

Chicago-Kent College of Law

From the Selected Works of Lori B. Andrews

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Banning the Clone

Lori B. Andrews, *Chicago-Kent College of Law*



IS THERE A RIGHT TO CLONE? CONSTITUTIONAL
CHALLENGES TO BANS ON HUMAN CLONING

Lori B. Andrews*

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* Professor of Law, Chicago-Kent College of Law; Director, Institute for Science, Technology, and Law, Illinois Institute of Technology. J.D., 1978, Yale Law School. This article is based, in part, on a background paper prepared for the National Bioethics Advisory Commission. This paper would not have been possible without the generous and creative aid of a talented group of lawyers and law students — Nanette Elster, Stephanie Grubenhoff, Michelle Hibbert, Laura Hutchinson, Julie Ann Sklaver, and Sheri Tarr.

*"Perhaps in recognition of the surrealistic circumstances they should have spelled it D-A-L-I, instead of D-O-L-L-Y."*¹

On December 5, 1997, Richard Seed shocked the scientific community by announcing that he intended to begin cloning human beings.² Seed planned to use the techniques that Ian Wilmut and Keith Campbell had used to create Dolly the sheep, the first cloned mammal.³ Dolly resulted from a transfer of the nucleic DNA of an adult mammary tissue cell to the enucleated egg cell of an unrelated sheep, and gestation in a third, surrogate mother sheep.⁴

Governments worldwide reacted strongly to the idea of human cloning. Nineteen European countries signed an accord banning cloning.⁵ President Clinton denounced Seed's plan in a national radio address⁶ and renewed his efforts to get Congress to adopt a moratorium on human cloning. When Dolly's birth was first announced in February 1997, President Clinton issued an executive order banning the use of federal funding for human cloning⁷ and asked his newly formed National Bioethics Advisory Commission ("NBAC") to prepare a comprehensive report on the scientific, ethical, and legal issues raised by human cloning.⁸ When the NBAC report was released in July 1997, Harold T. Shapiro, NBAC Chair, indicated that further public discussion of this

1. Ray Suarez, *Talk of the Nation* (NPR radio broadcast, Feb. 24, 1997) (transcript on file with author).

2. See Marilyn Marchione, *Cloning Research Could Offer Great Benefits, Some Experts Say*, MILWAUKEE J. SENTINEL, Jan. 19, 1998, at 1.

3. See Sharon Begley, *Little Lamb, Who Made Thee?*, NEWSWEEK, Mar. 10, 1997, at 53, 54.

4. See I. Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810, 810-813 (1997); see also Michael Specter & Gina Kolata, *After Decades of Missteps, How Cloning Succeeded*, N.Y. TIMES, Mar. 3, 1997, at A1.

5. See Robert Davis, *19 Countries Ban Human Cloning*, USA TODAY, June 13, 1998, at 1D (discussing agreements signed by Denmark, Estonia, Finland, France, Greece, Iceland, Italy, Latvia, Luxembourg, Macedonia, Moldova, Norway, Portugal, Romania, San Marino, Slovenia, Spain, Sweden, and Turkey).

6. See President William J. Clinton: *Address to the Nation* (radio broadcast Jan. 10, 1998); available at <<http://library.whitehouse.gov/Search/Query-RadioAddresses.html>>.

7. See *Transcript of Clinton Remarks on Cloning*, U.S. NEWSWIRE, Mar. 4, 1997, available in 1997 WL 571115.

8. See Letter from President William J. Clinton to Dr. Harold Shapiro, Chairman, National Bioethics Advisory Commission (Feb. 24, 1997) (on file with author), reprinted in NATIONAL BIOETHICS ADVISORY COMMISSION, CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION, at preface (1997) [hereinafter CLONING HUMAN BEINGS].

matter is important. Careful to avoid “confusing science and science fiction,” Shapiro noted that the public’s concerns ranged “from the implications for particular faith commitments, to views regarding the appropriate sphere for human action, to concerns regarding the future of the family, to cumulative apprehensions about the real net benefit of a rapidly advancing technology that some believe is too aggressively pushing aside important social and moral values.”⁹

The NBAC report recommended that Congress enact federal legislation banning the creation of a child through cloning — no matter what the source of funds — for three to five years, at which time the issue should be reconsidered.¹⁰ President Clinton forwarded a bill to Congress based on that recommendation.¹¹ The president’s bill is not the only proposed law banning or regulating human cloning. As of April 1, 1998, seven other bills had been introduced in Congress¹² and eighteen states were considering cloning laws.¹³

9. *Id.*

10. See Letter from Dr. Harold T. Shapiro, Chairman, National Bioethics Advisory Commission, to President William J. Clinton (June 9, 1997), *reprinted in* CLONING HUMAN BEINGS, *supra* note 8, at preface.

11. See Cloning Prohibition Act of 1997, H.R. Doc. No. 105-97 (1997).

12. See S. 1611, 105th Cong. (1998), also labeled S. 1602, 105th Cong. (1998); S. 1601, 105th Cong. (1998), also labeled S. 1599, 105th Cong. (1998); H.R. 3133, 105th Cong. (1998); S. 1574, 105th Cong. (1998); H.R. 923, 105th Cong. (1997); H.R. 922, 105th Cong. (1997); S. 368, 105th Cong. (1997).

13. As of April 1, 1998, there were bills introduced in Alabama, Connecticut, Delaware, Hawaii, Illinois, Kansas, Maryland, Minnesota, Mississippi, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, and Virginia. See S.B. 68, 1998 Reg. Sess. (Ala. 1998), S.B. 8, 1998 Reg. Sess. (Ala. 1998); H.B. 5475, 1998 Reg. Sess. Gen. Assembly (Conn. 1998); S.B. 241, 139th Gen. Assembly, 2d Sess. (Del. 1998); H.B. 3206, 19th Leg. (Haw. 1998); S.B. 1243, 90th Gen. Assembly, 1997–98 Reg. Sess. (Ill. 1998); H.B. 2235, 90th Gen. Assembly, 1997–98 Reg. Sess. (Ill. 1997); H.B. 2846, 77th Leg., 1998 Reg. Sess. (Kan. 1998); H.B. 932, 1998 Reg. Sess. (Md. 1998); H.J.R. 11, 1998 Reg. Sess. (Md. 1998); S.B. 2423, 80th Reg. Sess. (Minn. 1998); H.B. 2730, 80th Reg. Sess. (Minn. 1998); H.B. 996, 1998 Reg. Sess. (Miss. 1998); H.B. 1658, 155th Sess., 2d Year (N.H. 1998); A.B. 329, 208th Leg. (N.J. 1998); A.B. 2849, 207th Leg. (N.J. 1997); S.B. 5993, 221st Leg. Sess. (N.Y. 1998); A.B. 9183, 221st Leg. Sess. (N.Y. 1998); S.B. 2877, 220th Leg. Sess. (N.Y. 1997); A.B. 5383, 220th Leg. Sess. (N.Y. 1997); H.B. 675, 122d Gen. Assembly, 1997–98 Reg. Sess. (Ohio 1998); S.B. 218, 122d Gen. Assembly, 1997–98 Reg. Sess. (Ohio 1998); H.B. 2128, 182d Gen. Assembly, 1997–98 Reg. Sess. (Pa. 1998); H.B. 7123, 1997–98 Leg. Sess. (R.I. 1998); H.B. 3617, 112th Gen. Assembly Sess. (S.C. 1997); S.B. 2295, 100th Gen. Assembly (Tenn. 1998); H.B. 2281, 100th Gen. Assembly (Tenn. 1998); H.B. 2198, 100th Gen. Assembly (Tenn. 1998); S.B. 2208, 100th Gen. Assembly (Tenn. 1998); H.B. 752, 1998 Sess. (Va. 1998).

On October 4, 1997, the California legislature adopted a law that created a five-year moratorium on the cloning of a human being.¹⁴ On June 3, 1998, Michigan also adopted a ban on human cloning.¹⁵ No legislature has introduced a bill explicitly permitting human cloning.

Many medical organizations surveyed by the NBAC, including the American Medical Association, the World Medical Association, and the World Health Organization, find cloning human beings to be unacceptable.¹⁶ In fact, the majority of the thirty-two scientific societies surveyed opposed the procedure,¹⁷ although, notably, the infertility professional societies did not join in advocating a ban.¹⁸ Certain religious groups oppose the procedure as well. In reaction to the cloning of Dolly the sheep, the Vatican stated that a "person has the right to be born in a human way. It is strongly hoped that states . . . will immediately pass a law that bans the application of cloning of humans and that in the face of pressures, they have the force to make no concessions."¹⁹

This article analyzes the legal issues behind regulating human cloning, focusing specifically on whether a federal ban on cloning humans, such as that proposed by the President, would be constitutional. To give some context to the discussion, Part I of this article describes the scientific procedure of cloning and its potential uses and risks, thus setting the factual basis upon which the later arguments will be founded. Part II addresses the impact of existing laws and regulation on the legality of cloning, focusing especially on state bans on embryo research, and also describes proposed federal and state laws regarding cloning. The remainder of the paper addresses the three main constitutional challenges to laws banning cloning. Part III analyzes whether a ban on human cloning would unconstitutionally infringe upon scientists' right to scientific inquiry. Part IV assesses whether a ban on human cloning of complete individuals would violate constitutional rights to privacy or liberty in making reproductive decisions. Part V analyzes whether

14. See Act of Oct. 4, 1997, 1997 Cal. Stat. 688.

15. See Act of June 3, 1998, 1998 Mich. Pub. Acts 108, *bill text available in* Westlaw, at 1997 MI H.B. 864 (SN); Act of June 3, 1998, 1998 Mich. Pub. Acts 109, *bill text available in* Westlaw, at 1997 MI H.B. 4846 (SN); Act of June 3, 1998, 1998 Mich. Pub. Acts 110, *bill text available in* Westlaw, at 1997 MI H.B. 4962 (SN); Act of June 3, 1998, 1998 Mich. Pub. Acts 111, *bill text available in* Westlaw, at 1997 MI H.B. 5475 (SN) 7 MI H.B. 5475 (SN); *Engler Signs Legislation to Ban Human Cloning*, Grand Rapids Press, June 4, 1998, at A20.

16. See CLONING HUMAN BEINGS, *supra* note 8, at 99.

17. See *id.* at 97 n.17.

18. See *id.* at 98.

19. *Id.* at 56.

federal legislation restricting or banning cloning could be challenged as exceeding the federal spending power or the federal power to regulate interstate commerce.

I. THE GOALS AND POTENTIAL IMPACTS OF CLONING RESEARCH

A. *What Is Cloning and Why Might it Be Desirable?*

Mammalian “cloning” is the manipulation of a cell from an animal or human in such a way that it grows into a virtual copy of that animal or human with identical nucleic DNA.²⁰ One way to think about it is that cloning is a way to create later-born twins of an individual who is living or has already lived. Unlike naturally occurring twins, however, the clone will not be one hundred percent genetically identical because it will have mitochondrial DNA from the donor of the enucleated egg.²¹ In the case of Dolly the sheep, an adult mammary cell containing a copy of every gene needed to make the lamb was extracted, then starved of its nutrients, forcing the cell into a quiescent state.²² This cell was then fused with an enucleated egg cell — one in which the nucleus has been extracted — and an electric current was run through the fused cell, activating it and causing it to begin to divide. These active cells were then implanted into a surrogate mother and carried to term.²³

Cloning may be an attractive means of creating a child to people in a variety of situations. If one or both members of a couple are infertile, cloning presents one viable reproductive option.²⁴ If one member of the couple has a genetic disorder that the couple does not wish to pass on to a child, they could clone the unaffected member of the couple. If both husband and wife are carriers of a recessive genetic disease and are unwilling to run the twenty-five percent risk of bearing a child with the disorder, they may seek to clone one or the other of them.²⁵ This may be

20. See Begley, *supra* note 3, at 54.

21. See Shirley Tilghman, Address to the National Bioethics Advisory Commission (Mar. 13, 1997), available at <<http://www.all.org/nbac/970313a.htm>>.

