstrated ability to clone animals. Simply put, this is done by (1) transferring nuclei between deprogrammed cells and oocytes; (2) activating cell division, thus enabling growth; and (3) in-

* Vinson & Elkins Chair in Law, University of Texas School of Law. A.B. 1964, Dartmouth College; J.D. 1968, Harvard University.

1. *See, e.g.*, Emma Ross, *Human Cloning: Misguided Hype or Imminent Certainty?*, SUNDAY GAZETTE-MAIL (Charleston, W. Va.), Aug. 13, 2000, at 11A (noting that chief executive at Edinburgh's Roslin Institute declared that "it would take more than 400 eggs and 50 surrogate mothers to produce a cloned baby," and that Institute, when cloning sheep, started with 277 reconstructed eggs, of which 29 developed into normal embryos later placed in 13 sheep, and that only one embryo resulted in success).

2. *See generally* Elizabeth Hervey Stephen & Anjani Chandra, *Use of Infertility Services in the United States: 1995*, 32 FAM. PLAN. PERSP. 132 (2000) (discussing prevalence of use of in vitro fertilization and artificial insemination in United States); David L. Marcus, *Mothers with Another's Eggs*, U.S. NEWS & WORLD REP., Apr. 12, 1999, at 42 (describing use of egg donation in treating infertility).

serting the resulting embryo into a uterus wherein it is brought to term.[3] The concern of critics is not that this process would artificially interfere with the reproductive process, since in vitro fertilization and other assisted reproductive techniques have done exactly that for many years. Rather, the fear is that cloning is a harbinger of the genetic alteration and control of human characteristics in offspring.[4] This concern presents the greatest challenge to any institution charged with determining how to deal with cloning technology.[5] Success in overcoming this challenge will only be achieved by reaching a balanced solution that assures the benefits of cloning while simultaneously minimizing its harms.

Unfortunately, the cloning debate thus far has assumed that all uses of cloning will, in some sense, be harmful or will not serve valid societal interests. This is not surprising given that images of narcissistic billionaires replicating themselves pervade society's thoughts about cloning. Furthermore, there exists a sincere fear of entrepreneurs surreptitiously gathering DNA (deoxyribonucleic acid) from a famous person, such as Michael Jordan or Madonna, cloning it into an embryo, and selling the embryo to the highest bidder.[6] These frightening images presently shape the cloning debate, thereby leading to the current negative reaction.

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3. *See* Robert G. McKinnell & Marie A. Di Berardino, *The Biology of Cloning: History and Rationale*, 49 BIOSCIENCE 875, 880-81 (1999) (discussing development of mammalian cloning via nuclear transfer).

4. *See* E.J. Dionne Jr., *Hold Off on Cloning*, WASH. POST, Jan. 13, 1998, at A15 (describing cloning as having potential to "tamper[ ] with the 'moral and social' sense of what it means to be a human being."); Newswire, *Germans, French Press for Human Cloning Ban* (Apr. 29, 1997) (attributing German opposition to human cloning to "memories of Nazi attempts to engineer a master race"), *at* http://afgen.com/clon23.html.

5. *See, e.g.*, Barry Came, *Under the Microscope*, MACLEAN'S, Dec. 6, 1999, at 62 (describing regulatory problems facing England's Human Fertilisation and Embryology Authority); Andy Coghlan, *Cloning Report Leaves Loophole*, NEW SCIENTIST, June 14, 1997, at 7 (describing issues National Bioethics Advisory Commission faced in supporting cloning moratorium); Times Wire Services, *FDA Warns Against Human Cloning Attempt*, L.A. TIMES, Jan. 20, 1998, at B8 (explaining FDA's assertion of authority to regulate human cloning through Food, Drug, and Cosmetic Act).

6. *See* Dorothy C. Wertz, *Twenty-One Arguments Against Human Cloning, and Their Responses*, GENE LETTER (Aug. 1, 1998) (discussing fear of surreptitious gathering of DNA to clone persons against their will), *at* http://www.geneletter.org/archives/twentyonearguments.html.

