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4TH ITEM of Focus printed in FULL format.

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Technology
Albany Law Journal of Science & Technology

1997

8 Alb. L.J. Sci. & Tech. 1

LENGTH: 33749 words

ARTICLE: THE CLONAL CHILD: PROCREATIVE LIBERTY AND ASEXUAL REPRODUCTION

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SUMMARY:

... A clone would be the genetic twin of the cell donor. ... Whether human cloning, the development of an embryo from an enucleated cell taken from an adult, is within the realm of the feasible, within days of the publication of Dolly's birth, the President of the United States declared that no federal monies could be spent for cloning experiments involving humans. ... This includes issues of whether current legal principles permit the diabolical uses of cloned individuals that have been suggested, and decried, by critics; whether human cloning is an inexorable continuation of the use of reproductive technology; and whether it is a constitutionally protected reproductive activity. ... Human cloning offers the prospect of clonal children who, unlike many children who have lost a parent, will never have two genetic parents. ... In other words, one cannot consider the possibility of human cloning and deny the reality of the intense societal disagreement about the moral status of the human embryo or the preembryo before implantation and the developing fetus thereafter. ... The choice of sperm by those utilizing artificial insemination is usually based on the personal characteristics of the donor. ...

TEXT:

[*2]

I. Introduction

As readers of science fiction are well aware, the term "clone" refers to asexually produced offspring, that is, produced by a process of cell-division which does not begin with the union of two sex cells. A clone would be the genetic twin of the cell donor. Propagation of plants by this method is, of course, commonplace, but mammalian reproduction in this fashion would be indeed a revolutionary accomplishment, with profound and disturbing implications. n1

-----Footnotes-----

n1. Bromhall v. Rorvik, 478 F. Supp. 361, 363 n.1 (E.D. Pa. 1979).

-----End Footnotes-----

On February 22, 1997, the nonscientific world was astounded to learn that a lamb named Dolly had been born as a result of cloning an adult sheep. Ian Wilmut and his colleagues at the Roslin Institute in Scotland had cloned the first mammal through the use of nuclear transfer technology. The cloning process involved transferring the udder cell of an all-white adult Welsh Mountain six-year-old sheep into a Scottish Blackface ewe's egg from which DNA had been removed. An electronic charge was used to combine the cell and the egg; the egg divided and became an embryo. The embryo was then implanted in a surrogate mother sheep. The udder cell's genetic material directed the embryo to grow into a white, Welsh Mountain lamb. Thus, Dolly is the genetic twin of the six-year-old sheep whose DNA was used. Unlike twins that occur naturally from the separation of a single embryo at an early stage of development, Dolly has only one genetic parent. As a result, Dolly's birth presents the possibility of being able to create individuals who are genetically identical to existing, or previously existing, persons; in other words, the ability to create "delayed" genetic twins.

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n2. Cloning is a word that describes "several conceptually different processes: asexual reproduction; the creation of identical entities; bringing to life new individuals from small segments of parent forms; and splicing sections of DNA into a cloning vector." Ira H. Carmen, *Introduction to Cloning and the Constitution* xiii (1985). This last process, referred to as recombinant DNA, produced its own controversy in the 1970s similar to the current debate regarding the prospect of producing human beings by cloning. See *id.*

n3. See Gina Kolata, *Scientist Reports First Cloning Ever of Adult Mammal*, N.Y. Times, Feb. 23, 1997, at A1; Gina Kolata, *With Cloning of a Sheep, the Ethical Ground Shifts*, N.Y. Times, Feb. 24, 1997, at A1. See also Ehsan Masood, *Cloning Technique 'Reveals Legal Loophole'*, 385 Nature 757 (1997) (discussing the reaction of both the legal and religious community after the lamb was cloned). The media reports resulted from the premature disclosure of the research results by a British newspaper. *Id.* See generally Michael Specter & Gina Kolata, *After Decades of Missteps, How Cloning Succeeded*, N.Y. Times, March 3, 1997, at A1 (noting the comparison of Wilmut's discovery to those of Charles Darwin and Albert Einstein).

n4. I. Wilmut et al., *Viable Offspring Derived From Fetal and Adult Mammalian Cells*, 385 Nature 810, 813 (1997); Kolata, *With Cloning of a Sheep*, *supra* note 3, at B8.

n5. Kolata, *With Cloning of a Sheep*, *supra* note 3, at B8. This work builds on an earlier result of the same researchers in which they succeeded in transferring nuclei from a donor nucleus into a recipient cytoplasm. However, at that time, the embryo did not develop to term. See K.H.S. Campbell et al., *Sheep Cloned by Nuclear Transfer From a Cultured Cell Line*, 380 Nature 64 (1996) (describing the process of embryo cloning, to which Ian Wilmut was also a contributing researcher).

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n6. Dr. Wilmut later revealed that "the world's first cloned animal was named after singer Dolly Parton, because the cell used to create her came from the 'impressive mammaries' of another sheep." John Arlidge, Scientists 'Able to Create Human Clone,' Guardian (London), Feb. 26, 1997, at 6, available in 1997 WL 2368146.

n7. See generally National Bioethics Advisory Commission, Cloning Human Beings 13-22 (June 1997) [hereinafter "Cloning Human Beings"].

n8. Id. The possibility of a delayed fraternal twin birth exists without resorting to cloning techniques. See Kate Alderson, 'Timewarp' Twin Expected After Two Year Delay, The Times (London), July 2, 1996 (discussing how a mother, who had two eggs fertilized simultaneously but only had her first baby born to a surrogate mother last year, is now awaiting the birth of the second which was implanted after being frozen for over five years).

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Despite many unanswered questions concerning "the feasibility of using nuclear transfer cloning using adult [mammal] cells as the source of the nuclei," n9 Dolly's creation immediately led to speculation about our ability to clone human beings. For instance, an editorial in an issue of Nature that published the results of Wilmut's research suggested that "cloning humans ... is likely to be achievable any time from one to ten years from now." n10 In fact, at least one person has announced his plans to be cloned. Randolfe Wicker, who heads the Cloning Rights United Front in New York, stated that he "contacted a scientist rumored to be developing human cloning technology," explaining that cloning is [*4] "part of the reproductive rights of every human being." n11 Moreover, many infertility researchers and physicians see cloning as the answer to intractable problems of infertility. n12

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n9. Cloning Human Beings, supra note 7, at 22-24 (discussing questions that include whether the procedure can be successful in other cases.) In examining true differences in a species' ability to realize successful nuclear transfer, the question is whether the "phenomenon of genetic imprinting [will] affect the ability of nuclei from later stages to reprogram development." Id. at 23. Additionally, it needs to be determined whether "cellular aging [will] affect the ability of somatic cell nuclei to program normal development" and whether the "mutations that accumulate in somatic cells affect nuclear transfer efficiency and lead to diseases in offspring." Id. at 24.

n10. Caught Napping by Clones, 385 Nature 753 (1997). See David Masci, Cloning Humans Sparks Debate Advisory Panel to Report Thursday on Issues and Give Guidelines, Pitt. Post-Gazette, May 25, 1997, at A15 (noting that most scientists agree that cloning a human will be possible and that it could happen within the next decade); Sharon Begley, Spring Cloning, Newsweek, June 30, 1997, at 82, 83 (stating that, given what scientists have learned in the three months since Dolly's cloning, the statement in Nature looks circumspect).

n11. Questions for: Randolfe Wicker, N.Y. Times, May 25, 1997, 4 (Magazine), at 18. There are reports that the Raelian movement, a Canadian religious group, has formed Clonaid, a company to provide customers with a chance to be cloned

for a fee of \$ 200,000 per attempt with no guarantees. Vatican Says No to Human Clones, Because Only God Can Make A Soul, Biotechnology Newswatch, July 7, 1997, at 4. In fact, two families are said to have approached the Roslin Institute seeking to clone relatives who are dead or dying. Id. Mike Santangelo, Doctor Isn't Sheepish: U.S. Will Soon Clone Humans, Newsday, Oct. 21, 1997, at C3.

n12. See Gina Kolata, For Some Infertility Experts, Human Cloning is a Dream, N.Y. Times, June 7, 1997, at 8. By using cloning with infertile women, it would not be necessary for doctors to provide women with powerful drugs on a month to month basis in order to force the production of eggs. Id. They report that women with ovarian failure have requested that the DNA from one of their husband's cells be added to a donor's egg from which the DNA had been removed in order to produce clones of the husbands. In the alternative, the wife's cell could be added to an enucleated donor egg. Id.