22. See Thomas H. Maugh II, *Brave New World*, L.A. TIMES, Feb. 27, 1997, at B2.

23. See *id.*; see also Francis C. Pizzulli, Note, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. CAL. L. REV. 476, 483 (1974); Peter N. Spotts & Robert Marquand, *A Lamb Ignites a Debate on the Ethics of Cloning*, CHRISTIAN SCI. MONITOR, Feb. 26, 1997 at 3.

24. See Herbert Wray et al., *The World After Cloning*, U.S. NEWS & WORLD REP., Mar. 10, 1997, at 59.

25. See JAY KATZ, EXPERIMENTATION WITH HUMAN BEINGS 977 (1972).

the only way in which the couple will be willing to have a child that will carry on their genetic line.

Even people who could reproduce coitally may desire to clone for a variety of reasons. People may want to clone themselves, deceased or living loved ones, or individuals with favored traits. A wealthy childless individual may wish to clone himself or herself to have a genetic heir or to pass on control of a family business. Parents who are unable to have another child may want to clone their dying child.²⁶

People might wish to clone individuals with desired traits, such as Mother Teresa, Michael Jordan, or Michelle Pfeiffer. Less well-known individuals could also be cloned for specific traits, such as a high pain threshold or resistance to radiation.²⁷ Those who can perform a particular job well, like soldiers or athletes, might also make good candidates.²⁸ One biologist even suggested cloning legless men for the low gravitational field and cramped quarters of a space ship.²⁹

Clones could be created to donate non-essential organs like kidneys or bone marrow.³⁰ John Fletcher, former bioethicist at the National Institutes of Health, argues, "[t]he reasons for opposing this are not easy to argue."³¹ Going further with this idea, John Robertson advocates cloning a "back up supply of embryos from which tissue or organs could be obtained if a tragedy befell a first child."³²

Cloning also broadens the options available to non-traditional family units. Clone Rights United Front, a group of gay activists based in New York, demonstrated against the proposed New York legislation that

26. See Willard Gaylin, *The Frankenstein Myth Becomes Reality — We Have the Awful Knowledge to Make Exact Copies of Human Beings*, N.Y. TIMES, Mar. 5, 1972, § 6 (Magazine), at 12. This is not dissimilar to a present situation in which a couple whose daughter died is making arrangements to have her cryopreserved in vitro embryo implanted in a surrogate mother in an attempt to carry out her wish to provide grandchildren. See Gina Kolata, *Medicine's Troubling Bonus: Surplus of Human Embryos*, N.Y. TIMES, Mar. 16, 1997, at 1; *Fox on Trends* (Fox Television Broadcast, Mar. 19, 1997).

27. See J.B.S. Haldane, *Biological Possibilities for the Human Species in the Next Thousand Years*, in *MAN AND HIS FUTURE* 337, 355 (Gordon Wolstenholme ed., 1963), cited in Pizzulli, *supra* note 23, at 490 n.66.

28. See Joseph Fletcher, *Ethical Aspects of Genetic Controls*, 285 N. ENG. J. MED. 776, 779 (1971), cited in Pizzulli, *supra* note 23, at 490 n.67.

29. See Haldane, *supra* note 27, at 354, cited in Pizzulli, *supra* note 23, at 520 n.235.

30. See Jeffrey Kluger, *Will We Follow the Sheep?*, TIME, Mar. 10, 1997, at 66, 70.

31. *Id.* (quoting John Fletcher).

32. John Robertson, Address to the National Bioethics Advisory Commission (Mar. 14, 1997), available at <<http://www.all.org/nbac/70313b.htm>> [hereinafter Robertson statement].

would ban nuclear transplantation research and human cloning because they see human cloning as a significant breakthrough for same-sex reproduction.³³ Randolfe Wicker founded the Clone Rights United Front in order to pressure legislators not to ban human cloning research because he sees nuclear transplantation cloning as an inalienable reproductive right.³⁴ Wicker stated, "I realize my clone would be my identical twin, and my identical twin has a right to be born."³⁵

Ursula Goodenough, a cell biologist from Washington University, raised an additional application of cloning — reproduction without men.³⁶ If females cloned themselves, men would be superfluous in reproduction, leading to a world where men may eventually be phased out entirely — the ultimate feminist utopia.³⁷ Ann Northrop, a columnist for the New York gay newspaper, *LGNY*, says that cloning is enticing to lesbians because it offers them a means of reproduction and "has the potential of giving women complete control over reproduction."³⁸ "This is sort of the final nail in men's coffins. . . . Men are going to have a very hard time justifying their existence on this planet, I think. Maybe women may not let men reproduce."³⁹

B. The Potential Physical Risks in Cloning Humans

Many scientists, including Dolly's creators, are concerned that it would be premature to begin human cloning without first addressing the many safety concerns through animal research.⁴⁰ National Institutes of Health Director Harold Varmus, testifying before Congress, specifically raised the concern that animal cloning technology is not scientifically ready to be applied to human cloning research, even if it were permitted,

33. See Anita Manning, *Pressing a "Right" to Clone Humans, Some Gays Foresee Reproduction Option*, USA TODAY, Mar. 6, 1997, at 1D.

34. See *id.*; see also Liesl Schilinger, *Postcard from New York*, INDEPENDENT (London), Mar. 16, 1997, at 2 (discussing the Clone Rights United Front demonstrations in New York to dissuade New York legislators from passing a bill that would make human cloning research a felony).

35. Manning, *supra* note 33, at 1D (quoting Wicker).

36. See J. Madeline Nash, *The Age of Cloning*, TIME, Mar. 10, 1997, at 62, 64.

37. See, e.g., CHARLOTTE PERKINS GILMAN, *HERLAND* (1979). Immediately after the announcement of Dolly's birth, commentators discussed the implications of "virgin birth," or of a woman giving birth to her twin. See Nash, *supra* note 36, at 64.

38. Manning, *supra* note 33, at 1D (quoting Northrop).

39. Schilinger, *supra* note 34, at 2 (quoting Northrop).

40. See Paul Recer, *Sheep Cloner Says Cloning People Inhumane — Senator Disagrees*, ASSOCIATED PRESS POL. SERV., Mar. 13, 1997, available in 1997 WL 2508493 (reporting testimony of Dr. Ian Wilmut and of Dr. Harold Varmus before the Senate, Mar. 12, 1997, regarding the banning of human cloning research).

because there are technical questions which can only be answered by continued animal research.⁴¹ Of 277 attempts in the sheep cloning experiment, only one — Dolly — survived.⁴²

Reactivating the genes of a cell is risky. An adult cell which has already been differentiated contains a complete complement of genes, but only a small proportion are activated in order to do the specialized task of that cell. Activating the slumbering genes may reveal hidden mutations. Mutations are “a problem with every cell, and you don’t even know where to check for them,” according to Ralph Brinster of the University of Pennsylvania.⁴³

Moreover, some differentiated cells rearrange a subset of their genes. For example, immune cells rearrange some of their genes to make surface molecules.⁴⁴ Such rearrangement could cause problems for the resulting clone. Also, if all the genes in the adult DNA are not properly reactivated, there could be a problem for the clone at a later developmental stage.⁴⁵ The high rate of laboratory deaths suggests that cloning may in fact damage the DNA of a cell, and scientists urge that Dolly should be closely monitored for abnormal genetic anomalies that did not kill her as a fetus but may have long-term harmful effects.⁴⁶

Furthermore, because scientists do not fully understand the cellular aging process, they do not know what “age” or “genetic clock” Dolly inherited.⁴⁷ On a cellular level, when the report of her existence was published in *Nature*, was she a normal seven month old lamb, or was she six years old (the age of the mammary donor cell)? There is speculation that Dolly’s cells most likely are set to the genetic clock of the nucleus donor, and therefore are comparable to those of her six year old progenitor.⁴⁸ One commentator stated that if the hypotheses of a cellular, self-regulating genetic clock were correct, clones would be cellularly programmed to have much shorter life spans than the “original.”⁴⁹ This could seriously undermine many of the benefits which

41. *See id.*

42. *See* Wilmut et al., *supra* note 4, at 811.

43. Begley, *supra* note 3, at 59.

44. *See* Tilghman, *supra* note 21.

45. *See id.*

46. *See* Nash, *supra* note 36, at 65; *see also* Spotts & Marquand, *supra* note 23, at 3.

47. *See* Terence Monmaney, *Prospect of Human Cloning Gives Birth to Volatile Issues*, L.A. TIMES, Mar. 2, 1997, at A1.

48. *See id.*; *see also* *Whatever Next?*, ECONOMIST, Mar. 1, 1997, at 79, 79–80.

49. *See Hello Dolly*, ECONOMIST, Mar. 1, 1997, at 17 (discussing the pros and cons of aging research which could result from nuclear transplantation cloning); *see also* Monmaney, *supra* note 47 (noting that some biologists have “wondered if the DNA from

have been set forth in support of cloning and lead people to view cloned animals and humans as short-lived, disposable copies. This concern for premature aging has lead Dr. Sherman Elias, geneticist and obstetrician at the Baylor College of Medicine, to call for further animal testing of nuclear transplantation as a safeguard to avoid subjecting human clones to premature aging and the potential harms associated with aged cells.⁵⁰

The history of animal cloning from embryonic and fetal cells also suggests caution before cloning humans. Early cloning experiments on frogs in the 1950s⁵¹ and 1960s⁵² met only with mixed results, sometimes resulting in "grossly . . . genetically deformed adults."⁵³ More recently, when the Grenada Corporation in Texas began the cloning of cows⁵⁴ from differentiated embryonic cells, some of the cloned calves were abnormally large.⁵⁵ Some weighed up to one hundred and eighty pounds at birth, more than twice the normal seventy five pound birth weight of this breed.⁵⁶ Also, some of these calves were born with diseases such as diabetes and enlarged hearts, and eighteen to twenty percent of these calves simply died after birth.⁵⁷

The scientific team that created Dolly has also met with unsatisfactory results. After cloning Dolly, they used fetal cells to create cloned, transgenic animals.⁵⁸ In this experiment, the team successfully transferred the DNA from a fetal cell into 425 enucleated sheep eggs.⁵⁹ Of these attempted fusions, however, only fourteen resulted in pregnancy and only six lambs were born alive.⁶⁰ Labor was artificially induced in all of the surrogate ewes, and in some instances the lambs

an aged donor would give rise to a clone with a brand-new lease on life — or one that was already old, a sort of newborn oldster").

50. See Monmaney, *supra* note 47.

51. See Pizzulli, *supra* note 23, at 484–85.

52. See *Horizon: Dawn of the Clone Age* (BBC television broadcast, Sept. 10, 1997), transcript available at <<http://www.bbc.co.uk/horizon/cloneagetrans.shtml>>.

53. Pizzulli, *supra* note 23, at 484.

54. See *Horizon*, *supra* note 52.

55. See *id.*

56. See *id.*

57. See *id.*

58. See Angelika E. Schnieke et al., *Human Factor IX Transgenic Sheep Produced By Transfer of Nuclei from Transfected Fetal Fibroblasts*, 278 *SCIENCE* 2130, 2130 (1997). "Transgenic" animals are those that carry and express a gene of another species.