II
TWO MODELS OF HUMAN REPRODUCTIVE CLONING

In order to make any headway in the cloning debate, the benefits and harms of two distinct models of human reproductive cloning must be evaluated separately. The first model ("Model 1") envisions either a truly infertile couple for whom no other fertility method would allow a biological connection with their offspring or a couple for whom natural reproduction would present serious health risks for their offspring. Thus, Model 1 cloning applies when the desire to employ cloning arises from gametic infertility—when the couple lacks the healthy eggs or sperm necessary to produce healthy offspring—or from serious genetic disorders. In contrast, the second model ("Model 2") envisions a fertile couple with the option to reproduce coitally or sexually, but who nevertheless insists on cloning.

A. Model 1 Uses of Reproductive Cloning

Model 1 use of reproductive cloning presents a potential method of obtaining the biological or genetic connection to one's children that is so crucial to society's conception of reproduction and family. Specifically, Model 1 cloning could be used to address situations involving male gametic infertility, female gametic infertility, and serious genetic disorders.

Model 1 cloning could provide a couple facing male gametic infertility with an opportunity for each partner to share a biological connection with the cloned child. Instances of male gametic infertility include azoospermia, a condition indicating the total absence of living spermatozoa in the seminal fluid,[7] or severe oligospermia, in which the seminal fluid contains very few spermatozoa.[8] These are sperm dysfunctions so severe that even the latest techniques, such as intracytoplasmic sperm injection (ICSI), may provide no remedy.[9] In such cases, reproductive cloning—placing the husband's DNA in the wife's enucleated egg, activating it, and inserting the resulting embryo in the wife to carry the fetus to term—would allow both the man (through his nuclear DNA) and the woman (through the mitochondrial DNA in the oocyte, and through gestation as well) a biological connection with their offspring. This cloning technique, with its ability to provide each member of the couple a biological or genetic connection with his or

7. STEDMAN'S MEDICAL DICTIONARY 148 (William H.L. Dornette ed., 5th unabr. lawyer's ed. 1982).

8. *Id.* at 980.

9. *See* LEE M. SILVER, REMAKING EDEN: CLONING AND BEYOND IN A BRAVE NEW WORLD 72-73 (1997) (describing technique involved in ICSI).

her offspring, may be preferable for some couples to alternative methods of reproduction, such as using an anonymous sperm donor.

Model 1 cloning could also be applied to cases of female gametic infertility. For example, a woman with an oocyte dysfunction—an inability to produce viable eggs—could use reproductive cloning to enable her to have a biological connection with her child. In this situation, the cloning process would require obtaining an enucleated egg from a donor female. Upon obtaining the donor egg, doctors would insert the infertile woman's DNA into the donor egg, activate it, and place the resulting embryo in the woman's uterus. Here, however, the woman's male partner would have no biological connection with the child, unlike the previous example in which the use of cloning allows both members of the couple to have a biological connection.

The third situation that qualifies as a Model 1 use of reproductive cloning involves genetic carriers of severe recessive diseases, such as Tay-Sachs, sickle cell anemia, and cystic fibrosis.[10] Couples carrying these genes face a one-in-four risk that their child will be born with a severe genetic disease.[11] One option available to the couple is to attempt coital reproduction, resulting in the female partner's pregnancy; to use prenatal diagnosis to determine whether the child will be born with the disorder; and then either abort the fetus or carry it to term.[12] Should the couple choose not to use this method, however, few options remain. The couple may decide to forego a genetic connection with their child and either adopt or use a sperm donor, or the couple may decide to forego having a child altogether. Cloning may provide these couples with an attractive alternative.