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The birth of Dolly has raised the controversy about the utilization and control of reproductive technology to new levels. As soon as the news of Dolly's birth was released, the rush to judgment about the wisdom and implications of cloning human beings began and an abundance of mostly negative commentary appeared. Many observers note the specter of dire and unthinkable consequences of human cloning, even as other voices suggest that the cloning of humans, in the sense of replicating not just one's genes but one's personality, character, and behavior, is not a foreseeable possibility. n13 The current contretemps is a continuation of a debate that began on a lesser scale in the nineteen sixties when a clonal frog was produced. n14 The debate diminished in the seven [*5] ties and eighties due to the widespread belief that the cloning of mammals was not a realistic possibility for the foreseeable future. n15 The debate was recently renewed however, when news of the "twinning" n16 of human embryos, widely characterized as "cloning," circulated in 1993. n17 This form of twinning is not the same cloning as that achieved by Wilmut and his colleagues. The twinning resulted from "'blastomere separation,' a process wherein the embryo is split at the four - or eight - cell stage, and 'embryo splitting' a process wherein the embryo is at the blastocyst stage, the last embryonic stage during preimplantation development." n18

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n13. See, e.g., Stanley I. Greenspan, The Growth of the Mind: And the Endangered Origins of Intelligence 133 (1997) (suggesting that "environmental influences can alter the physical structure of the brain, determining in part how genes express themselves in both biology and behavior").

n14. John Gurdon produced the first clonal frog from a cell nucleus obtained from a tadpole in 1964, utilizing research results of work done in the 1950's by Robert Briggs and Thomas J. King. See Elizabeth Ann Pitrolo, Comment, The Birds, the Bees and the Deep Freeze: Is There International Consensus in the Debate Over Assisted Reproductive Technologies, 19 Hous. J. Int'l L. 147, 156-57 n.53 (1996) (citing Peter J. Russell, Genetics 679 (1986)). See also James Watson, Moving Toward the Clonal Man, Atlantic Monthly, May 1971, at 50; Peter Singer & Deane Wells, Making Babies: The New Science and Ethics of Conception 135-36 (1985) (according to the authors the debate was intensified by the publication of David M. Rovik's In His Image: The Cloning of Man (1978)). A work

"purporting to be a factual account of a successful experiment, conducted in great secrecy, resulting in the creation of a genetic 'twin' by cloning." *Bromhall v. Rorvik*, 478 F. Supp. 361, 363 (E.D. Pa. 1979). The book described the laboratory research of an actual scientist, Dr. J.D. Bromhall, a recognized authority on embryology, and incorporated part of his doctoral thesis. *Id.* at 364. Outcry over the book resulted in appointment of a senate subcommittee to investigate controls over cloning and related genetic research. *Singer & Wells*, *infra* at 135. See also Francis C. Pizzulli, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. Cal. L. Rev. 476 (1974).

n15. See, e.g., Sharon Begley, *Little Lamb, Who Made Thee?*, *Newsweek*, March 10, 1997, at 54 (noting that "some scientists were so sure it could not be done that, in the 1970's, they dissuaded bioethicists from pondering its moral implications."). Cf. *Watson*, *supra* note 14, at 50-51 (warning that since the human embryological development is no longer inaccessible and in vitro fertilization is possible, efforts to achieve asexual reproduction are likely to ensue).

n16. Investigators in the in-vitro laboratory at George Washington University successfully divided seventeen human embryos into forty-eight. *Monica S. Amer*, *Comment, Breaking the Mold: Human Embryo Cloning and its Implications for a Right to Individuality*, 43 UCLA L. Rev. 1659 (1996) (citing *Jerry L. Hall et al.*, *Experimental Cloning of Human Polyploid Embryos Using Artificial Zona Pellucida*, an unpublished paper presented to the American Fertility Society and the Canadian Fertility & Andrology Society). n17. See *Gina Kolata*, *Scientist Clones Human Embryos and Creates an Ethical Challenge*, *N.Y. Times*, Oct. 24, 1993, at A1. See also *Rebecca Kolberg*, *Human Embryo Cloning Reported; Cloned Human Embryos have Potential Applications in In Vitro Fertilization, but Before that can Happen Some Serious Ethical Issues will have to be Addressed*, 262 *Science* 652 (1993). For some legal commentary regarding this issue refer to: *Amer*, *supra* note 16; *George J. Annas*, *Regulatory Models for Human Embryo Cloning: The Free Market, Professional Guidelines, and Government Restrictions*, 4 *Kennedy Inst. Ethics J.* 235 (1994); *Debra Feuerberg Duffy*, *Note, To Be or Not to Be: The Legal Ramifications of the Cloning of Human Embryos*, 21 *Rutgers Computer & Tech. L.J.* 189 (1995); *John A. Robertson*, *The Question of Human Cloning*, 24 *Hastings Ctr. Rep.*, Mar.-Apr. 1994, at 6.

n18. *Jacques Cohen & Giles Tomkin*, *The Science, Fiction, and Reality of Embryo Cloning*, 4 *Kennedy Inst. Ethics J.* 193, 196 (1994).

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Whether human cloning, the development of an embryo from an enucleated cell taken from an adult, is within the realm of the [*6] feasible, n19 within days of the publication of Dolly's birth, the President of the United States declared that no federal monies could be spent for cloning experiments involving humans. n20 At the same time, the President asked the National Bioethics Advisory Committee to "report to him within 90 days on legal and ethical issues involved in cloning techniques and 'possible Federal actions to prevent its abuse.'" n21 Stating that "people should 'resist the temptation to replicate themselves,'" the President also asked private researchers to voluntarily refrain from human cloning research. n22 Almost simultaneously, bills were introduced in Congress to outlaw such practices. n23

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n19. See Gina Kolata, Ethics Panel Recommends a Ban on Human Cloning, N.Y. Times, June 8, 1997, at 22 (stating that "most medical experts predict that it will be years before it is known how likely cloning is to succeed, even in animals.").

n20. See Katharine Q. Seelye, Clinton Bans Federal Money for Efforts to Clone Humans, N.Y. Times, Mar. 5, 1997, at A13.

n21. Gina Kolata, Little-Known Panel Challenged to Make Quick Cloning Study, N.Y. Times, Mar. 18, 1997, at C1.

n22. Seelye, supra note 20, at A13.

n23. See Gina Kolata, Commission on Cloning: Ready-Made Controversy, N.Y. Times, June 9, 1997, at A12. Legislative efforts to ban cloning have received renewed emphasis recently due to a physicist's announcement that he intended to open a cloning clinic even though the physicist lacks funds or a formal institutional affiliation. Sheryl Gay Stolberg, Small Spark Reignites Debate on Human Cloning, N.Y. Times, Jan. 19, 1998, at A11.

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The National Bioethics Advisory Commission [NBAC] reviewed the scientific, religious, ethical, and legal issues raised by the prospect of using somatic cell nuclear transfer to create a human embryo that would then be implanted in a woman's uterus and brought to term. n24 After evaluating current scientific information, members of the NBAC agreed that the procedure likely poses unacceptable risks to the fetus and/or potential child. For example, it is not clear at this time if Dolly is normal or whether there are subtle problems present that could lead to serious diseases. n25 This concern has led the NBAC to conclude that "at this time it is morally unacceptable for anyone in the public or private sector, whether in a research or a clinical setting, to attempt to create a child using ... cloning." n26 Moreover, the panel concluded that [*7] there is a need for "much more widespread and careful public deliberation" of the many ethical concerns raised by cloning. n27

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n24. See Cloning Human Beings, supra note 7, at i-iv. See generally Cloning Symposium, 38 Jurimetrics J. 1 (1997) (providing a critique of the NBAC report from various perspectives).

n25. See Cloning Symposium, supra note 24, at 13.

n26. Id. at 108.

n27. Id.