59. See *Cloned Transgenic Lambs Produce Clotting Factor in Milk*, *BIO-TECHNOLOGY NEWSWATCH*, Jan. 15, 1998, at 5.

60. See Schnieke et al., *supra* note 58, at 2132. This study determined that a "pregnancy" resulted when an embryo continued to develop 60 days after implantation, which is slightly less than half of this breed of lamb's normal gestational period. See *id.* at 2131–32.

were delivered by cesarean section.⁶¹ Some of these cloned lambs weighed nearly twice the average amount.⁶²

The gross deformities and early deaths among cloned animals raise concerns that initial trials in human nuclear transplantation will also meet with disastrous results.⁶³ Dr. Wilmut is specifically concerned with the ethical issues raised by any such defective births.⁶⁴ He responded to the announcement that Dr. Richard Seed intended to clone human beings within the next two years by stating: "Let me remind you that 1/4 of the lambs born in our experiment died within days of birth. Seed is suggesting that a number of humans would be born but others would die because they didn't properly develop. That is totally irresponsible."⁶⁵ Dr. Wilmut noted further that "[w]ith people, the possibility of 276 failures, many of which would involve miscarriages, sounds horrific and raises huge ethical barriers" to the possibility of human cloning in the near future.⁶⁶ Roger Pederson, a physician at the University of California, San Francisco, stated that many scientific groups are voluntarily observing a moratorium on human cloning because "the chance of abhorrent offspring is high."⁶⁷

C. *The Potential Psychological Impacts of Cloning*

Concerns about the psychological impact of cloning focus on the parent/child relationship, the undermining of the clone's autonomy and

61. *See id.* at 2132. The fact that some of these lambs were delivered by cesarean section prompted an animal welfare organization, Compassion in World Farming, to criticize the Roslin team for using Scottish Blackface sheep as surrogate ewes because these ewes are typically smaller than the Poll Dorset breed which are actually used to create the cloned embryos. *See* Nick Thorpe, *Scientists Baffled By Oversized Sheep Clones*, SCOTSMAN, July 28, 1997, at 1; *see also* Steve Connor, "Giant" Lambs Put Future of Cloning in Doubt, SUNDAY TIMES (London), July 27, 1997, at 5.

62. *See* Thorpe, *supra* note 61; *see also* Connor, *supra* note 61.

63. *See* Pizzulli, *supra* note 23, at 487.

64. *See* Recer, *supra* note 40 (quoting Dr. Wilmut as stating, "I don't see any reason why we would want to copy a person. I personally still have not heard of a potential use of this technique to produce a new person that I would find either ethical or acceptable").

65. *Seed's Human Cloning Bid Draws Edgy World Reactions*, MEDICAL INDUSTRY TODAY, Jan. 8, 1998, available in LEXIS, News Library, Curnws File (quoting Dr. Wilmut).

66. *Cloning: Scientist's Plan to Clone Human Sparks Outrage*, HEALTH LINE, Jan. 8, 1998, available in LEXIS News Library, Medical & Health Materials File (quoting Wilmut).

67. David Kestenbaum, *Cloning Plan Spawns Ethics Debate*, 279 SCIENCE 315, 315 (1998) (quoting Pederson).

free will, and the later-born twin's loss of ability to control private information.

The unique origins of a clone might create unreasonable expectations about her. When a clone is created from a dead child, the parents might expect the second child to be a replacement for the first. The similar physical appearance of the second child will bring to life the ghost of the first, perhaps underscoring expectations that the children will be identical in behavior and personality. But the clone will invariably be different. The parents will be older — even if just by a few years — than they were when rearing the first child. They will also have suffered an indelible grief, the death of their child, and thus may have a tendency to overprotect the clone. They may also narrow the experiences of the clone, exposing it only to the type of food, toys, or classes that the first child liked.

These two problems — the specter of difference, leading to disappointment, and the narrowing of experiences — are likely to haunt all cloning arrangements. Consider, for example, what might happen if a couple cloned a famous basketball player.⁶⁸ If the clone breaks his knee at age ten, would his parents consider him a disappointment? Would he view himself as a failure? “For the clonant to have as his parent the foreknower and creator of every one of his genetic predispositions might well make child adjustment exponentially more difficult.”⁶⁹

Family relationships could also be altered by the fact that a cloned child may seem more like an object than a person, since he or she is “designed and manufactured as a product, rather than welcomed as a gift.”⁷⁰ As the NBAC observed, “[s]omatic cell nuclear transfer cloning, some fear, offers the possibility of virtually complete control over one important aspect of a child's development, his or her genome, and it is the completeness of this control . . . [that] invokes images of manufacturing children according to specification.”⁷¹ It might diminish the personhood of a clone if he were created to satisfy the vanity of the nucleic DNA donor or to meet the needs of a pre-existing individual, such as a child needing bone marrow.⁷² In attempting to cull out from

68. This is an example provided by Mark Rothstein, Professor, University of Houston Law Center.

69. Pizzulli, *supra* note 23, at 510.

70. CLONING HUMAN BEINGS, *supra* note 8, at 52 (citing Gilbert Meilaender, Testimony Before the National Bioethics Advisory Commission, Mar. 13, 1997); *see also id.* at 53 (“The cloning of humans risks transforming children into ‘products’ of technological achievement rather than ‘gifts’ created in love.”) (citation omitted).

71. CLONING HUMAN BEINGS, *supra* note 8, at 69.

72. *See* CLONING HUMAN BEINGS, *supra* note 8, at 74.

the resulting child the favored traits of the loved one or celebrity who has been cloned, the social parents might limit the environmental stimuli to which the child is exposed. "Arguably a person cloned from a departed loved one . . . has less chance of being loved solely for his own intrinsic worth."⁷³

Some scientists argue that these concerns are unfounded, because a clone will be invariably different from the original. The NBAC report observes that "the idea that one could make through somatic cell nuclear transfer a team of Michael Jordans, a physics department of Albert Einsteins, or an opera chorus of Pavarottis, is simply false."⁷⁴

However, we are in an era of genetic determinism. James Watson, co-discoverer of deoxyribonucleic acid ("DNA") and the first director of the Human Genome Project, has stated, "[w]e used to think our fate was in our stars. Now we know, in large measure, our fate is in our genes."⁷⁵ Harvard zoologist Edward O. Wilson asserts that the human brain is not tabula rasa later filled in by experience, but rather "an exposed negative waiting to be slipped into developer fluid."⁷⁶ Genetics are alleged to be so important by some scientists that psychiatrist David Reiss at George Washington University has declared that "the Cold War is over in the nature and nurture debate."⁷⁷

Whether or not genetics actually play such a large role in human development, parents may raise a clone as if they do. After all, regardless of their belief in genetic determinism, the only reason people want to clone (as opposed to adopting or using an egg or sperm donor in the case of infertility) is to assure that a child has a certain genetic make-up. It seems absurd to think that they would forget about that genetic make-up once the clone was born. We already limit parents' genetic foreknowledge of their children because we believe it will improperly influence their rearing practices. Medical genetics groups often caution parents against having their children tested for late-onset genetic disorders,⁷⁸ because a child who tested positive could "grow up in a

73. Pizzulli, *supra* note 23, at 503 n.140.

74. CLONING HUMAN BEINGS, *supra* note 8, at 33.

75. Leon Jaroff, *The Gene Hunt*, TIME, Mar. 20, 1989, at 217.

76. Tom Wolfe, *Sorry, but Your Soul Just Died*, FORBES ASAP, Dec. 2, 1996, at 210.

77. Charles C. Mann, *Behavioral Genetics in Transition*, 264 SCIENCE 1686, 1686 (1994).

78. See American Society of Human Genetics Board of Directors & American College of Medical Genetics Board of Directors, *Points to Consider: Ethical, Legal, and Psychological Implications of Genetic Testing in Children and Adolescents*, 57 AM. J. HUM. GENETICS 1233, 1236 (1995).

world of limited horizons and may be psychologically harmed even if treatment is subsequently found for the disorder.”⁷⁹

Cloning could undermine human dignity by threatening the replicant’s sense of self and autonomy. A vast body of developmental psychology research has demonstrated children’s need to have a sense of an independent self.⁸⁰ This might be difficult for the clone of a parent or of a previous child who died.⁸¹ Even if the clone did not believe in genetic determinism, the original’s life “would always haunt the later twin, standing as an undue influence on the latter’s life, and shaping it in ways to which others lives are not vulnerable.”⁸²

Clones are very different from naturally-occurring twins. With twins:

[E]ach life begins ignorant of what [the genome’s determinative effects] will be, and so remains as free to choose a future as are individuals who do not have a twin. In this line of reasoning, ignorance of the effect of one’s genome on one’s future is necessary for the spontaneous, free, and authentic construction of a life and self.⁸³

In fact, some philosophers⁸⁴ and lawyers⁸⁵ argue that the child has a “right to an open future.”

Another problem is that a clone cannot control disclosure of intimate personal information.⁸⁶ This may threaten her self-image.⁸⁷ Studies of people’s responses to genetic testing information show that learning genetic information about oneself (whether it is positive or negative

79. Dorothy Wertz et al., *Genetic Testing for Children and Adolescents: Who Decides?*, 272 JAMA 875, 878 (1994).

80. See generally Daniel N. Stern, *THE INTERPERSONAL WORLD OF THE INFANT* (1985).

81. See CLONING HUMAN BEINGS, *supra* note 8, at 68 (citing HANS JONAS, *PHILOSOPHICAL ESSAYS: FROM ANCIENT CREED TO TECHNOLOGICAL MAN* (1974)).

82. *Id.* at 67.

83. *Id.*

84. See Joel Feinbeberg, *The Child’s Right to an Open Future*, in *WHOSE CHILD? CHILDREN’S RIGHTS, PARENTAL AUTHORITY, AND STATE POWER* at 124 (W. Aiken & H. LaFollette, eds., 1980).

85. See, e.g., Dena S. Davis, *Genetic Dilemmas and the Child’s Right to an Open Future*, 28 RUTGERS L.J. 549 (1997).

86. See Pizzulli, *supra* note 23, at 512.

87. See *id.* at 514. Pizzulli points out that a person’s self-image may be “at odds” with an “objective” description of himself or herself, and that overestimation of abilities might spur one to achieve goals otherwise thought unattainable. See *id.* at 515.

information) can harm one's self image.⁸⁸ Moreover, an individual might be stigmatized or discriminated against based on foreknowledge of her genotype. If an individual were cloned and later died young of an inheritable disease, the clone might suffer from insurance or employment discrimination.

D. The Potential Societal Impacts of Cloning Humans

The prospect of cloning humans raises several serious concerns about its overall effect on society. Cloning may interfere with evolution, because it promotes genetic uniformity, thus increasing the danger that a disease might arise in the future to which clones would have no resistance.⁸⁹ George Johnson, an biologist at Washington University, opposes cloning because "[g]enetic variation is the chief defense our species has against an uncertain future. To strip ourselves of it, even partially, is to endanger our species."⁹⁰ Genetic adaptation has allowed the human species to survive; producing genetically identical humans may therefore be threatening to the species.⁹¹ Further, although Dolly the sheep has gotten pregnant,⁹² the possibility that *human* clones would be sterile is another concern.⁹³ Despite these overall risks, some commentators argue that if human cloning is restricted to very rare cases, then the evolution of the human species should not be stunted nor the human gene pool disturbed any more than the gene pool is currently affected by naturally occurring identical twins.⁹⁴

Cloning might also bring detrimental changes to the institution of the family. Boston College theologian Lisa Sowhill Cahill is concerned that cloning may lead to the commodification of human beings and their genes and to the manipulation of human genetics to achieve more socially desirable children.⁹⁵ Allen Verhey, a Protestant ethicist at Hope

88. For a review of the studies, see Lori B. Andrews, *Prenatal Screening and the Culture of Motherhood*, 47 HASTINGS L.J. 967 (1996).

89. See George B. Johnson, Editorial, *What Rights Should a Cloned Human Have?*, ST. LOUIS POST-DISPATCH, Mar. 20, 1997, at B7.

90. *Id.*

91. See Editorial, *Genesis the Sequel*, NEWSDAY, Mar. 9, 1997, at G1.

92. See Christy Campbell, *Scientist Admits That Dolly May Not Be "Wonder Clone"*, SUNDAY TELEGRAPH (London), Feb. 22, 1998, at 15.

93. See *Genesis the Sequel*, *supra* note 91.

94. See Max Bader, Editorial, *Threats from Cloning Shouldn't Be Overstated*, PORTLAND OREGONIAN, Mar. 9, 1997, at G5 (arguing that as long "[a]s the human gene pool is intact, humans will be able to adapt to the extent that is within their overall makeup to do so").