B. Model 2 Uses of Human Reproductive Cloning

Model 1 uses of cloning can be contrasted with Model 2 uses, in which reproductive cloning is used by those who are coitally fertile. The use of cloning by sexually fertile persons has animated much of the fear about cloning because it represents a major step toward the genetic control of offspring. Model 2 cloning constitutes an affirma-

10. *See* Dorie W. Schwertz & Kathleen M. McCormick, *The Molecular Basis of Genetics and Inheritance*, J. CARDIOVASCULAR NURSING, July 1999, at 1, 15 (explaining that autosomal recessive disorders such as sickle cell anemia, cystic fibrosis, and phenylketonuria can only be transferred to child if both parents carry defective gene that causes disease).

11. *Id.*

12. *See* Dorothy C. Wertz, *Society and the Not-So-New Genetics: What Are We Afraid of? Some Future Predictions from a Social Scientist*, 13 J. CONTEMP. HEALTH L. & POL'Y 299, 315-16, 335-36 (1997) (discussing practice of, and attitudes toward, prenatal diagnosis and selective abortion of fetuses with genetic conditions).

tive form of genetic selection that goes beyond the boundaries of currently acceptable practices.[13] Current genetic selection practices are accomplished primarily through negative screening methods. Carrier screening, for example, allows a couple to determine whether either partner has a genetic mutation that would cause recessive genetic disorders in their offspring.[14] Another current genetic selection practice involves embryo and fetal screening in combination with embryo discard and selective abortion.[15]

It is important to recognize that society could permit Model 1 uses without automatically legitimizing the uses envisioned in Model 2. Claiming a right to clone when one has the ability to naturally reproduce claims more than a mere right to engage in genetic reproduction. Model 2 uses of cloning claim a right to control and select the entire genome of one's offspring. Transgenic modification—altering the genes of offspring before birth—is on the horizon and promises to be a major ethical, legal, and public policy issue for years to come.[16] It is, therefore, premature at this time to tackle the question of whether one has the right not only to reproduce, but also to totally select the genome of his or her offspring.

III
WHY MODEL 1 USES OF REPRODUCTIVE CLONING SHOULD BE PROTECTED

Model 1 uses of reproductive cloning, when the couple is gametically infertile or carries a serious genetic disease, fall within our standard conceptions of family or procreative liberty.[17] Therefore, Model 1 cloning, like all other forms of assisted reproduction technology, should be presumptively protected as part of a fundamental right to have children, unless some compelling harm requires its prohibition. In the interest of time, I am not going to spell out in detail each step in

13. *See generally* Lori B. Andrews & Nanette Elster, *Regulating Reproductive Technologies*, 21 J. LEGAL MED. 35, 60-65 (2000) (discussing modern concept of procreative liberty and existing genetic selection practices).

14. THE MERCK MANUAL OF DIAGNOSIS AND THERAPY 2005 (Mark H. Beers & Robert Berkow eds., 17th ed. 1999).

15. *See* Mary A. Crossley, *Choice, Conscience, and Context*, 47 HASTINGS L.J. 1223, 1230-34 (1996) (discussing some concerns raised by genetic screening of embryos).

16. *See* Edward H. Schuchman & Robert J. Desnick, *Strategies for the Treatment of Genetic Disease*, *in* 1 EMERY & RIMOIN'S PRINCIPLES AND PRACTICE OF MEDICAL GENETICS 619, 620-21 (David L. Rimoin et al. eds., 3d ed. 1997).

17. Lawrence Wu, Note, *Family Planning Through Human Cloning: Is There a Fundamental Right?*, 98 COLUM. L. REV. 1461 (1998) (arguing that married couples possess fundamental right to procreate through use of cloning technology).

the argument supporting a fundamental right to procreate and why that right would encompass the right to use such non-coital techniques as cloning.[18] Nevertheless, this right does exist, at least for fertile couples and infertile couples using other techniques; and to the extent the right exists, it should necessarily extend to Model 1 uses of cloning. This argument, however, merely establishes the presumptive right to clone. To determine whether cloning is always a good idea, any countervailing harms must be evaluated.