-----End Footnotes-----

Accordingly, the NBAC has recommended that the ban on the use of federal funding for research attempting to create clonal children by somatic cell nuclear transfer be continued; n28 that "all firms, clinicians, investigators, and professional societies in the private and non-federally funded sectors ... comply voluntarily with the intent of the federal moratorium;" and that scientific and professional societies "make clear that any attempt to create a child by [cloning] and implantation into a woman's body would at this time be an irresponsible, unethical and unprofessional act." n29 Additionally, the Commission recommended that Congress enact legislation prohibiting all attempts to create a child through somatic cell nuclear transfer but limited its recommendation with the caveat that any legislative or regulatory actions undertaken to give effect to such prohibition be "carefully written so as not to interfere with other important areas of scientific research." n30 This was added to clarify that the panel did not intend its recommendations to result in the banning of cloning DNA sequences and cell lines or research on cloning animals. n31

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n28. Id. at 109.

n29. Id.

n30. See Cloning Human Beings, supra note 7, at 109.

n31. See id.

-----End Footnotes-----

The request for federal legislation covering both research and clinical ttings was made in an effort to prevent privately funded infertility researchers from attempting to create clonal human embryos for implantation in wo n. n32 If only research, and not clinical cloning efforts were banned, a loophole would be created that would permit in vitro fertilization physicians to claim that they were not doing research but simply "using an innovative technique to help a couple with severe infertility." n33 Furthermore, the professional fertility societies have not united with the American Medical Association in its announcement that "efforts to use somatic cell nuclear transfer cloning to create a child are unacceptable at this time." n34

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n32. Joyce Price, Panel Studies Limits on Cloning Humans: One Proposal Bans Only Implantation, Wash. Times, May 26, 1997, at A1.

n33. Jeannine Aversa, Panel Suggests Keeping Ban on Federal Funding of Human Clone Studies, Wis. St. J., May 18, 1997, at 2A.

n34. Cloning Human Beings, supra note 7, at 98.

-----End Footnotes-----

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Although there is a ban on the use of federal funds for purposes of human oryzo experimentation, n35 the ban does not prevent the continuation of embryo research by privately funded scientists, assuming that there is no existing state ban on embryo research in the researcher's jurisdiction. n36 Thus, the NBAC does not support a complete ban of clonal embryo research. Moreover, the panel has recommended that federal legislation contain a sunset clause to enable the issue to be re-evaluated in the future. n37 The Commission also concluded that if "clinical use of somatic cell nuclear transfer techniques to create a child [is permitted, it] should be preceded by research trials." n38 Such trials would be protected by existing norms of experimentation dealing with human [*9] subjects, such as independent review and informed consent. n39 The Commission did not specify, however, whose informed consent should be obtained. n40 Finally, the NBAC suggested that there be cooperation between the United States government and other nations, as well as international organizations to enforce the common aspects of each entities policies. n41

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n35. See Warren E. Leary, Clinton Rules Out Federal Money for Research on Human Embryos Created for That Purpose, N.Y. Times, Dec. 3, 1994, at 8. Additionally, Congress utilized language in Fiscal Year 1996 and Fiscal Year 1997 appropriations bills that has in effect banned "virtually all human embryo research conducted with federal funds." Cloning Human Beings, supra note 7, at 5.

n36. See, e.g., Mich. Comp. Laws Ann. 333.2685 (West 1995). Human research; use of human embryo, fetus or neonate.

(1) A person shall not use a live human embryo, fetus, or neonate for nontherapeutic research if, in the best judgment of the person conducting the research, based upon the available knowledge or information at the approximate time of the research, the research substantially jeopardizes the life or health of the embryo, fetus, or neonate. Nontherapeutic research shall not in any case be performed on an embryo or fetus known by the person conducting the research to be the subject of a planned abortion being performed for any purpose other than to protect the life of the mother.

(2) For purposes of subsection (1) the embryo or fetus shall be conclusively presumed not to be the subject of a planned abortion if the mother signed a written statement at the time of the research, that she was not planning an abortion.

Cf. Smith v. Hartigan, 556 F. Supp. 157, 159-64 (N.D. Ill. 1983) (seeking to attempt to conceive using in vitro fertilization, a married couple challenged the constitutionality of what they believed to be a statutory prohibition of the procedure, but the court held that no case or controversy existed because the statute did not prohibit the procedure). But see Jane L. v. Bangerter, 61 F.3d 1493, 1499-1502 (10th Cir. 1995) (articulating that the fetal experimentation provision, 76-7-310 of Utah's abortion statute banning experimentation on live unborn children, is impermissibly vague); Lifchez v. Hartigan, 735 F. Supp.

1361, 1363-76 (N.D. Ill. 1990) (stating that the term experimentation is unconstitutionally vague, and the fetal experimentation ban is invalid); Margaret S. v. Edwards, 794 F.2d 994, 988-99 (5th Cir. 1986) (invalidating Louisiana's fetal experimentation statute because the word "experiment" is unconstitutionally vague).

n37. Cloning Human Beings, *supra* note 7, at 109. A sunset clause allows the legislation to be re-evaluated after a certain number of years in order to ensure that the enactment is still necessary. *Id.*

n38. *Id.*

n39. *Id.*

n40. *Id.*

n41. *Id.* at 110.

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Recognizing that there are divergent religious and ethical views regarding the morality of attempting to create a clonal child, the Commission recommended that there be "widespread and continuing deliberation" in order to "produce appropriate long-term policies ... should the time come when present concerns about safety have been addressed." n42 Finally, to insure that citizens participating in the debate are scientifically informed, the federal organizations concerned with science should cooperate to provide the public with genetic and other biomedical information and education, "especially where these affect important cultural practices, values and beliefs." n43

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n42. Cloning Human Beings, *supra* note 7, at 110.

n43. *Id.*

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In testimony before the United States Congress just days after the announcement of his successful experiment, Ian Wilmut, the embryologist who was one of those responsible for the cloning that resulted in Dolly's birth, advised against attempting to clone humans. In fact, he stated that he and his fellow researchers are unable to "see a clinical reason to copy a human being," noting that it is illegal in his country. n44 At the same time, Ian Wilmut admitted that his technique could be applied to humans. n45 Three months later, the Roslin institute announced it had moved to patent the cloning process, termed Nuclear Transfer Technology, including its use for cloning humans, n46 to prevent other researchers from attempting to clone human beings.

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n44. Youssef M. Ibrahim, Ian Wilmut: Secrecy Gives Way to Spotlight for Scientist, N.Y. Times, Feb. 24, 1997, at B5. See Masood, *supra* note 3, at 757 (suggesting that the Wilmut technique may not be covered by the Human

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Fertilization and Embryology Act of 1990, which prohibits the creation of an embryo outside the human body without authorization but states that permission will not be granted to "replace [the] nucleus of a cell of an embryo with a nucleus taken from a cell of any person, embryo, or subsequent development of an embryo").

n45. Arlidge, *supra* note 6, at 6.

n46. *Sheep Cloner Applying for Patents*, Times Union (Albany, N.Y.), May 9, 1997, at A2. The patent application was submitted to the World Intellectual Property Organization, a United Nations agency based in Geneva, Switzerland. *Id.* A group known as the Rural Advancement Foundation International stated however, that it would lobby the World Health Organization in order to stop the patents. *Id.*

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[*10]