95. See Kenneth L. Woodward, *Today the Sheep . . .*, NEWSWEEK, Mar. 10, 1997, at 60.

College in Holland, Michigan, warns that cloning would desensitize society into regarding children as “products.”⁹⁶ Other opponents envision a world where clones are “cannibalized for spare parts”⁹⁷ — made solely for medical purposes and asked to donate their organs.

Cloning may also have negative impacts on broader legal concepts. Pizzulli points out that:

(a) privacy and autonomy might be severely attenuated in one known by himself or others to have a predetermined genetic identity; and (b) irrespective of personal and/or public knowledge of one’s clonal origins, the technology of cloning might have macro-effects upon society by eroding the concept of individuality which is at the core of our notions of privacy and autonomy.⁹⁸

In addition to weakening an individual’s sense of free will, cloning would “weaken the social constructs and political institutions that serve to foster the exercise of individual autonomy and to inhibit the coercive manipulation of individuals.”⁹⁹

II. EXISTING AND PROPOSED LAWS THAT COULD RESTRICT CLONING

There are serious problems with using existing legal authority to govern cloning. There are questions about whether cloning would fall under existing Food and Drug Administration (“FDA”) authority and whether it could be regulated by state laws covering embryo research.

A. *The Role of the Food and Drug Administration*

The FDA recently claimed that it has the power and mechanism to regulate cloning, asserting that the agency’s approval is necessary before attempting to clone a human being.¹⁰⁰ The FDA has guidelines covering products that contain cells that have been substantially altered through

96. *See id.*

97. Philip Elmer-Dewitt, *Cloning: Where Do We Draw the Line?*, TIME, Nov. 8, 1993, at 65, 65.

98. Pizzulli, *supra* note 23, at 498.

99. *Id.* at 524–25.

100. *See* Rick Weiss, *Human Clone Research Will Be Regulated*, WASH. POST, Jan. 20, 1998, at A1.

“more than minimal” manipulation,¹⁰¹ such as skin tissue for burn victims. But these may not technically extend to cloning,¹⁰² and even if they do, they do not require prior approval if a patient’s cells are being used for his or her own reproductive purposes.¹⁰³ The Biotechnology Industry Organization, which represents 750 biotech companies, academic institutions, and state biotechnology centers, supports the FDA’s assertion of authority here and is trying to dissuade federal and state lawmakers from enacting moratoria or bans on human cloning.¹⁰⁴

B. State Statutes Governing Research on Embryos

The Michigan¹⁰⁵ and California¹⁰⁶ legislatures have passed legislation prohibiting cloning, but other states may assume their bans on embryo research would apply. Ten states have laws regulating research and/or experimentation on conceptuses, embryos, fetuses, or unborn children that use broad enough language to include early stage conceptuses.¹⁰⁷ It could be argued, however, that these statutes do not cover nuclear transfer cloning.

For example, eight of the states prohibit some form of research on some product of conception, referred to in the statutes as a conceptus,¹⁰⁸ embryo,¹⁰⁹ fetus,¹¹⁰ or unborn child.¹¹¹ An argument could be made that

101. FDA, PROPOSED APPROACH TO REGULATION OF CELLULAR AND TISSUE-BASED PRODUCTS 6, 9 (1997) [hereinafter FDA GUIDELINES].

102. For example, if the FDA can regulate cloning, why hasn’t it used the same authority to monitor intracytoplasmic sperm injection (“ICSI”), in which DNA (in the form of sperm) is being injected into women’s eggs? See FDA GUIDELINES, *supra* note 101.

103. See FDA Guidelines, *supra* note 101, at Table I.

104. See Biotechnology Industry Organization, *There Is No Need for a Rush to Legislate* (visited May 30, 1998) <http://www.bio.org/laws/cloning_paper1.dgw>.

105. See *supra* note 15 and accompanying text.

106. See Act of Oct. 4, 1997, 1997 Cal. Stat. 688.

107. See Fla. Stat. § 390.0111(5) (1997); La. Rev. Stat. Ann. § 9:121–122 (West 1991); Me. Rev. Stat. Ann. tit. 22, § 1593 (West 1992); Mass. Gen. Laws Ann. ch. 112, § 12J (West 1996); Mich. Comp. Laws Ann. § 333.2685–.2692 (West 1992); Minn. Stat. § 145.421–.422 (1994); N.D. Cent. Code § 14-02.2-01 to 14-02.2-02 (1991); N.H. Rev. Stat. Ann. § 168-B:15 (1994); Pa. Cons. Stat. Ann. § 3216 (West Supp. 1998); R.I. Gen. Laws § 11-54-1 (1994).

108. See Minn. Stat. Ann. § 145.421 (1994).

109. See Mich. Comp. Laws Ann. § 333.2685–.2690 (West Supp. 1997).

110. See Fla. Stat. § 390.0111(5) (1997); Me. Rev. Stat. Ann. tit. 22, § 1593 (West 1992); Mass. Gen. Laws Ann. ch. 112, § 12J (West 1996); Mich. Comp. Laws Ann. § 333.2685–.2690 (West 1992); N.D. Cent. Code § 14-02.2-01 to 14-02.2-02 (1991); R.I. Gen. Laws § 11-54-1 (1994).

111. See 18 Pa. Cons. Stat. Ann. § 3216 (West Supp. 1998).

these statutes should not apply to cloning because the experimentation is being done on an *egg*, not on the product of conception. By the time the egg is re-nucleated, the experiment or research has already been completed. The most protection these statutes would then supply is protection from experimentation after the re-nucleation; these statutes would not prohibit cloning itself. Similarly, two of the ten states define the object of protection — the conceptus (Minnesota) or unborn child (Pennsylvania) — as the product of fertilization.¹¹² If transfer of nucleic material is not considered fertilization, these laws would not apply.

Not all state statutes suffer from these drafting weaknesses. In New Hampshire, a researched-upon pre-embryo may not be transferred to a uterine cavity.¹¹³ Thus, if a re-nucleated oocyte is considered to be a pre-embryo, it would be impermissible in New Hampshire to implant the resulting conceptus to create a child. In Louisiana, the statute applies to an “in vitro fertilized human ovum . . . composed of one or more living human cells and human genetic material so unified and organized that it will develop in utero into an unborn child,”¹¹⁴ and an entity meeting this definition cannot be cultured and farmed solely for research purposes.¹¹⁵ This would prohibit research to study gene function, cellular development, and so forth, if it involved cloning techniques. The law also specifically states, however, that such an entity may be used “solely for the support and contribution of the complete development of human in utero implantation.”¹¹⁶ This creates the anomalous result that researchers could clone a whole individual in Louisiana, but could not do research *ex utero* on cloned cells.

In addition to questions of statutory interpretation, the state laws that have general bans on embryo research or experimentation may be challenged as unconstitutionally vague.¹¹⁷ In *Lifchez v. Hartigan*, for example, a ban on experimentation on embryos was held unconstitutionally vague because it failed to define the terms

112. See Minn. Stat. Ann. § 145.421 (1994); 18 Pa. Cons. Stat. Ann. § 3216 (West Supp. 1998).

113. See N.H. Rev. Stat. Ann. § 168-B:15(II) (1994).

114. La. Rev. Stat. Ann. § 9:121 (West 1991).

115. See *id.* § 9:122.

116. *Id.*

117. Three states’ fetal research bans — those of Utah, Illinois, and Louisiana — have already been struck down on those grounds. See *Jane L. v. Bangerter*, 61 F.3d 1493, 1499–1502 (10th Cir. 1995), *rev’d on other grounds sub nom. Leavitt v. Jane L.*, 518 U.S. 137 (1996); *Lifchez v. Hartigan*, 735 F.Supp. 1361, 1364–67 (N.D. Ill. 1990), *aff’d mem.*, 914 F.2d 260 (7th Cir. 1990); *Margaret S. v. Edwards*, 794 F.2d 994, 999 (5th Cir. 1986).

“experimentation” and “therapeutic,”¹¹⁸ forcing researchers and clinicians to guess whether their conduct was unlawful and thus violating their Fourteenth Amendment due process rights.¹¹⁹

C. Proposed Federal and State Statutes Regarding Cloning

The announcement of the Dolly experiment led to the immediate introduction of federal and state bills to ban the practice of human cloning. Most do not suffer from the problem of unconstitutional vagueness since the particular activity they ban — cloning — is explicitly described. However, cloning is described in different ways in the various bills, which could lead to definitional problems in scope of application as new variations of the technology are developed that may not exactly fit into the current cloning definitions. In fact, technology has already outpaced some of these bills.

There are seven bills to ban cloning pending in Congress.¹²⁰ State bans are under consideration in eighteen states.¹²¹ But many of these proposed laws still suffer from drafting infirmities. For example, five of the states' proposals create a loophole by only prohibiting the creation of a “genetically identical” individual through cloning.¹²² Since the current technique uses a donated egg to create the clone, the resulting individual will have some additional mitochondrial DNA from the enucleated egg, so he or she will not be genetically identical to the original individual.

Only two states, California and Michigan, have actually passed bans on cloning.¹²³ The California law, however, may soon be outpaced because of the rapid advances in cloning technology. The law prohibits transferring the nucleus from a human cell into a human egg cell.¹²⁴ But, in January 1998, scientists at the University of Wisconsin revealed that cow eggs could serve as incubators for nucleic DNA of other mammalian species.¹²⁵ The California law as well as proposed laws in

118. *Lifchez*, 735 F.Supp. at 1364.

119. *See id.* at 1364.

120. *See supra* note 12.

121. Alabama, Connecticut, Delaware, Georgia, Hawaii, Illinois, Indiana, Kansas, Maryland, Michigan, Minnesota, Mississippi, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, and Wisconsin. *See supra* note 13; *infra* Appendix, Table 2.

122. Illinois, Kansas, New York, South Carolina, and Tennessee. *See infra* Appendix, Table 2.

123. *See supra* notes 14-15 and accompanying text.

124. *See* Act of Oct. 4, 1997, § 5, 1997 Cal. Stat. 688.

125. *See* Robert Lee Hotz, *Cow Eggs Used as Incubator In Cloning Boon*, L.A.

ten of the eighteen states that also prohibit cloning using human eggs¹²⁶ could be evaded by making a human clone via somatic cell DNA transfer into an enucleated cow egg. In contrast, the Michigan law prohibits human cloning utilizing a human or non-human egg.¹²⁷

III. WOULD A BAN ON CLONING INFRINGE UPON A CONSTITUTIONAL RIGHT OF SCIENTIFIC INQUIRY?

If Congress (or a state) were to adopt a ban on human cloning, one possible constitutional challenge would be that the law unduly interferes with a right of scientific inquiry. In fact, Senator Tom Harkin has defended cloning research on these grounds, stating that there are no "appropriate limits to human knowledge. None, whatsoever. . . . To my friends Senator Bond and President Clinton who are saying 'Stop, we can't play God,' I say 'Fine. Take your ranks alongside Pope Paul V, who in 1616 tried to stop Galileo.'"¹²⁸

Although there is no specifically enumerated right to research in the U.S. Constitution, certain commentators argue that support for such a right could be derived from the Fourteenth Amendment right to personal liberty¹²⁹ and the First Amendment right to free speech.¹³⁰ Further, there

TIMES, Jan. 19, 1998, at A1.

126. Connecticut, Illinois, Minnesota, Mississippi, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, and Tennessee. See *infra* Appendix, Table 2.

127. See Act of June 3, 1998, 1998 Mich. Pub. Acts 108, *bill text available in* Westlaw, at 1997 MI H.B. 864 (SN), which prohibits "transferring the nucleus of a human somatic cell into an egg cell from which the nucleus has been removed or rendered inert."

128. Sheryl Stolberg, *Sheep Clone Researcher Calls for Caution Science*, L.A. TIMES, Mar. 13, 1997, at A18 (quoting Harkin).