While Donald Shapiro and Frank Grad mentioned the potential harm to society, the main harm I want to talk about is the potential harm to children born as a result of Model 1 cloning. It is important to note at the outset that any claim of harm to a child as a justification for not engaging in a particular reproductive technique must overcome an initial hurdle: But for the use of the technique at issue, the child would never have been born. Therefore, claiming that the technique harms the child when the child would never have been born without that technique assumes that the child is worse off if born through cloning than if never born at all. This argument sounds similar to the wrongful life tort cases; cases that, with a few exceptions, American tort law has rejected as stating no cause of action.[19]

In any case, we should consider whether a child born through a Model 1 use of human reproductive cloning would be severely harmed, even if we accepted the wrongful life doctrine. One argument in opposition to human reproductive cloning hinges on the notion that having the same nuclear DNA as a rearing parent harms the child by eliminating much of the child's uniqueness. Basically, Model 1 uses of human reproductive cloning create instances of "near identical"[20] twins born a generation apart. For a variety of reasons, however, these intergenerational near identical twins would be less alike than identical twins born at the same time. Intergenerational twins would have

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18. For a more detailed discussion, see JOHN A. ROBERTSON, CHILDREN OF CHOICE: FREEDOM AND THE NEW REPRODUCTIVE TECHNOLOGIES 22-25 (1994), and John A. Robertson, *Liberty, Identity, and Human Cloning*, 76 TEXAS L. REV. 1371, 1389-92 (1998).

19. *See, e.g.*, Robak v. United States, 685 F.2d 471, 474 n.3 (7th Cir. 1981) ("Every jurisdiction that has considered actions for wrongful life, except for California, has held that no such cause of action exists."); Elliott v. Brown, 361 So. 2d 546, 547-48 (Ala. 1978) (stating that court "cannot weigh the value of life with impairments against the nonexistence of life itself"); Becker v. Schwartz, 386 N.E.2d 807, 813 (N.Y. 1978); Dumer v. St. Michael's Hosp., 233 N.W.2d 372, 375-76 (Wis. 1975).

20. I say "near identical" twins because while the clone and the DNA source will share the same nuclear DNA, they will almost certainly not share the same mitochondrial DNA since the mitochondrial DNA comes from the oocyte. *See* Robertson, *Liberty, Identity, and Human Cloning*, *supra* note 18, at 1413.

been gestated in different uteruses, as well as reared and educated under different circumstances. It is, therefore, sheer speculation to say that a child born as a result of cloning will not be a unique individual possessing his or her own rights and interests.

A second issue concerning harm to offspring from having the same DNA as a rearing parent is that a child will lack a basic sort of freedom. Critics of reproductive cloning fear that the child will lack an open future because people will expect the child to act exactly like the DNA source, and that the child will not have any freedom to be different. I think that this fear also has very little basis in reality. An infertile couple's interest is merely in having a child with whom they share a genetic connection, not in having a copy of the infertile mate. Additionally, even if the rearing parents wanted to make their child exactly like the source parent, it is highly doubtful that they would be able to accomplish such a feat.

The argument that Model 1 cloning harms the children whose very existence it makes possible does not meet the compelling state interest standard essential to override the parents' fundamental right to have a biologically connected family. Parents, including parents of children born through the use of Model 1 cloning, are likely to be primarily interested in the well-being and best interests of their children. Thus, the fear that they will attempt to force their child to be exactly like the DNA source appears to be based on an unrealistic understanding of parental motivation. Furthermore, any potential for realizing these fears could be minimized by ensuring that the infertile parents desiring to use reproductive cloning receive information and counseling regarding its potential psychological complications so that they will be prepared to deal with the unique relational situations and tensions that might arise.