The possibility of clonal humans has set off a firestorm of condemnation. Public opinion polls following the revelation of Dolly's birth indicate that there is widespread disapproval of the prospect of clonal humans. n47 The World Medical Association (an international umbrella organization comprised of nearly seventy medical professional groups), n48 the World Health Assembly (the governing body of the World Health Organization), n49 and the Chinese Academy of Sciences (China's leading institute of scientific research), n50 have all announced their opposition to the use of cloning for the replication of human individuals. Australia, Britain, Canada, Denmark, Germany, and Spain have, or are considering, laws that ban human cloning. n51 In addition, a number of state legislatures have enacted, or are considering, bills that outlaw cloning or attempts to clone humans. n52 Much of the immediate commentary on the announcement of Dolly's birth focused on the religious and moral dimensions of human cloning. n53 Some denounced human cloning as an attempt to arrogate divine powers or as inherently immoral. n54 For example, the World Health Assembly approved a resolution stating, "the use of cloning for the replication of [*11] human individuals is ethically unacceptable and contrary to human integrity and morality." n55 The vice president of the Chinese Academy of Sciences stated, "banning the use of cloning to copy human beings is absolutely necessary to maintain ethical morality, which holds together today's human society." n56 In the United States, the National Bioethics Advisory Commission condemned cloning by stating it would be "'morally unacceptable' ... [for] anyone to attempt to clone a human being." n57 In addition, Jeremy Rifkin, the head of the Foundation on Economic Trends in Washington D.C. and leader of a worldwide alliance of 300 religious and ethics organizations, urged an international ban on human cloning, suggesting that the penalty for violation be "'on par with rape, child abuse and murder.'" n58

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n47. See, e.g., Masci, *supra* note 10, at A15 (noting that a Time/CNN poll taken within days of Wilmut's announcement indicated that 93% of Americans oppose cloning a human, while 66% oppose even cloning animals).

n48. *Global Group Urges a Voluntary Ban on Human Cloning*, Chi. Trib., May 12, 1997, at 6.

n49. U.N. Body Decries Human Cloning Series, St. Petersburg Times, May 17, 1997, at 3.

n50. Chinese Scientific Institute Bans Cloning of Humans as Unethical Procedure Presented Dilemma for Scientists Doing Disease Research, Rocky Mtn. News, May 25, 1997, at A70.

n51. Michele Grygotis, The Cloning of a Sheep Named Dolly Just One Biotech Development Producing Unprecedented Opportunities to Explore New Treatments of Human Diseases, Transplant News, May 12, 1997, available in 1997 WL 8941015.

n52. See, e.g., id. (providing that there are bills to control cloning pending in Congress, as well as in state legislatures such as California and New York). See also Cloning Human Beings, supra note 7, at 104, tbl. 1 (listing proposed state and federal bills to ban various aspects of cloning).

n53. See Former Chief Justice Says Court Shouldn't Judge Its Own, Portland Oregonian, May 20, 1997, at B6 (noting that Senator John Lim, the sponsor of a bill to make the cloning of humans illegal, is quoted as saying, "the measure is needed in view of the ethical, legal and religious issues surrounding cloning").

n54. See Gustav Niebuhr, Suddenly, Religious Ethicists Face a Quandary on Cloning, N.Y. Times, Mar. 1, 1997, at 1.

n55. U.N. Body Decries Human Cloning, supra note 49, at 3.

n56. Chinese Scientific Institute, supra note 50, at A70.

n57. Kolata, supra note 19, at 22.

n58. Masood, supra note 3, at 757.

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Despite all the foreboding with which the news of Dolly's birth was greeted, there are supporters who back efforts to achieve human cloning because they believe the benefits will outweigh any negative aspects. It is important, however, to distinguish between cloning research intended to replicate only "bits and pieces" of people, such as certain types of genes and cells, and cloning research intended to replicate full human beings. n59 Many of the envisioned benefits of cloning, such as altering human genes to abolish hereditary diseases, growing skin, arteries, and organs, preventing the extinction of certain species, and producing better livestock for meat and milk, do not involve the replication of complete human beings. n60 Physicians have indicated that the engineering feat that created Dolly offers the possibility of so lay growing new bone marrow for cancer patients, combating sickle cell anemia, and healing injured spines. n61 Many of the benefits would accrue to biologists whose understanding of "cell growth, multiplication and differentiation" would be greatly enhanced with concomitant advances in understanding the etiology of disease [*12] disease mechanisms. n62 Accordingly, many members of the NBAC who want to ban research intended to clone a whole human are supportive of cloning research that involves cloning human genes and tissues. n63

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n59. Rex Bowman, Clinton is Warned on Clone Law Issue: Scottish Firm's Chief Spoke at Tech, Richmond Times-Dispatch, May 28, 1997, at B1 (stating the Scottish Biotechnology firm that produced Dolly has asked President Clinton to be careful in drafting and enacting any legislation so as not to prohibit the cloning of bits and pieces of humans, which for example currently allows for the replication of tissue to treat skin burn patients).

n60. See id.

n61. See Grygotis, supra note 51.

n62. See George P. Smith, II, Pathways to Immortality in the New Millennium: Human Responsibility, Theological Direction, or Legal Mandate, 15 St. Louis U. Pub. L. Rev. 447, 455 (1996) ("Specifically, research in combating cancer would be advanced through the study and perfected use of cloning, as would the study of gerontology. The rate of aging could be diminished and the human cycle increased. A better understanding of the body's immunological responses to disease would advance the management of allergies, infections, wound healing, and organ transplantation.").

n63. See id.

-----End Footnotes-----

However, the use of cloning to produce a whole human being also has valuable purposes. For instance, it could serve as a means to combat infertility and avoid genetic abnormalities. n64 Behavioral scientists could benefit by understanding the relative influences of nature and nurture, that is, genetic inheritance versus environment in determining personality and behavior. n65 For example, it is widely concluded that an individual who results from cloning will be just that, an individual and not a replica in every particular of the person donating the cell. n66 He or she would be unique; each would have a consciousness and an identity separate from that of the genetic parent. After all, there are influences governing fetal development that produce differences even in identical twins who have shared the same prenatal environment. n67 There is, however, a paradox at work in some of the reactions to the prospect of replicating humans. On one hand, the use of cloning as a reproductive method is seen as part of our culture's overemphasis on individualism without regard to other larger concerns. Yet, at the same time, cloning is decried as devaluing the individuality and identity of the clonal person. n68

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n64. See id.

n65. See generally Greenspan, supra note 13, at 133-60 (explaining the debated interplay between an individual's genetic make-up and environmental influences).

n66. See generally Amer, supra note 16, at 1682-84 (comparing cloning to the birth of identical twins).

n67. See id. n68. See id. (noting that [twinning and blastomere separation] differ most significantly because clones can be born at separate times, whereas naturally created identical twins cannot, ... allowing for the existence of one 'twin' years before any of the other cloned embryos are utilized").

- - - - -End Footnotes- - - - -
[*13]

Although ethical and moral concerns are germane to the policy choices we make about asexual reproduction, n69 the primary focus of this article is on the legal implications of human cloning intended to produce a child. This includes issues of whether current legal principles permit the diabolical uses of cloned individuals that have been suggested, and decried, by critics; whether human cloning is an inexorable continuation of the use of reproductive technology; and whether it is a constitutionally protected reproductive activity. The form of cloning known as blastomere separation or embryo cloning, in which an embryo is divided in the laboratory with the same result as when an embryo divides naturally, n70 is not the subject of this inquiry except to the extent that both types of cloning raise shared issues such as postmortem reproductive rights. n71 Notably, there are many other questions raised by the prospect of human cloning that are beyond the scope of this article. One is whether cloning for the purpose of creating embryos for research or in order to harvest organs for replacement should be permitted. n72 Other issues include whether scientists and researchers have a First Amendment right to conduct experiments designed to lead to human cloning n73 and what the patent law implications of cloning may be. n74

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n69. "The words 'cloning' and 'asexual reproduction' are used interchangeably to describe a technology of nuclear transplantation whereby an enucleated egg is renucleated with a body cell nucleus from an existing body source, or as the case may be, a human." Smith, *supra* note 62, at 454.

n70. See generally Cohen & Tomkin, *supra* note 18, at 195-98.

n71. See *infra* notes 166-99 and accompanying text for a discussion of similar issues raised by cloning.

n72. See, e.g., Singer & Wells, *supra* note 14, at 140 ("It may prove possible to grow embryos to provide tissues or organs that would save the lives of people dying from a variety of diseases. The major problem with tissue and organ transplants is rejection. This ... would not occur with a donation from one's own clone.").

n73. See generally Carmen, *supra* note 2, at 34-59.

n74. See, e.g., Anita Varma & David Abraham, DNA is Different: Legal Obviousness and the Balance Between Biotech Inventors and the Market, 9 Harv. J. L. & Tech. 53-85 (1996); Dan L. Burk, Patenting Transgenic Human Embryos: A Nonuse Cost Perspective, 30 Hous. L. Rev. 1597-1669 (1993). See also Moore v. Regents of Univ. of Calif., 793 P.2d 479, 487-97 (Cal. 1990) (holding that the plaintiff did not maintain an interest in his excised cells after they were removed from his body because the genetic code for the particular lymphokines extracted does not vary from one person to the next, and the scientists

- - - - -End Footnotes- - - - -

I conclude that, given the current practices that are a part of assisted or collaborative reproduction as well as the legal responses to them, human cloning is not as revolutionary as feared. Arguably, cloning is more deserving of protection as a means of reproduction than many other techniques. Additionally, there are almost no issues raised by the specter of cloning human beings that are not already present due to advances in cell biology and human embryology. Furthermore, the monstrous wrongs that many fear will ensue if human cloning does become an actuality already exist. The means to inflict suffering are already at hand and have been widely used throughout human history. Instead of terrifying ourselves with visions of an inhumane future, we might better employ our wits to ameliorate the misery that abounds in the present, while debating the very real issues that accompany human cloning.