129. See Richard Delgado & David R. Millen, *God, Galileo, and Government: Toward Constitutional Protection for Scientific Inquiry*, 53 WASH. L. REV. 349, 394-99 (1978) (arguing that scientific inquiry may be protected by substantive and procedural due process); see also June Coleman, Comment, *Playing God or Playing Scientist: A Constitutional Analysis of Laws Banning Embryological Procedures*, 27 PAC. L.J. 133, 1367-68 (1996). But see John Robertson, *The Scientist's Right to Research: A Constitutional Analysis*, 51 S. CAL. L. REV. 1203, 1214 (1977) (concluding that the Court is unlikely to identify scientific research as a fundamental right protected by the Fourteenth Amendment).

130. See *id.* at 1212. June Coleman argues that "[v]arious Supreme Court decisions, read together, seem to acknowledge a freedom to conduct research which is anchored in the freedom of speech." Coleman, *supra* note 129, at 1387; see also *Roth v. United States*, 354 U.S. 476, 484 (1957) (noting that the Continental Congress cited scientific advancement as a reason for protecting freedom of the press); *Sweezy v. New Hampshire*, 354 U.S. 234, 250 (1957) (noting that "[t]eachers and students must always remain free to inquire, to study and to evaluate, to gain new maturity and understanding;

is no doubt that scientific inquiry has been an enduring American value. The framers of the Constitution discussed the sacred nature of scientific inquiry.¹³¹ The Constitution authorized the establishment of a system of patents to promote scientific invention.¹³² Historically, scientific theories have been protected because of the great social import the United States places on the "sanctity of knowledge and the value of intellectual freedom."¹³³

This right to research consists of the freedom to pursue knowledge.¹³⁴ The strongest claims have been made for a First Amendment right of scientific inquiry. The Supreme Court in *Branzburg v. Hayes*¹³⁵ specifically analogized the information function performed by academic researchers to that performed by the press. If the First Amendment protects a marketplace of ideas, it seems likely that it would protect the generation of information that will be included in the marketplace.¹³⁶ Indeed, the Court's jurisprudence has protected activity under this theory in a variety of settings, such as the financing of speech¹³⁷ and the gathering of news.¹³⁸

There is also extensive discussion in dicta of a right of inquiry. The Court stated in *Meyer v. Nebraska*¹³⁹ that the right to liberty guaranteed by the Fourteenth Amendment encompasses the freedom to "acquire useful knowledge . . . and generally to enjoy those privileges long recognized at common law as essential to the orderly pursuit of happiness by free men."¹⁴⁰ A federal district court similarly suggested

otherwise our civilization will stagnate and die"); Ira H. Carmen, *Should Human Cloning Be Criminalized?*, 13 J.L. & POL. 745, 752 (1997). Carmen suggests that even if cloning is not protected by the Fourteenth Amendment's protection of procreative liberty, cloning is likely to be protected by the First Amendment. Carmen writes: "Replication may not be reproduction, but in many contexts it is scientific inquiry, perhaps even pure research. Scientific inquiry, including genetic engineering, implicates First Amendment freedom of expression values."

131. See Gary L. Francione, *Experimentation and the Marketplace Theory of the First Amendment*, 136 U. PA. L. REV. 417, 428-29 (1987).

132. See U.S. CONST. art. I, § 8, cl. 8 (granting to Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries").

133. See Coleman, *supra* note 129, at 1387.

134. See Robertson, *supra* note 129, at 1204.

135. 408 U.S. 665, 705 (1972).

136. See Coleman, *supra* note 129, at 1386-87.

137. See *Buckley v. Valeo*, 424 U.S. 1 (1976).

138. See *Branzburg*, 408 U.S. at 681-82 (dictum).

139. 262 U.S. 390 (1923).

140. *Id.* at 399.

that scholars have a right “to do research and advance the state of man’s knowledge.”¹⁴¹

But what does that “right” consist of? Scientists have a right of access to existing information. For example, that federal court suggested in dicta that obscenity laws could not be applied to prohibit the Kinsey Institute from studying obscene materials.¹⁴² However, courts have held there is no fundamental right of scientific inquiry to undertake experiments — in particular, to conduct research on fetuses.¹⁴³

Cloning is sufficiently analogous to embryo research that restrictions on it should not be considered protected by a right of scientific inquiry. In holding that the right to conduct medical research is not fundamental under the Constitution, a federal court held that a state could regulate experimentation involving the unborn so long as the regulation was rational. The court explained, in words that are particularly applicable to cloning, “[g]iven the dangers of abuse inherent in any rapidly developing field, it is rational for a State to act to protect the health and safety of its citizens.”¹⁴⁴

Even if cloning research on humans were protected by the Constitution, certain restrictions would be permissible. The freedom to pursue knowledge is distinguishable from the right to choose the method for achieving that knowledge, which may permissibly be regulated to some extent.¹⁴⁵ Although the government may not prohibit research in an attempt to prevent the development of new knowledge, it may restrict or prohibit the means used by researchers that threaten interests in which the state has a legitimate concern.¹⁴⁶ Research may be restricted, for example, to protect the subject’s right to autonomy and welfare by requiring informed, free and competent consent.¹⁴⁷

Therefore, federal and state government may regulate the researcher’s methods in order to protect the rights of research subjects and community safety. As the NBAC report points out:

141. *Henley v. Wise*, 303 F. Supp. 62, 66 (N.D. Ind. 1969).

142. *See id.* at 67.

143. *See Margaret S. v. Edwards*, 488 F. Supp. 181, 220–21 (E.D. La. 1980) [*“Margaret S. I”*]; *see also Margaret S. v. Treen*, 597 F. Supp. 636, 674 (E.D. La. 1984), *aff’d sub nom. Margaret S. v. Edwards*, 794 F.2d 994 (5th Cir. 1986) [*“Margaret S. II”*]; *Wynn v. Scott*, 449 F. Supp. 1302, 1322 (N.D. Ill. 1978), *aff’d sub nom. Wynn v. Carey*, 599 F.2d 193 (7th Cir. 1979).

144. *Margaret S. I*, 488 F. Supp. at 221.

145. *See Robertson*, *supra* note 129, at 1204–07.

146. *See id.* at 1253.

147. *See id.* at 1256.

Because science is both a public and social enterprise and its application can have profound impact, society recognizes that the freedom of scientific inquiry is not an absolute right and scientists are expected to conduct their research according to widely held ethical principles. There are times when limits on scientific freedom must be imposed, even if such limits are perceived as an impediment by an individual scientist.¹⁴⁸

IV. WOULD A BAN ON CLONING INFRINGE UPON THE RIGHT TO MAKE REPRODUCTIVE DECISIONS?

A variety of personal desires may motivate people to utilize cloning.¹⁴⁹ The NBAC report suggests it would be “understandable, or even, as some have argued desirable,”¹⁵⁰ to create a child from one adult if both members of the couple have a lethal recessive gene; from a dying infant if his father is dead and the mother wants an offspring from her late husband; or from a terminally ill child to create a bone marrow donor.¹⁵¹ Some of the experts testifying before the NBAC also suggested that cloning should be appropriate in exceptional circumstances. Rabbi Dorff opined that it would be “legitimate from a moral and a Jewish point of view” to clone a second child to act as a bone marrow donor so long as the “parents” raise that second child as they would any other.¹⁵² Rabbi Tendler raised the scenario of a person who was the last in his genetic line and whose family was wiped out in the Holocaust. “I would certainly clone him,” said Tendler.¹⁵³ In contrast, the Catholic viewpoint is that cloning “is entirely unsuitable for human procreation even for exceptional circumstances.”¹⁵⁴

The right to make decisions about whether or not to bear children is constitutionally protected under the constitutional right to privacy¹⁵⁵ and the constitutional right to liberty.¹⁵⁶ The Supreme Court in 1992 reaffirmed the “recognized protection accorded to liberty relating to

148. CLONING HUMAN BEINGS, *supra* note 8, at 6.

149. *See supra* Part I.

150. CLONING HUMAN BEINGS, *supra* note 8, at 79.

151. *See id.* at 80.

152. *Id.* at 55 (citation omitted).

153. *Id.* at 55. For other Jewish support for cloning, see Peter Hirschberg, *Be Fruitful and Multiply and Multiply and Multiply and Multiply*, JERUSALEM REP., Apr. 16, 1998, at 32, 32–36.

154. CLONING HUMAN BEINGS, *supra* note 8, at 55.

155. *See Griswold v. Connecticut*, 381 U.S. 479 (1965).

156. *See, e.g., Planned Parenthood v. Casey*, 505 U.S. 833 (1992).

intimate relationships, the family, and decisions about whether or not to beget or bear a child.”¹⁵⁷ Early decisions protected a married couple’s right to privacy to make procreative decisions, but later decisions focused on individuals’ rights as well: “If the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”¹⁵⁸

A federal district court has indicated that the right to make procreative decisions encompasses the right of an infertile couple to undergo medically-assisted reproduction, including in vitro fertilization and the use of a donated embryo. *Lifchez v. Hartigan*¹⁵⁹ held that a ban on research on fetuses was unconstitutional not only because it was impermissibly vague, but also because it impermissibly infringed upon a woman’s fundamental right to privacy.¹⁶⁰ Although the Illinois statute banning embryo and fetal research at issue in the case permitted in vitro fertilization, it did not allow embryo donation, embryo freezing, or experimental prenatal diagnostic procedures. The court stated: “It takes no great leap of logic to see that within the cluster of constitutionally protected choices that includes the right to have access to contraceptives, there must be included within that cluster the right to submit to a medical procedure that may bring about, rather than prevent, pregnancy.”¹⁶¹

Using similar logic, some commentators argue that the Constitution also protects the right to create a child through cloning. As Pizzulli points out, “[i]n comparison with the parent who contributes half of the sexually reproduced child’s genetic formula, the clonist is conferred with more than the requisite degree of biological parenthood, since he is the sole genetic parent.”¹⁶²

John Robertson argues that cloning is not qualitatively different from the practice of medically assisted reproduction and genetic selection that is currently occurring.¹⁶³ Consequently, he argues that

157. *Id.* at 857.

158. *Eisenstadt v. Baird*, 405 U.S. 438, 453 (1972).

159. 735 F. Supp. 1361 (N.D. Ill. 1990), *aff’d mem.*, 914 F.2d 260 (7th Cir. 1990).

160. *See Lifchez*, 735 F. Supp. at 1376–77.

161. *Id.* at 1377 (citations omitted). The court also held that the statute was impermissibly vague because of its failure to define “experiment” or “therapeutic.” *See id.* at 1376.

162. Pizzulli, *supra* note 23, at 550 n.357.

163. *See* Robertson Statement, *supra* note 32. This seems to be a reversal of Robertson’s earlier position that cloning “may deviate too far from prevailing conception of what is valuable about reproduction to count as a protected reproductive experience. At some point attempts to control the entire genome of a new person pass beyond the central experiences of identity and meaning that make reproduction a valued experi-

"cloning . . . would appear to fall within the fundamental freedom of married couples, including infertile married couples to have biologically related offspring."¹⁶⁴ Similarly, June Coleman argues that the right to make reproductive decisions includes the right to decide in what manner to reproduce, including reproduction through, or made possible by, embryo cryopreservation and twinning.¹⁶⁵ This argument could also be applied to nuclear transplantation by saying that a ban on cloning as a method of reproduction is tantamount to the state denying one's right to reproductive freedom.

However, cloning is too qualitatively different from normal reproduction and from the types of assisted reproduction protected by the *Lifchez* case to simply assume the same Constitutional protections apply. As George Annas suggests, "[t]his change in kind in the fundamental way in which humans can 'reproduce' represents such a challenge to human dignity and the potential devaluation of human life (even comparing the 'original' to the 'copy' in terms of which is to be more valued) that even the search for an analogy has come up empty handed."¹⁶⁶

Cloning is not a process of genetic mix, but of genetic duplication. In even the most high-tech reproductive technologies available, a mix of genes occurs to create an individual with a genotype that has never before existed on earth. Even in the case of twins, their futures are unknown and the distinction between the offspring and their parents is acknowledged.¹⁶⁷ In the case of cloning, however, the genotype in question has already existed. Even though it is clear that a clone will develop into a person with different traits because of different social, environmental, and generational influences, there is strong speculation that the fact that he or she has a genotype that already existed will affect how the resulting clone is treated by himself, his family, and social institutions.¹⁶⁸

ence." John A. Robertson, *CHILDREN OF CHOICE: FREEDOM AND THE NEW REPRODUCTIVE TECHNOLOGIES* 169 (1994).