IV
CLONING AND PUBLIC POLICY

The standard approach throughout the world to the prospect of human reproductive cloning has been a policy of permanent prohibition or a time-limited ban on further research.[21] Presently, such legis-

21. *See* Jerome P. Kassirer & Nadia A. Rosenthal, *Should Human Cloning Research Be Off Limits?*, 338 NEW ENG. J. MED. 905 (1998) (discussing proposals for state and federal bans in United States and noting existence of bans on cloning already in place in European countries). While several executive offices and the FDA have taken steps to ban human cloning, the legality of their actions is at least questionable. Many bills have been introduced in Congress attempting to ban or limit human cloning. Despite presidential support, none of these bills have passed. *See, e.g.*, Human Cloning Prohibition Act, S. 1601, 105th Cong. (1998); Prohibition on Cloning of

lation is merely symbolic. The scientific community remains far away from having a safe and effective means of human reproductive cloning; hence, there is no need for legislation at this time.[22]

It is, however, worthwhile to outline some useful regulations that might be enacted if human reproductive cloning were shown to be safe and effective. Surely, we would want the Food and Drug Administration (FDA) to ensure the health and safety of the techniques.[23] We would also want doctors providing this service to obtain full informed consent from, and assure the counseling of, couples choosing to use reproductive cloning. Counseling would help couples become aware of the psychological issues that could arise, thus enabling them to think through and work out the issues to their satisfaction beforehand. Finally, we would want to clarify the rearing rights and duties to be sure we know in advance who would bear primary responsibility for rearing the child.

Obtaining the DNA source's consent represents another important consideration. If, for example, the source were the husband in Model 1 cloning, consent would likely be relatively easy to obtain. Some Model 2 uses, however, could present interesting scenarios if someone managed to get ahold of a non-consenting individual's DNA. Legally, would cloning that individual interfere with some right he or she has in not having their DNA used for such a purpose? Rights in DNA would not be intellectual property rights because there has been no expenditure of intellectual creativity,[24] but other concerns clearly exist that suggest the need for the DNA source's consent. We might also want to impose limits on the number of clones and on who may or may not be cloned. But again, these concerns really arise with respect to Model 2 cloning, rather than Model 1, and need not be addressed in the near future.

Human Beings Act of 1998, S. 1602, 105th Cong. (1998). Several states, however, have already banned human cloning. *See, e.g.*, CAL. HEALTH & SAFETY CODE § 24185 (WEST 2000); MICH. COMP. LAWS ANN. § 333.16274 (West 2000); R.I. GEN. LAWS § 23-16.4-2 (1999).

22. *See* Melissa K. Cantrell, *International Response to Dolly: Will Scientific Freedom Get Sheared?*, 13 J.L. & HEALTH 69, 85 (1998-99) (stating that director of Center for Bioethics at University of Pennsylvania called forecast of pregnancies via human cloning in one year "goofy" and "nonsense").

23. *See* Letter from Stuart L. Nightingale, Associate Commissioner, FDA, to Institutional Review Boards (Oct. 26, 1998) (confirming FDA's "jurisdiction over clinical research using cloning technology to create a human being" pursuant to 21 C.F.R. pt. 312, *available at* http://www.fda.gov/oc/oha/irbletr.html.

24. Courtney J. Miller, Comment, *Patent Law and Human Genomics*, 26 CAP. U. L. REV. 893, 906 (1997).

CONCLUSION

The problems underlying the cloning debate are not unique to cloning. Cloning is merely a harbinger of a broader problem: adapting to technology enabling the alteration of the human genome prior to birth.

In adapting to this future technology, we have some beacons to guide us. These include our well-developed tradition of fundamental rights and other legal principles that give a high priority to individual and family autonomy. These principles recognize the legitimacy of a couple's interest in having biologically and genetically related offspring to rear. Human reproductive cloning has the potential to aid in the formation and maintenance of families when utilized as envisioned by Model 1. Therefore, once cloning technology has been shown to be sufficiently safe and effective, its Model 1 use should not be denied, even if we have great reservations about Model 2 uses and are not prepared as a society to take that far more momentous step toward total parental control over a child's genome.