The prospect of human cloning raises profound questions, but we should not deliberate in an atmosphere of hysteria and misunderstanding. Human cloning offers the prospect of clonal children who, unlike many children who have lost a parent, will never have two genetic parents. Thus, in contemplating cloning, we have an opportunity to reconsider the legal response to other reproductive technologies, some of which have meant that a child of assisted reproduction has only one legal parent. In other words, the law of assisted technology permits the deliberate creation of partial orphans. The possibility of clonal children now raises the question of whether we must or even should permit the creation of partial genetic orphans. [*15]

A. Popular Misconceptions: The Meaning of Cloning

Some of the criticism and fear evoked by the potentiality of human cloning stems from a misunderstanding of the meaning of reproduction by cloning. If cartoons and letters to the editors of popular periodicals are to be believed, there is a widespread belief that individuals who result from cloning spring from a petri dish, fully formed in an adult state identical to the present age and shape of the DNA contributor. n75 In an article addressing the ethical and policy issues in human embryo twinning, Andrea L. Bonnicksen noted that a distinction between twinning, or embryo splitting, is important because while twinning is a common

natural occurrence, cloning evokes mental images of "dozens of Rush Limbaughs, Ross Perots and Howard Sterns." n76 The reality that the cloned individual begins as a single celled entity, is gestated until ready for birth, and then grows and develops from infancy to adulthood, just as all mortals must, has been lost in the excitement surrounding the unexpected birth of the clonal lamb.

-Footnotes-

n75. The comic strip Sylvia, for example, presented the following exchange. In the first panel, Clyde, a "Domestic Scientist," who, surrounded by contraptions, asks, "Honey, is there anything you want cloned?" In the next panel, the redoubtable feminist Sylvia, is seated at her typewriter thinking: "'Yes!' I answered without hesitation, having thought of little else since I heard the news. 'My clone can party on, breaking hearts and hotel china, while I sit at home writing my memoirs and aging gracefully.' 'I think you're a bit late,' said Clyde snidely. 'Well, clone this!' I shouted, throwing a crock pot at his head. My aim was as good as ever." Nicole Hollander, Sylvia, Times Union (Albany, N.Y.), Mar. 25, 1997, at D7.

n76. Pitrolo, supra note 14, at 157, n. 58 (citing Andrea L. Bonnicksen, Ethical and Policy Issues in Human Embryo Twinning, 4 Cambridge Q. Healthcare Ethics 268, 268-70 (1995)).

-End Footnotes-

One of the most common concerns about the clonal person is that he or she will not have an identity separate from the individual who was cloned. For example, a post-Dolly issue of The New Republic featured a cover with four pictures each, of three babies, and the following caption: "They are human. They cannot be replicated. The moral repugnance of cloning." n77 The reference is to an article by Leon R. Kass of the University of Chicago entitled, "The Wisdom of Repugnance: Why We Should Have the Cloning of Humans," n78 in which he calls for a ban on cloning because, among other reasons, the clonal child "is given a genotype that has [*16] already lived, with full expectation that this blueprint of a past life ought to be controlling of the life that is to come." n79

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n77. Erik Baker, The New Republic, June 2, 1997, at 1 (Cover).

n78. Leon R. Kass, The Wisdom of Repugnance: Why We Should Ban the Cloning of Humans, The New Republic, June 2, 1997, at 17.

n79. Id. at 24. "Cloning is inherently despotic, for it seeks to make one's children (or someone else's children) after one's own image (or an image of one's choosing) and their future according to one's will." Id.

-End Footnotes-

Even Daniel Callahan, the founder of the Hasting Center, a bioethics research group, has expressed misgivings based on his concern about the identity of the child who is produced through cloning. n80 And, President Clinton, in his announcement to ban the cloning of human beings, said that the ban "would

insure that Americans resist the urge to duplicate themselves in contradiction to 'our most cherished beliefs about the miracle of human life and the God-given individuality each person possesses.'" n81 The Pontifical Academy of Life, a panel set up by Pope John Paul II, has concluded, however, that "the spiritual soul, 'the constitutive kernel' of every human created by God, cannot be produced through cloning." n82 Accordingly, human cloning will not lead to identical souls, since only God is able to create a soul.

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n80. See Daniel Callahan, *A Step Too Far*, N.Y. Times, Feb. 26, 1997, at A23 (explaining that a child is influenced by his parents' values and his own individuality, so that engineering a child's entire genetic make-up upsets this balance).

n81. Clinton Seeks to Ban Human Cloning but Not All Experiments, N.Y. Times, June 10, 1997, at C4.

n82. Vatican Warns Against Cloning, N.Y. Times, June 25, 1997, at A2.

-----End Footnotes-----

These concerns are shared by many people who are not primarily involved in bioethical issues. After interviewing a number of prominent individuals, including a politician, a lawyer, a playwright, a sports figure, a religious leader, and a sex therapist, The New York Times reported that the jokes that greeted the news of Dolly's birth "quickly [gave] way to deep brooding about immortality and identity, the nature of the human soul and the difference between love and narcissism. Standing unexpectedly at the forbidden frontiers of reproductive biology, everyone is apparently more alarmed than amused." n83 One observer went so far as to state that "'the people who would do this are evil incarnate.' ... 'The most materialistic people. The ones afraid of the flesh withering. Movie people. Narcissists. O.J. would clone himself and then say, It's not me; it's the other O.J.'" n84

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n83. Jane Gross, *Thinking Twice About Cloning*, N.Y. Times, Feb. 27, 1997, at B1.

n84. *Id.* at B3.

-----End Footnotes-----

These last comments suggest a profound misunderstanding about the relationship between the cloned and clonal individual, [*17] that is, a mistaken belief that clonal individuals share a mind and personality with the cloned. If Dolly, the clonal lamb, is a model for human cloning, there is no reason to believe that child and parent are one anymore than identical twins are one person in two bodies. In fact, there should be fewer similarities given their generational differences and vastly dissimilar gestational and social environments. n85 Much more troubling are the arguments made by those scientists that state the diversity created by the sexual method of reproduction is a "fundamental condition for man to adapt to the environment and survive." n86

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Nevertheless, it is difficult to imagine cloning, even if it becomes feasible as a method of producing offspring, becoming a widespread reproductive technique in the foreseeable future. At present, only ten laboratories in the world have the facilities necessary to duplicate Wilmut's work. n87

-Footnotes-

n85. See, e.g., Amer, supra note 16, at 1677-78. "Fundamentally, DNA is what makes each person different, separate (in a nonphysical sense), and distinguishable from other human beings around them. It also affects a great deal of an individual's behavior, including 'aggressiveness, dangerousness, job and educational success, exhibitionism, the tendency to commit arson, ... zest for life,' vulnerability to stress, imagination, leadership ability, and alienation." Id. (quoting Rochelle C. Dreyfuss & Dorothy Nelkin, The Jurisprudence of Genetics, 45 Vand. L. Rev. 313, 320 (1992)) (alterations in original).

n86. Chinese Scientific Institute, supra note 50, at A70 (quoting Xu Zhihong, Vice President of the Chinese Academy of Sciences).

n87. See Bowman, supra note 59, at B1. But see Robert Lee Hotz, Scientists Duplicate Dolly Clone Technique, Times Union (Albany, N.Y.), Jan. 19, 1998, at A1 (reporting that researchers have used adult cells from five species, including primates, to create viable embryos).