164. Robertson Statement, *supra* note 32.

165. See Coleman, *supra* note 129, at 1364.

166. *Scientific Discoveries in Cloning: Challenges for Public Policy: Hearing Before the Subcomm. on Public Health and Safety of the Senate Comm. on Labor and Human Resources*, 105th Cong. 44 (1997) (statement of George Annas).

167. Gilbert Meilaender, testifying before the NBAC, pointed out the social importance of children's genetic independence from their parents: "They replicate neither their father nor their mother. That is a reminder of the independence that we must eventually grant to them and for which it is our duty to prepare them." *CLONING HUMAN BEINGS*, *supra* note 8, at 67 (quoting Meilaender).

168. See *supra* Part I.

Just as in the scientific inquiry context, even if a fundamental constitutional right to clone were recognized, any legislation that would infringe unduly upon this right would be permissible if it were narrowly tailored to further a compelling state interest.¹⁶⁹ As demonstrated by the discussion in Part I, the potential physical and psychological risks of cloning an entire individual are sufficiently compelling to justify banning the procedure. Further, the notion of replicating existing humans seems to fundamentally conflict with our legal system, which emphatically protects individuality and uniqueness.¹⁷⁰

Some commentators argue that the potential harm to the cloned child should not matter because the child would not have been born otherwise and thus cloning is beneficial to that child.¹⁷¹ But there are obviously some harms that are worse than non-existence, as courts recognize in wrongful life cases.¹⁷² If this were not the case, any amount of pain and suffering could be inflicted on a child, so long as the parents claimed they would not have given birth to him otherwise.¹⁷³

Similarly, it has been argued that, because the risk of physical harm of cloning is no different from risks with normal reproduction from certain genetic disorders, cloning should not be restricted any more than other forms of reproduction.¹⁷⁴ This analogy is not apt, though. Parents might conceive a child who was unable to walk due to the genetic anomaly of spina bifida. But if they intervened with a child, by beating her, and caused the same result, the moral analysis would be much different. To the extent that cloning is a purposeful intervention that causes harm, it should be viewed differently from traditional reproduction.

The government could also assert a compelling interest in protecting against broader social harms. For example, the government could assert an interest in preserving evolution and thus forbid cloning because it could lessen diversity in society.¹⁷⁵ The government may also assert an

169. *See* *Roe v. Wade*, 410 U.S. 113, 155 (1973).

170. *See* Tony Mauro, *Sheep Clone Prompts U.S. Panel Review*, USA TODAY, Feb. 25, 1997, at A1.

171. This is an argument made by John Robertson. *See* CLONING HUMAN BEINGS, *supra* note 8, at 65-66.

172. *See, e.g.,* *Curlender v. Bio-Science Laboratories*, 165 Cal. Rptr. 477 (Ct. App. 1980).

173. *See* CLONING HUMAN BEINGS, *supra* note 8, at 66.

174. *See id.* at 65 (citing Dan W. Brock, *Cloning Human Beings: An Assessment of Ethical Issues Pro and Con* (1997) (paper commission by NBAC)).

175. *See* Pizzulli, *supra* note 23, at 557. "[L]arge-scale cloning of a limited number of genotypes would decrease the adaptive potential of man." *Id.* at 560.

interest in diversity as a cultural good independent of its value for evolution.¹⁷⁶

Cloning a whole individual whose genetic constitution is known in advance may create a form of "genetic bondage"¹⁷⁷ that runs afoul of the U.S. Constitution's Thirteenth Amendment prohibition on slavery.¹⁷⁸ To the extent that a cloned individual would be limited in his or her freedom based on expectations about his or her genetic makeup, cloning can be seen as creating a badge of slavery.¹⁷⁹ Intentionally producing people whose genetic predispositions are known undermines their free will, and courts have held that infringement on free will and civil liberty may be prohibited by the Thirteenth Amendment.¹⁸⁰

Additionally, the creation of persons to be used as "spare parts" for transplantation would not only be socially repugnant,¹⁸¹ but might be violative of the clone's Thirteenth Amendment rights against involuntary servitude.¹⁸² The clone's right to bodily integrity and personal property are also violated by the notion of spare organ part banking.¹⁸³

Francis Pizzulli points out that a ban on cloning individuals might be constitutional if it were not based on a religious rationale but on "the valid secular purpose of safeguarding a normative view of human identity," resting upon the personal privacy and individual autonomy values of the Thirteenth and Fourteenth Amendments.¹⁸⁴ "Implicit in the prohibition of clonal humans is the rationale that certain types of humans ought not to exist, either because they have inalienable rights to nonexistence or because their presence would erode important social values."¹⁸⁵

Some commentators argue that potential psychological and social harms from cloning are too speculative to provide the foundation for a

176. *See id.* at 559.

177. This useful term was introduced by Francis Pizzulli. *See Pizzulli, supra* note 23, at 481.

178. Under the Thirteenth Amendment of the U.S. Constitution, "[n]either slavery nor involuntary servitude, except as punishment for crime whereof the party shall have been duly convicted, shall exist within the United States, or any place subject to their jurisdiction." U.S. CONST. amend. XIII, § 1.

179. *See Pizzulli, supra* note 23, at 515.

180. *See id.* at 516–22. Bans or restrictions on cloning would be justifiable where the government could prove that cloning is inconsistent with the notion of free will, and that such an erosion of the free will would result in grave societal harms. *See id.*

181. *Cf. Kluger, supra* note 30, at 70 (quoting NIH Director Harold Varmus' contention that cloning a person is "repugnant to the American public").

182. *See Pizzulli, supra* note 23, at 525–28.

183. *See id.*

184. Pizzulli, *supra* note 23, at 583.

185. *Id.* at 493.

governmental ban. Elsewhere, I have argued that speculative harms do not provide a sufficient reason to ban reproductive arrangements such as in vitro fertilization or surrogate motherhood.¹⁸⁶ But the risks of cloning go far beyond the potential psychological risks to the original whose expectations are not met by the clone, or the risks to the child of having an unusual family arrangement if the original was not one of his or her rearing parents.

The essential difference with cloning is the risk of hubris, of abuse of power. Cloning represents the potential for “[a]buses of the power to control another person’s destiny — both psychological and physical — of an unprecedented order.”¹⁸⁷ A Pizzulli suggests, legal discussions of whether the replicant is the property of the cloned individual, the same person as the cloned individual, or a resource for organs all show how easily the replicant’s own autonomy can be swept aside.¹⁸⁸

In that sense, maybe the best analogy is cloning is incest. Arguably, reproductive privacy and liberty are threatened as much by a ban on incest as by a ban on cloning. Arguably the harms are equally speculative. Yes, incest creates certain potential physical risks to the offspring, due to the potential for lethal recessive disorders. But no one seriously thinks that this physical risk is the reason we ban incest. A father and daughter could avoid that risk by contracepting or agreeing to have prenatal diagnosis and abort the affected fetuses. There might even be instances in which, because of their personalities, there is no psychological harm to either party. Yet we ban incest — despite the speculative nature of the harm — because it allows an exercise of excessive power of parents over children.

V. THE FEDERAL ROLE IN REGULATING CLONING

Because both President Clinton and various members of Congress have expressed concerns about human cloning — as have many members of the public — federal action is being considered to ban the practice. Such action would raise important questions of federalism and might be challenged as exceeding the federal government’s authority. However, a close analysis of U.S. Supreme Court cases regarding federal powers provides justification for federal action in this area.

The states, rather than the federal government, have traditionally regulated issues related to health care. Physicians and hospitals are

186. See Lori B. Andrews, *Surrogate Motherhood: The Challenge for Feminists*, 16 L., MED. & HEALTH CARE 72 (1988).

187. Pizzulli, *supra* note 23, at 492.

188. See *id.*

licensed and regulated by state boards of medical examiners. Thus, at first glance, it would seem that cloning would be more appropriately regulated at the state level. However, despite this tradition of decentralization, the federal government may justify regulation of human cloning by linking such regulation to its spending power¹⁸⁹ and/or its power to regulate interstate commerce.¹⁹⁰

The federal government currently regulates a variety of medical and scientific activities that are linked to government funding. In conjunction with its provision of Medicare funds, the federal government has required physicians to abide by certain regulations, such as those prohibiting certain forms of fraud and abuse.¹⁹¹ Similarly, as a condition of receiving federal funds for scientific research, scientists must comply with federal regulations governing research.¹⁹² A federal ban on human cloning research using federal funds, as the President has already promulgated, is also a permissible exercise of federal spending power.¹⁹³

However, regulation based on the spending power is insufficient to reach research in the private sector, conducted with non-governmental funds or at institutions that do not receive federal funding. To be permissible, federal regulation of private research must be justified under the Commerce Clause.

When Congress regulates medical and scientific activities pursuant to its Commerce Clause power, it often includes a jurisdictional element — a provision in the statute which indicates that it applies only to activities involving interstate commerce.¹⁹⁴ If a federal ban on cloning were enacted, a clinic in a particular state might claim that it was operating entirely intrastate and thus the prohibition, as applied to the clinic, exceeded Congress' authority under the Commerce Clause. To analyze whether such an argument would prevail, it is necessary to assess the factors that influence whether intrastate activities are found to have an impact on interstate commerce.

In *United States v. Darby*,¹⁹⁵ the Court upheld the Fair Labor Standards Act stating:

189. See U.S. CONST. art. I, § 8, cl. 1.

190. See *id.* cl. 3.

191. See, e.g., 42 U.S.C. § 1395nn(b)(2)(B) (1994).

192. See 45 C.F.R. §§ 46.202–.211 (1997).

193. See *Transcript of Clinton Remarks on Cloning*, *supra* note 7.

194. One example is the National Organ Transplant Act which provides, in part, that “[i]t shall be unlawful for any person to knowingly acquire, receive, or otherwise transfer any human organ for valuable consideration for use in human transplantation if the transfer affects interstate commerce.” 42 U.S.C. § 274e(a) (1994).

195. 312 U.S. 100 (1941).

The power of Congress over interstate commerce is not confined to the regulation of commerce among the states. It extends to those activities intrastate which so affect interstate commerce or the exercise of the power of Congress over it as to make regulation of them appropriate means to the attainment of a legitimate end, the exercise of the granted power of Congress to regulate interstate commerce.¹⁹⁶

The federal government has thus been found to have power to regulate intrastate commerce when supplies moved in interstate commerce,¹⁹⁷ and when customers came from out of state.¹⁹⁸

In assessing whether cloning done within one state has an impact on interstate commerce, the first question is whether cloning is, in fact, commerce. Medicine initially was viewed as an altruistic, non-commercial endeavor. Hospitals were charitable institutions for the poor and were exempt from various rules that governed businesses. For example, tort suits against hospitals were prohibited on the ground of charitable immunity.¹⁹⁹ In recent years, hospitals have taken on more of the characteristics of business, characterized by revenues and expenditures in the millions of dollars.²⁰⁰ The characterization of hospitals as businesses has justified the extension of such federal regulatory schemes as the Fair Labor Standards Act,²⁰¹ the National Labor Relations Act,²⁰² and the Sherman Act²⁰³ to hospitals. Each of those acts specifically states that it applies only to interstate

196. *Id.* at 118.

197. *See, e.g., Daniel v. Paul*, 395 U.S. 298, 305, 308 (1969) (holding that an Arkansas amusement facility isolated on a country road nonetheless affected interstate commerce because a substantial portion of the food served at the snack bar moved in interstate commerce, as did the "sources of entertainment," which included paddle boats leased from an Oklahoma company and a juke box that was manufactured out of state and played records manufactured out of state.)