-End Footnotes-

B. Popular Misconceptions: Reasons for and Results of Cloning

It is feared that clonal beings, by reason of the method of their procreation, will be viewed as less than human and subject to abuse and exploitation. A concomitant misgiving is that they will be deliberately genetically diminished, a concern dubbed the "Bladerunner" scenario by Professor John A. Robertson. n88 It is derived from a 1982 film in which "genetically engineered human 'replicants' are created to do dirty and dangerous work 'off-planet'." n89 The prospect of clonal humans also evokes the fear that a genetically engineered class of subnormal human beings will be developed for nefarious purposes, such as slavery.

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n88. John A. Robertson, Children of Choice: Freedom and the New Reproductive Technologies 170 (1994).

n89. Id. (posing the question of whether there is a moral duty to make clones as healthy and normal as possible).

-End Footnotes-

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It is undeniable that throughout human history dominant and oppressive groups have committed unspeakable wrongs against those viewed as inferior. Once a person (or a people) has been characterized as sub-human, there appears to have been no limit to the cruelty that was or will be visited upon him. For

example, in almost all wars, hatred towards the enemy was inspired to justify the killing and wounding by separating the enemy from the human race, by casting them as unworthy of human status. This same rationalization has supported: genocide, chattel slavery, racial segregation, economic exploitation, caste and class systems, coerced sterilization of social misfits and undesirables, n90 unprincipled medical experimentation, n91 the subjugation of women, and the social Darwinists' theory justifying indifference to the poverty and misery of others. n92

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n90. See, e.g., Philip R. Reilly, *The Surgical Solution: A History of Involuntary Sterilization in the United States* 2 (1991) (pointing out that in the name of amelioration of social problems such as poverty, mental illness, mental retardation, disease and criminality, over sixty thousand individuals labeled as "degenerates" were sterilized without their consent in an effort to "cut off the flow of allegedly defective genes into the nation's gene pool."). Supposedly degenerate individuals were segregated in institutions and restrictive immigration policies were enacted in the belief that the "continued immigration of individuals from Eastern and Southern Europe with inferior genes constituted a distinct menace." Gerald N. Grob, *Forward to The Surgical Solution: A History of Involuntary Sterilization in the United States* ix (1991). See also Sweden Revisits Pain From its Past: Sterilization, *Times Union* (Albany, N.Y.), Aug. 26, 1997, at A1; Dan Balz, Sweden Asks Why Sterilization Program Happened, *Times Union* (Albany, N.Y.), Aug. 30, 1997, at A5 (reporting that 62,000 victims stir a progressive nation that has often ignored its dark side). But see Japan says Forced Sterilizations Merit No Payments, No Apology, *N.Y. Times*, Sept. 18, 1997, at A12 (discussing program, legal until 1996, in which 16,000 handicapped women were sterilized in effort to "improve Japanese people").

n91. See, e.g., Robert J. Lifton, *The Nazi Doctors: Medical Killing and the Psychology of Genocide* (1988) (discussing the medical practice of experimentation and euthanasia in Nazi Germany); James H. Jones, *Bad Blood: The Tuskegee Syphilis Experiment* (1993) (describing the infamous study conducted by U.S. health officials in which Afro-American males with syphilis were followed but not treated for four decades in order to observe the natural course of the disease); Patricia A. King, *The Dangers of Difference: The Legacy of the Tuskegee Syphilis Study*, 22 *Hastings Center Rep.*, Nov-Dec. 1992, at 35; Jeff Stryker, *Tuskegee's Long Arm Still Touches a Nerve*, *N.Y. Times*, April 13, 1997, at 4 (noting the Tuskegee Study's legacy of mistrust about public health programs and fear of vaccinations among many blacks).

n92. See, e.g., Herbert Spencer, *Social Statics Together with Man Versus the State* 141-52 (1892) (explaining his influential views that an ideal society provides the maximum opportunity for the elimination of the unfit, and that efforts to ease the sufferings of the poor, the diseased and the intemperate are misguided and misunderstand the rigorous necessity of the natural order's purifying process that eliminates the weak, the ill, and the slow).

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These sad realities, however, do not lead to the inevitable conclusion that individuals produced by human cloning are doomed to inferior status, destined to be subjected to unethical experiments, or used for spare parts or treated as lab rats of the field. The law that has developed regarding children produced through other, at one time revolutionary, techniques, such as in vitro fertilization, does not support the idea that the law will be helpless to protect the basic humanity of babies conceived by cloning. n93 Whatever the flaws in the legal response to developments in reproductive technology, and there are many, n94 denying complete status as human beings to these children is not one of them. While they may be treated unfairly insofar as some are denied accurate information about their genetic parentage n95 or face issues concerning their status as heirs if they were conceived post-mortem, n96 there is no question that they are granted unrestricted membership in the human species.

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n93. "In vivo" fertilization (IVF) is fertilization of the egg in the female's body. In contrast, "in vitro" (literally "in glass") fertilization consists of the removal of eggs from an ovary and their subsequent fertilization in a petri dish. When the egg has divided to the four or eight cell pre-embryo, it is ready to be transferred to a female's uterus for gestation. See Andrea L. Bonnicksen, *In Vitro Fertilization: Building Policy from Laboratories to Legislatures* 147-51 (1989) (describing the process in detail). IVF presents the possibility of genetic manipulation of either the egg or the sperm prior to fertilization. Moreover, the physician could genetically manipulate the resulting zygote. See John A. Robertson, *Embryos, Families, and Procreative Liberty: The Legal Structure of the New Reproduction*, 59 S. Cal. L. Rev. 939, 947-49 (1986).

n94. For this writer's criticism, particularly of the unwarranted deference to medical and entrepreneurial views of legal parentage, see Katheryn D. Katz, *The Public Policy Response to Surrogate Motherhood Agreements: Why They Should be Illegal and Unenforceable*, 60 N.Y. St. B. J., May 1988, at 21; Katheryn D. Katz, *Ghost Mothers: Human Egg Donation and the Legacy of the Past*, 57 Alb. L. Rev. 733 (1994) (criticizing the deception regarding, and denigrating efforts of, the genetic link between sperm or egg donors and the resulting offspring).

n95. One of the hallmarks of physician control of artificial insemination has been extreme secrecy to protect donor anonymity including such practices as routinely concealing the donor's identity, failing to keep any records of identifying information and listing the husband's name as the child's natural father on the child's birth certificate. See generally George J. Annas, *Fathers Anonymous: Beyond the Best Interests of the Sperm Donor*, 14 Fam. L. Q. 1 (1980); Elizabeth L. Gibson, *Artificial Insemination by Donor: Information, Communication and Regulation*, 30 J. Fam. L. 1 (1991).

n96. See *infra* text and accompanying notes 166-99 for a discussion of post-mortem reproduction.

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In fact, one of the fears that has attended experimentation with "assisted conception" techniques such as in vitro fertilization is [*20] that the fertilization process will harm the resulting conceptus. n97 This fear is not

a product of the belief that a pre-embryo is deserving of the same rights as a born child. n98 Rather, it indicates a concern for the well-being of the eventual child conceived through this process and not the view that they are regarded as members of a different species. Nevertheless, as James D. Watson warned, "the growing up to adulthood of these first clonal humans could be a very startling event." n99 So long as the public and the lawmakers do not succumb to hysteria and popular misunderstandings regarding what it means to be a clonal individual, children born as the result of asexual reproduction should, indeed must, enjoy complete membership in the human community.

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n97. See Singer & Wells, *supra* note 14, at 20 (discussing 1978 Harris poll finding that 63% of those polled in United States thought that IVF should be banned until further testing established that it would not cause birth defects).

n98. See, e.g., *Doe v. Shalala*, 862 F. Supp. 1421 (D. Md. 1994) (holding that an ex utero embryo lacks standing to maintain an action seeking an injunction to prohibit an advisory panel from submitting a report to the Department of Health and Human Services concerning human fetal tissue research).

n99. Watson, *supra* note 14, at 51.