198. *See, e.g., Heart of Atlanta Motel, Inc. v. United States*, 379 U.S. 241, 255-56 (1964).

199. This changed in 1957 in the landmark case *Bing v. Thunig*, 143 N.E.2d 3 (N.Y. 1957).

200. *See* Kenneth R. Wing & Andrew M. Sifton, *Constitutional Authority for Extending Federal Control over the Delivery of Health Care*, 57 N.C. L. REV. 1423, 1470 (1979).

201. 29 U.S.C. § 203(s)(1)(B) (1994) (establishing minimum wage and working condition requirements for certain defined employers engaged in interstate commerce).

202. 29 U.S.C. § 152(14) (1994) (imposing collective bargaining requirements on employers engaged in interstate commerce).

203. 15 U.S.C. §§ 1-7 (1994).

commerce.²⁰⁴ Cases upholding the application of these regulatory schemes to hospitals reason that the purchase of medicine and supplies from out-of-state sources and reimbursement from out-of-state insurance companies and the federal government are sufficient to establish a substantial effect on interstate commerce.²⁰⁵

Providers challenging the federal regulation of cloning may argue that they provide their services for purely altruistic purposes — creation of organs, reproductive options — rather than economic gain. When the Repository for Germinal Choice in Escondido, California (the Nobel Prize Sperm Bank) was founded, sperm were provided without charge to women due to the owner's interest in attempting to upgrade the intelligence of the next generation.²⁰⁶ A similar entity could be established to allow people to raise clones of talented individuals. The Supreme Court has held, however, that an organization does not have to be a commercial enterprise to affect interstate commerce.²⁰⁷

What if it were alleged that cloning did not have a substantial impact on interstate commerce? Such an argument has already been made in the medical setting, when individual dentists challenged the application of Title III of the Americans with Disabilities Act²⁰⁸ to their practices as unconstitutional under the Commerce Clause, arguing that their practices occurred entirely intrastate.²⁰⁹ The U.S. Court of Appeals for the First Circuit held:

[I]f the Defendant's purchase of supplies and equipment from out of state, receipt of payments from out of state insurers and credit card companies, and attendance of classes and conferences out of state by themselves do not substantially affect interstate commerce . . . those commercial activities, taken

204. See 29 U.S.C. § 203(b) (1994) (FLSA); 29 U.S.C. § 152(6) (1994) (NLRA); 15 U.S.C. § 12 (1994) (Sherman Act).

205. See, e.g., *Summit Health, Ltd. v. Pinhas*, 500 U.S. 322 (1991) (holding jurisdictional element of Sherman Act satisfied because ophthalmological services affects interstate commerce because physicians and hospitals serve nonresident patients, they receive Medicare payments, and peer review proceedings routinely distributed across state lines affect doctors' employment opportunities throughout the Nation); *Hospital Bldg. Co. v. Trustees of Rex Hosp.*, 425 U.S. 738 (1976) (holding hospital had sufficient nexus with interstate commerce to invoke federal jurisdiction of Sherman Act).

206. See *Lori Andrews, Inside the Genius Farm*, PARENTS, Oct. 1980, at 80, 81-83.

207. See *National Org. of Women, Inc. v. Scheidler*, 510 U.S. 249, 256-61 (1994); *United States v. Wilson*, 73 F.3d 675 (7th Cir. 1995), *cert. denied*, 117 S. Ct. 47 (1996).

208. 42 U.S.C. §§12101-12213 (1994).

209. See *Abbott v. Bragdon*, 912 F. Supp. 580, 592-94 (D. Me. 1995), *aff'd*, 107 F.3d 934 (1st Cir. 1997); *United States v. Morvant*, 898 F. Supp. 1157 (E.D. La. 1995).

together with the activities of other dentists similarly situated, have an effect on interstate commerce substantial enough to fall within the reach of congressional authority under the Commerce Clause.²¹⁰

The court's conclusion has been read to mean that "[t]here is little doubt that health care providers are subject to the congressional commerce authority and, therefore, the Congress can opt to impose regulatory controls or federal policy conditions on the activities of those providers"²¹¹

Recent cases challenging the constitutionality of the Freedom of Access to Clinic Entrances Act ("FACE")²¹² provide further precedent for suggesting that cloning clinics would be considered to have a substantial impact on interstate commerce. FACE prohibits the physical obstruction, injury or interference "with any person because that person is or has been . . . obtaining or providing reproductive services."²¹³ Cases sustaining the constitutionality of the Act under the Commerce Clause have held that the provision of reproductive health services substantially affects interstate commerce based on the following congressional findings: (1) "reproductive health facilities acquire 'equipment, medicine, medical supplies, surgical instruments and other necessary medical products . . . from other states,'" (2) "individuals travel interstate to obtain and provide reproductive services;" (3) "obstruction of facilities decreases the overall availability of reproductive health services nationwide;" and (4) "obstruction of facilities is a nationwide problem that is beyond the control of individual states."²¹⁴ Because FACE regulates a commercial activity that substantially affects interstate commerce, as supported by congressional findings, it is therefore a legitimate exercise of Congress' commerce power.²¹⁵

Cloning facilities are likely to substantially affect interstate commerce in some of the same ways that the facilities at issue in the FACE cases do. For example, cloning facilities are likely to acquire equipment, medicine, medical supplies, surgical instruments and other

210. *Abbott*, 912 F. Supp. at 593.

211. *Wing & Sifton*, *supra* note 200, at 1471.

212. 18 U.S.C. § 248 (1994).

213. 18 U.S.C. § 248(a)(1) (1994).

214. *United States v. Wilson*, 73 F.3d 675, 681-83 (7th Cir. 1995) (quoting S. REP. No. 103-117, at 31 (1993) (alteration in original)) (holding that unique scarcity of certain reproductive health services necessitates substantial interstate travel), *cert. denied*, 117 S. Ct. 47 (1996); *see also* *Cheffer v. Reno*, 55 F.3d 1517 (11th Cir. 1995), at 1520-21.

215. *See Wilson*, 73 F.3d at 688; *Cheffer*, 55 F.3d at 1520-21.

necessary medical products from other states. It is likely that some of the patients coming to cloning clinics will travel interstate. By one estimate, there are only ten labs in the world which are capable of duplicating the Dolly experiment,²¹⁶ and, consequently, people in other states would have to cross state lines to obtain the services.

A business that hires employees and purchases equipment from out of state, and then brings them in state, is also engaged in interstate commerce.²¹⁷ In addition, cloning providers will share information and research findings in a national arena, requiring traveling and attendance at national classes and conferences that may be sufficient to satisfy the "substantially affects" requirement.²¹⁸ Furthermore, those human beings who result from cloning will have the right to travel. Finally, cloning is an issue of national concern and in fact state legislatures are urging the federal government to enact a ban.²¹⁹

Until recently, the Supreme Court endorsed a broad construction of the Commerce Clause. However, in *United States v. Lopez*,²²⁰ the Court held for the first time in close to sixty years²²¹ that Congress had passed a law that exceeded its authority under the Commerce Clause. In *Lopez*, the Court held that the Gun-Free School Zones Act of 1990, prohibiting the knowing possession of a firearm "at a place that the individual knows, or has reasonable cause to believe, is a school zone,"²²² neither "regulate[d] a commercial activity nor contain[ed] a requirement that the

216. See Begley, *supra* note 3, at 55 (using estimate from Dr. W. Bruce Currie, biologist at Cornell University).

217. See *United States v. Robertson*, 514 U.S. 669 (1995) (interpreting the RICO statute).

218. A legislative assistant in Senator Glenn's office suggested that the national exchange of research results justifies Congress' authority under the Commerce Clause to regulate the use of human subjects in all research, including those projects that do not receive federal funding. See Interview with legislative assistant, office of Senator John Glenn; see also Human Research Subject Protections Act of 1997, S. 193, 105th Cong. § 2(a)(11) (stating that human research involves interstate commerce or substantially affects interstate commerce).

219. See S.J.R. 14, 1997-98 Reg. Sess. (Cal. 1997).

220. 514 U.S. 549 (1995).

221. See *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936) (holding provisions of the Bituminous Coal Conservation Act of 1935 regarding minimum wages, wage agreements, and collective bargaining in the coal-mining industry unconstitutional on the basis that mining constituted "production" which is an "antecedent" of, not a part of, "commerce").

222. 18 U.S.C. § 922(q)(1)(A) (Supp. V 1993). The term "school zone" is defined as "in, or on the grounds of, a public, parochial or private school" or "within a distance of 1,000 feet from the grounds of a public, parochial or private school." 18 U.S.C. § 921(a)(25) (Supp. V 1993).

possession be connected in any way to interstate commerce.”²²³ Consequently, the law was struck down as exceeding the federal power to regulate.

The activity of cloning is distinguishable from the activities at issue in *Lopez*²²⁴ because it does not affect an area where there is a history of state regulation and where states have regulated extensively. Unlike primary and secondary education, which is provided at a local level, cloning would generally be provided by a limited number of facilities around the country who draw personnel and patients from a national market. In addition, few states have regulated the conduct of human research.²²⁵ Such research has primarily been funded and regulated at the federal level. In *Lopez*, more than forty states had already acted to ban the possession of guns on or near school grounds.²²⁶ With respect to cloning, only California and Michigan have legal schemes in place to deal with the issue.²²⁷ In fact, state legislators — including California’s — have introduced bills calling on the federal government to address the issue.²²⁸ If a federal law were adopted, however, it would be important to provide a sufficient legislative history to indicate how cloning would affect interstate commerce, to establish why cloning is of national importance, and to document state legislative actions specifically asking for the federal government to intervene in this area. The current federal proposals attempt to do this.

President Clinton’s legislative proposal, the Cloning Prohibition Act of 1997, states in the “Findings” section of the proposal that the effect of cloning on interstate commerce is one justification, in addition to safety and ethical concerns, for a federal ban. The bill proposed states that “[b]iomedical research facilities, including those conducting cloning, and reproductive services facilities affect interstate commerce.”²²⁹

Three of the seven federal proposals to ban human cloning would prohibit only the use of federal funding for conducting or supporting human cloning or human cloning research.²³⁰ One of the remaining four

223. *Lopez*, 514 U.S. at 551.

224. For a more thorough discussion of *Lopez* and the factors that distinguished it from most Commerce Clause cases, see Deborah Jones Merritt, *Commerce!*, 94 MICH. L. REV. 674 (1995).

225. See LORI B. ANDREWS, MEDICAL GENETICS: A LEGAL FRONTIER 33–34 (1987).

226. See *Lopez*, 514 U.S. at 581 (Kennedy, J., concurring).

227. See *supra* notes 14–15 and accompanying text. Other states have proposed laws. See *supra* note 13 and accompanying text.

228. See, e.g., S.J.R. 14, 1997–98 Reg. Sess. (Cal. 1997).

229. Cloning Prohibition Act of 1997, H.R. Doc. No. 105-97 § 2(c) (1997).

230. See H.R. 3133, 105th Cong. (1998); S. 368, 105th Cong. (1997); H.R. 922,

federal proposals explicitly invokes the federal government's power under the Interstate Commerce Clause as a justification for federally prohibiting human cloning, regardless of the funding source.²³¹ Another bill, which would prohibit human cloning conducted with public or private funds, invokes the Commerce Clause as a justification for the ban in the "Findings" section of the proposal.²³² Only two bills prohibit human cloning regardless of the funding source without invoking the Commerce Clause at all.²³³

VI. CONCLUSION

In May of 1971, Dr. James Watson, the Nobel Prize winner for co-discovering the structure of DNA, authored the seminal article for *The Atlantic* called *Moving Toward the Clonal Man*.²³⁴ He explained how cloning could be done and he tried to alert ethicists and scientists that the realization that human cloning was "a matter far too important to be left solely in the hands of the scientific and medical communities."²³⁵ When President Clinton assigned the task of making recommendations about cloning to the National Bioethics Advisory Commission, he noted that "any discovery that touches upon human creation is not simply a matter of scientific inquiry, it is a matter of morality and spirituality as well."²³⁶

The cloning procedure presents numerous physical and psychological risks to the resulting offspring. Only three state statutes — the California and Michigan bans and the New Hampshire restriction on implanting embryos created for research purposes²³⁷ — would currently limit the proposal made by Richard Seed to clone humans. Additional bans on human cloning are being considered at the federal and state level. This article has addressed the potential barriers that may block federal and state attempts to prohibit human cloning such as constitutional challenges based on the Commerce Clause, scientists' right of inquiry, or individuals' or couples' privacy or liberty rights to make reproductive decisions. In each case, it has been shown that human cloning could permissibly be restricted based on compelling potential harms to the clone or to the society as a whole.