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In contrast, another apprehension is that individuals produced by cloning will be genetically enhanced in order to produce a race of superhuman beings. The fear is that in some cases cloning will be desired for personal vanity and scenery reasons, that is, to recreate extremely gifted individuals who excel in sports, the arts, or who are unusually beautiful or have enormous intelligence. If this proves to be the case, however, it would differ in degree and not kind from the current practice of mating with individuals possessing the characteristics desired and using gametes from such individuals in assisted reproduction. Once it became possible for humans to procreate without sexual intercourse or even knowledge of, or a relationship with, the other genetic parent, the door was opened to reach new eugenic levels. Instead of having to depend on the vagaries of chance, that is, the hope of meeting a mate who would contribute good genes, we can pick and choose at the sperm or egg bank. n100 Sc infertility specialists are now creating "custom made" embryos by mixing "eggs and sperm to make a variety of embryos with different pedigrees." n101

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n100. See, e.g., *Sperm Banks Tailor Supply for Customers*, Times Union (Albany, N.Y.) June 5, 1994, at A20 (reporting that sperm bank customers are checking donor SAT scores and colleges attended).

n101. Gina Kolata, *Infertile Couples Pick Traits from Premade Embryos*, State Journal-Register (Springfield, Ill.) Nov. 24, 1997.

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[*21]

The extent gamete donation enables would-be parents to select offspring characteristics is illustrated by the existence of the Institute for Germinal Choice established in 1980. The institute is a sperm bank that was originally founded to offer the sperm of men, who had won the Nobel Prize, with the hope that a future generation of outstanding scientists and other intellectual giants would be produced. n102 Since most Nobel prize winners were too old or not interested in participating, n103 its scope was later widened "to include less accomplished scientists and other professionals who had I.Q.'s of at least 130." n104 Since its inception, the sperm bank has aided in the conception of 218 children in Australia, Egypt, Germany, Lebanon and the United States. n105 However, it is difficult to measure whether this program has resulted in improving the stock of human intelligence, since most of the parents of these children have refused to answer a follow-up questionnaire. n106

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n102. See Walter Wadlington, *Artificial Conception: The Challenge for Family Law*, 69 Va. L. Rev. 465, 468-69 n.14 (1983).

n103. See Robert Lee Hotz, Robert Graham, *Founder of Exclusive Sperm Bank*, *Dies*, L.A. Times, Feb. 18, 1997, at A3.

n104. Id.

n105. Id.

n106. Id.

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Moreover, if cloning is used to create a child, there will be an extremely close resemblance between those that are cloned and their clones. Unless there is some manipulation involved, cloning by itself is not going to lead to any spectacular improvements in individuals born as a result. In its current phase, the process of cloning will result in offspring born with all the inherent ills, problems, and weaknesses of their progenitors. Again, the fear of cloning reveals the wide disparity between what is already possible using other techniques, such as artificial insemination, egg donation and recombinant DNA, n107 and the perception of what is possible in the future. Preimplantation and prenatal genetic testing are commonplace n108 and pre and post natal gene therapies are [*22] already being practiced. n109 In fact, researchers are already "manipulating sperm and poking and prodding eggs, taking single cells out of embryos and testing them for genetic defects, taking cytoplasm out of one egg and adding it to another, directly injecting single sperm cells into eggs and moving chromosomes from one egg to another." n110

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n107. See Philip Kitcher, *The Lives to Come: The Genetic Revolution and Human Possibilities* 44-46 (1996) (describing the cutting, pasting, and tracking techniques of recombinant DNA).

n108. See generally Lori B. Andrews, *Prenatal Screening and the Culture of Motherhood*, 47 *Hastings L.J.* 967 (1996) (analyzing the potential impact of

prenatal testing and offering recommendations for regulating fetal cell sorting tests); Mary A. Crossley, Choice, Conscience and Context, 47 Hastings L.J. 1223, 1230-34 (1996) (examining the use of prenatal testing to detect genetic abnormalities); Michael J. Malinowski, Coming into Being: Law, Ethics and the Practice of Prenatal Genetic Screening, 45 Hastings L. J. 1435 (1994) (analyzing prenatal genetic screening options).

n109. Presently, it is possible to screen pre-implantation embryos for diseases such as cystic fibrosis, hemophilia, Tay Sachs and muscular dystrophy. Radhika Rao, Assisted Reproductive Technology and the Threat to the Traditional Family, 47 Hastings L.J. 951, 952-53 (1996).

n110. Gina Kolata, Scientists Face New Ethical Quandaries in Baby-Making, N.Y. Times, Aug. 19, 1997, at C1.

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Of all the research devoted to enhancing and controlling the genetic makeup of human progeny, none has had more profound implications than the Human Genome Project currently underway on an international level. The scientists involved seek to map every gene in the human body. It is expected that the results will impact our ability to screen for genetic abnormalities and control offspring characteristics. n111 This is not to suggest that such practices and possibilities do not raise serious and troubling issues; n112 only that the dreaded future some imagine cloning will bring is already here.

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n111. See, e.g., John A. Robertson, Genetic Selection of Offspring Characteristics, 76 B.U. L. Rev. 421 (1996) (noting that the "genome project will almost certainly accelerate a growing tendency of parents to choose or exercise control over offspring characteristics"). See also Glenn McGee, The Perfect Baby: A Pragmatic Approach to Genetics (1997) (suggesting that within the next few years expectant parents will be able to choose from a salad bar of traits such as aggressiveness, muscle tone, height, disposition, to obesity and risk-seeking behavior, thanks to gene therapies and genetic tests); Kitcher, supra note 107; Robert Mullan Cook-Deegan, Mapping the Human Genome, 65 S. Cal. L. Rev. 579, 585-90 (1991).

n112. See generally Malinowski, supra note 108; Kimberley Nobles, Birthright or Life Sentence: Controlling the Threat of Genetic Testing, 65 S. Cal. L. Rev. 2081 (1992) (discussing how testing can lead to discrimination, abuse and invasion of privacy); Susan M. Wolf, Beyond 'Genetic Discrimination': Toward the Broader Harm of Geneticism, 23 J. L. Med. & Ethics 345 (1995) (posing the question of labeling and possible disadvantages based on genetic information).

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Another cluster of concerns of those antagonistic to human cloning can be classified under the heading, "Cloning for Bad Reasons." Chief among these is the belief that cloning will occur for narcissistic reasons. Under this theory it is believed that there is something inherently selfish in the desire to reproduce without taking a chance and risking whatever permutations and combinations result from sexual reproduction. n113 It may or may not be the

case that a desire to be cloned is selfish, but individual reasons for deciding to procreate are irrelevant under our established doctrines of reproductive liberty.

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n113. Former New York Governor Mario Cuomo, for example, has stated that "every juncture with [my wife] produced better human beings than I could have created myself." Gross, *supra* note 83, at B3.

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To the extent that procreation is undertaken as a conscious choice, individuals have many and varied reasons for wanting to generate progeny. n114 Sc of these might be deemed "selfish" or "narcissistic." In fact, it can be argued that all willfully undertaken reproduction contains a narcissistic element, but the reasons articulated could just as easily be an effort to assume control over what is an unconscious drive, a response to a biological imperative. Moreover, among individuals who have resorted to in vitro fertilization, there is a reluctance to use donated embryos. n115 This reluctance could be deemed narcissistic; under a more charitable view, however, it might be seen as consistent with the experiences of those who are able to reproduce without the aid of technology. Although there are those who condemn cloning as "replication," rather than reproduction, partial replication of oneself is an inherent part of sexual reproduction.

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n114. See Michael H. Shapiro, *Illicit Reasons and Means for Reproduction: On Excessive Choice and Categorical and Technological Imperatives*, 47 *Hastings L. J.* 1081, 1110-19 (1996) (discussing the accusation that new reproductive technologies are used selfishly and irresponsibly).

n115. See, e.g., Gina Kolata, *Medicine's Troubling Bonus: Surplus of Human Embryos*, *N.Y. Times*, Mar. 16, 1997, at 1.