105th Cong. (1997).

231. See S. 1601, 105th Cong. (1998), also labeled S. 1599, 105th Cong. (1998).

232. See S. 1611, 105th Cong. (1998), also labeled S. 1602, 105th Cong. (1998).

233. See S. 1574, 105th Cong. (1998); H.R. 923, 105th Cong. (1997).

234. James D. Watson, *Moving Toward the Clonal Man*, ATLANTIC, May 1971, at 50.

235. *Id.* at 53.

236. Transcript of Clinton Remarks on Cloning, *supra* note 7.

237. See *supra* note 113 and accompanying text.

APPENDIX

Table 1: Proposed Federal Cloning Bills

	EHlers H.R. 922 3/10/97	EHlers H.R. 923 3/10/97	BOND S. 368 3/3/97	CLINTON H. DOC. No. 105-97 6/10/97
Prohibits somatic cell nuclear transfer to create human beings	X	X	X	X
Specifically prohibits making "genetically identical" being				
Specifically prohibits conspiracy to clone a human being				
Specifically prohibits purchase or sale of ovum, zygote, embryo, or fetus for purposes of cloning a human being				
Could be read to ban embryo splitting		X		
Could be read to ban cloning from an embryo	X	X	X	X
Could be read to ban injecting human ova cytoplasm into human egg				
Could be read to ban transferring DNA into nonhuman cells		X	X	X
Bans research on cloning human beings				
Bans cloning of tissues or molecules				
Bans use of private or public funds for cloning		X		X
Bans only use of public funds for cloning	X		X	
Specifically protects biomedical research				X
Specifically excludes IVF and other ARTs not intended to produce a genetically identical human being				
Civil penalties imposed		X		X
Criminal penalties imposed				
Licensure penalties imposed				
Sunset clause				X
Establishes review body that reports to legislature				X

	STEARNS HR 3133 1/30/98	CAMPBELL S 1574 1/28/98
Prohibits somatic cell nuclear transfer to create human beings	X	X
Specifically prohibits making "genetically identical" being		
Specifically prohibits conspiracy to clone a human being		
Specifically prohibits purchase or sale of ovum, zygote, embryo, or fetus for purposes of cloning a human being		
Could be read to ban embryo splitting		
Could be read to ban cloning from an embryo	X	X
Could be read to ban injecting human ova cytoplasm into human egg		
Could be read to ban transferring DNA into nonhuman cells	X	
Bans research on cloning human beings		X
Bans cloning of tissues or molecules		
Bans use of private or public funds for cloning		X
Bans only use of public funds for cloning	X	
Specifically protects biomedical research	X	
Specifically excludes IVF and other ARTs not intended to produce a genetically identical human being		
Civil penalties imposed		X
Criminal penalties imposed		
Licensure penalties imposed		
Sunset clause		
Establishes review body that reports to legislature	X*	

* National Science Foundation shall enter into an agreement with the National Research Council for a review of the implementation of the Act.

	FEINSTEIN S 1611 — 2/5/98 S 1602 — 2/9/98	LOTT et al. S 1601 — 2/4/98 S 1599 — 2/5/98
Prohibits somatic cell nuclear transfer to create human beings	X	X
Specifically prohibits making "genetically identical" being		
Specifically prohibits conspiracy to clone a human being		
Specifically prohibits purchase or sale of ovum, zygote, embryo, or fetus for purposes of cloning a human being		
Could be read to ban embryo splitting		
Could be read to ban cloning from an embryo	X***	X
Could be read to ban injecting human ova cytoplasm into human egg		
Could be read to ban transferring DNA into nonhuman cells	X	X
Bans research on cloning human beings		
Bans cloning of tissues or molecules		
Bans use of private or public funds for cloning	X	X
Bans only use of public funds for cloning		
Specifically protects biomedical research	X	X
Specifically excludes IVF and other ARTs not intended to produce a genetically identical human being		
Civil penalties imposed	X	X
Criminal penalties imposed		X
Licensure penalties imposed		
Sunset clause	X	
Establishes review body that reports to legislature	X**	X

** NBAC.

*** As the term "diploid" is not defined in the statutory language, it could be read to prohibit cloning embryo cells.

Table 2: Proposed and Active State Cloning Bills

Prohibits somatic cell nuclear transfer to create human beings	AL1, AL2, CT, DE, HI, IL1, IL2, KS, MD1*, MD2*, MN, MS, NH1, NH2, NJ, NY1, NY2, NY3, NY4, NY5, OH1, OH2, PA, RI1, RI2, RI3, SC, TN1, TN2, VA
Specifically prohibits making "genetically identical" being	IL1, KS, NY1, RI2, RI3, SC, TN2
Specific ban of conspiracy to clone a human being	MS, NJ***, NY1, NY2, NY4, SC, TN2
Specifically prohibits purchase or sale of ovum, zygote, embryo, or fetus for purposes of cloning a human being	IL2, MN, MS, NH1, NH2, NY3, OH1, OH2, PA, RI1, TN1
Could be read to ban embryo splitting**	MD1, NJ, NY1, RI2, RI3, SC, TN2
Could be read to ban cloning from an embryo	AL1, AL2, DE, HI, IL2, KS, MD1, MN, MS, NH1, NH2, NJ, NY1, NY3, NY4, NY5, OH1, OH2, PA, RI1, RI2, RI3, SC, TN1, TN2, VA
Could be read to ban injecting human ova cytoplasm into human egg	none
Could be read to ban transferring DNA into nonhuman cells	AL1, AL2, DE, HI, KS, MD1, MD2, NJ, NY1, NY4, SC, TN2, VA
Bans research on cloning human beings	KS, MD1, MD2, NY4
Bans cloning of tissues or molecules	none
Bans use of private or public funds for cloning	AL1, AL2, CT, DE, HI, IL1, IL2, KS, MN, MS, NH1, NH2, NJ, NY1, NY2, NY3, NY4, NY5, OH1, OH2, PA, RI1, RI2, RI3, SC, TN1, TN2, VA
Bans only use of public funds for cloning	MD1, MD2
Specifically protects biomedical research	CT, DE, HI, NY2, NY4, NY5, OH1, OH2, PA, RI2, RI3
Specific ban of IVF and other ARTs not intended to produce a genetically identical human being	CT, IL1, MN, NY2, NY5, RI2, RI3
Civil penalties imposed	CT, DE, IL2, MS, NH1, NH2, NY3, NY5, OH1, OH2, PA, RI1, RI2, RI3, TN1, VA
Criminal penalties imposed	AL1, AL2, CT, HI, IL1, IL2, KS, MN, MS, NJ, NY1, NY2, NY4, SC, TN2
Licensure penalties imposed	CT, IL2, MN, NH1, NH2, NY4, OH1, PA
Sunset clause	DE, IL2, NH1, NH2, NY3, NY5, OH1, OH2, RI2, RI3
Establishes review body that reports to legislature	IL2, NH1, NH2, NY3, NY5, OH1

Key to Table 2 Abbreviations:

AL1:	S.B. 511, 1998 Reg. Sess. (Ala., Mar. 14, 1997)
	S.B. 68, 1998 Reg. Sess. (Ala., Jan. 13, 1998)
AL2:	S.B. 8, 1998 Reg. Sess. (Ala., Jan. 13, 1998)
CT:	H.B. 5475, 1998 Reg. Sess. Gen. Assembly (Conn., Feb. 19, 1998)
DE:	S.B. 241, 139th Gen. Assembly, 2d Sess. (Del., Jan. 22, 1998)
HI:	H.B. 3206, 19th Leg. (Haw., Feb. 2, 1998)
IL1:	H.B. 2235, 90th Gen. Assembly, 1997-98 Reg. Sess. (Ill., Mar. 10, 1997)
IL2:	S.B. 1243, 90th Gen. Assembly, 1997-98 Reg. Sess. (Ill., Jan. 14, 1998)
KS:	H.B. 2846, 77th Leg., 1998 Reg. Sess. (Kan., Feb. 6, 1998)
MD1:	H.B. 932, 1998 Reg. Sess. (Md., Feb. 12, 1998)
MD2:	H.J.R. 11, 1998 Reg. Sess. (Md., Feb. 12, 1998)
MN:	S.B. 2423, 80th Reg. Sess. (Minn., Jan. 26, 1998)
	H.B. 2730, 80th Reg. Sess. (Minn., Jan. 26, 1998)
MS:	H.B. 996, 1998 Reg. Sess. (Miss., Jan. 14, 1998)
NH1:	H.B. 1658, 155th Sess., 2d Year (N.H., Jan. 22, 1998)
NH2:	H.B. 1658, 155th Sess., 2d Year (N.H., Mar. 5, 1998)
NJ:	A.B. 329, 208th Leg. (N.J., Jan. 13, 1998)
	A.B. 2849, 207th Leg. (N.J., Mar. 24, 1997)
NY1:	S.B. 2877, 220th Leg. Sess. (N.Y., Feb. 26, 1997)
NY2:	A.B. 5383, 220th Leg. Sess. (N.Y., Mar. 25, 1997)
	S.B. 2877, 220th Leg. Sess. (N.Y., Mar. 19, 1997)
	S.B. 2877, 220th Leg. Sess. (N.Y., Apr. 28, 1997)
	S.B. 2877, 220th Leg. Sess. (N.Y., Jun. 23, 1997)
NY3:	S.B. 5993, 221st Leg. Sess. (N.Y., Jan. 7, 1998)
NY4:	A.B. 9183, 221st Leg. Sess. (N.Y., Feb. 3, 1998)
NY5:	A.B. 9116, 221st Leg. Sess. (N.Y., Jan. 27, 1998)
OH1:	H.B. 675, 122d Gen. Assembly, 1997-98 Reg. Sess. (Ohio, Jan. 15, 1998)
OH2:	S.B. 218, 122d Gen. Assembly, 1997-98 Reg. Sess. (Ohio, Mar. 24, 1998)
PA:	H.B. 2128, 182d Gen. Assembly, 1997-98 Reg. Sess. (Pa., Jan. 21, 1998)
RI1:	H.B. 7123, 1997-98 Leg. Sess. (R.I., Jan. 9, 1998)
RI2:	H.B. 7123, 1997-98 Leg. Sess. (R.I., Apr. 21, 1998)
RI3:	H.B. 7123, 1997-98 Leg. Sess. (R.I., Apr. 29, 1998)
SC:	H.B. 3617, 112th Gen. Assembly Sess. (S.C., Mar. 11, 1997)
TN1:	S.B. 2208, 100th Gen. Assembly (Tenn., Jan. 15, 1998)
	H.B. 2198, 100th Gen. Assembly (Tenn., Jan. 15, 1998)
TN2:	S.B. 2295, 100th Gen. Assembly (Tenn., Jan. 20, 1998)
	H.B. 2281, 100th Gen. Assembly (Tenn., Jan. 20, 1998)
VA:	H.B. 752, 1998 Sess. (Va., Jan. 23, 1998)

Notes:

- * Does not define "cloning."
- ** If a somatic cell is defined as a diploid cell, one might argue that that includes embryonic cells.
- *** A person who engages in or assists, directly or indirectly, in the cloning of a human being is guilty of a crime in the first degree.