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III. Current Reproductive Technologies

A. Procedures and Techniques

To determine whether cloning comes within the ambit of procreative rights, the major reproductive technologies now available should be considered. Currently there are a number of procedures in use. Some involve egg, sperm or embryo donation. The oldest and most widely used is artificial insemination. Artificial insemination is a noncoital process in which semen is collected and then introduced into a woman's body by artificial means. If a male, who is not the woman's husband contributes the semen, the process is designated artificial insemination by donor [AID] n116 and the donor is usually paid for his contribution. If however, the husband's semen is used, the process is termed "homologous artificial insemination" [AIH]. n117 It was artificial insemination that began the separation of reproduction from sexual intercourse and, in the case of the donor, moral and legal responsibility for the

resulting child. n118

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n116. See Wadlington, supra note 102, at 468. For a general survey of the practice of AID, see Office of Technology Assessment, U.S. Congress, Artificial Insemination Practice in the United States: Summary of a 1987 Survey 3 (1988).

n117. See Wadlington, supra note 102, at 469, 487.

n118. See Uniform Parentage Act 5, 9B U.L.A. 301 (1987).

[Artificial Insemination]

(a) If, under the supervision of a licensed physician and with the consent of her husband, a wife is inseminated artificially with semen donated by a man not her husband, the husband is treated in law as if he were the natural father of a child thereby conceived. The husband's consent must be in writing and signed by him and his wife. The physician shall certify their signatures and the date of the insemination, and file the husband's consent with the [State Department of Health], where it shall be kept confidential and in a sealed file. However, the physician's failure to do so does not affect the father and child relationship. All papers and records pertaining to the insemination, whether part of the permanent record of a court or of a file held by the supervising physician or elsewhere, are subject to inspection only upon an order of the court for good cause shown.

(b) The donor of semen provided to a licensed physician for use in artificial insemination of a married woman other than the donor's wife is treated in law as if he were not the natural father of a child thereby conceived. (alterations in original).

See also Uniform Putative and Unknown Fathers Act 9B U.L.A. 1 (Supp. 1997).

In this [Act]:

(1) "Man" means a male individual of any age.

(2) "Putative father" means a man who claims to be, or is named as, the biological father or a possible biological father of a child, and whose paternity of the child has not been judicially determined, excluding:

(i) a man whose parental rights with respect to the child have been previously judicially terminated or declared not to exist;

(ii) a donor of semen used in artificial insemination or in vitro fertilization whose identity is not known by the mother of the resulting child or whose semen was donated under circumstances indicating that the donor did

not anticipate having an interest in the resulting child;

(iii) a man who is or was married to the mother of the child, and the child is born during the marriage [or within 300 days after the marriage was terminated by death, annulment, declaration of invalidity, divorce, or marital dissolution, or after a decree of separation was entered by a court];

(iv) a man who, before the birth of the child, attempted to marry the mother of the child in apparent compliance with law, although the attempted marriage is, or could be declared, invalid, and:

(A) if the attempted marriage could be declared invalid only by a court, the child is born during the attempted marriage, [or within 300 days after its termination by death, annulment, declaration of invalidity, divorce, or marital dissolution]; or

(B) if the attempted marriage is invalid without a court order declaring its invalidity, the child is born during, or within 300 days after the termination of, cohabitation; and

(v) a man who, after the birth of the child, married or attempted to marry the mother of the child in apparent compliance with law, although the attempted marriage is, or could be declared, invalid, and:

(A) has acknowledged his paternity of the child in a writing filed with the [appropriate court or Vital Statistics Bureau];

(B) with his consent, is named as the child's biological father on the child's birth certificate; or

(C) is obligated to support the child under a written promise or by court order.

(3) "Unknown father" means a child's biological father whose identity is unascertained.

However, the term does not include a donor of semen used in artificial insemination or in vitro fertilization whose identity is not known to the mother of the resulting child or whose semen was donated under circumstances indicating that the donor did not anticipate having any interest in the resulting child. (alterations in original).

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[*25]

The next development in reproductive technology was in vitro fertilization [IVF]. n119 It consists of the fertilization of a human ovum or ova in a petri dish and then subsequently transferring the fertilized ovum or ova to a uterus for gestation. Thus, IVF enables women unable to conceive due to blocked Fallopian tubes to bear children. n120 Moreover, IVF allows the conceptus to be placed in the uterus of a second woman if the first woman is unable to carry the fetus. n121 In addition, the ovum can also come from a third party donor. n122 Currently, it is possible to freeze and store the conceptus before transferring it to a uterus for gestation.

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n119. See Wadlington, *supra* note 102, at 473-74.

n120. *Id.* at 473.

n121. *Id.*

n122. *Id.* See also George J. Annas & Sherman Elias, *In Vitro Fertilization and Embryo Transfer: Medicolegal Aspects of a New Technique to Create a Family*, 17 Fam. L. Q. 199, 214-22 (1983) (discussing the use of third party donors and surrogate child bearers).

-----End Footnotes-----

"Traditional surrogacy" involves a woman who agrees to be artificially inseminated by a male to whom she will surrender the resulting child upon its birth. n123 Gestational surrogacy entails the hiring of a woman by an individual or a couple. The woman agrees to gestate a surgically implanted embryo and deliver a child with the understanding that she will turn the infant over to the contracting party or parties who may or may not be the [*26] genetic parents. n124 Also included in assisted conception techniques are those where fertilization takes place through sexual intercourse and the resulting embryo is transplanted in the womb of another woman. n125

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n123. See generally Martha Field, *Surrogacy Contracts - Gestational and Traditional: The Argument for Nonenforcement*, 31 Washburn L.J. 433 (1992).

n124. See, e.g., *Johnson v. Calvert*, 851 P.2d 776, 782 (Cal. 1993) (holding that the birth mother, in whom the couples' fertilized egg had been implanted, was not the "natural" mother of the child).

n125. See Unif. Status of Children of Assisted Conception Act 1, 9B U.L.A. 197 (Supp. 1997).

In this [Act]:

(1) "Assisted conception" means a pregnancy resulting from (i) fertilizing an egg of a woman with sperm of a man by means other than sexual intercourse or (ii) implanting an embryo, but the term does not include the pregnancy of a wife resulting from fertilizing her egg with sperm of her husband.

(2) "Donor" means an individual [other than a surrogate] who produces egg or sperm used for assisted conception, whether or not a payment is made for the egg or sperm used, but does not include a woman who gives birth to a resulting child.

[(3) "Intended parents" means a man and woman, married to each other, who enter into an agreement under this [Act] providing that they will be the parents of a child born to a surrogate through assisted conception using egg or sperm of one or both of the intended parents.]

(4) "Surrogate" means an adult woman who enters into an agreement to bear a child conceived through assisted conception for intended parents. (alteration in original).

- - - - -End Footnotes- - - - -

Assisted conception techniques depend on donated sperm, ova, or embryos to produce a child to be reared by those participants in the process who cannot contribute genetic material. Donors are the ones who actually reproduce, even though they usually do not intend to take any responsibility for their offspring; in fact, they are shielded from any obligation by the laws of many states. n126 Moreover, due to the secrecy and deception that has been the hallmark of artificial insemination even if there was a drastic change in the laws that govern artificial insemination, many past donors would be unidentifiable. n127 Similarly, even though there has been almost no legal response to the practice of egg donation, history suggests n128 that egg donors will be treated just as sperm donors, without parental rights or responsibilities.

- - - - -Footnotes- - - - -

n126. See, e.g., Unif. Parentage Act 5, 9B U.L.A. 301 (1987); Or. Rev. Stat. 109.239(1) (1996) (deeming that a sperm donor has no rights in, or responsibility for, a child conceived through artificial insemination).

n127. See, e.g., Karen M. Ginsberg, FDA Approved: A Critique of the Artificial Insemination Industry in the United States, 30 Mich. J. L. Reform 823, 847-48 (1997) (noting emphasis on confidentiality and the practice of record destruction by some clinicians and the small percentage of doctors who kept any records).

n128. See, e.g., Sheryl Gay Stohlberg, Quandry on Donors Eggs: What to Tell the Children, N.Y. Times, Jan. 18, 1998, at A1 (describing strong differences among mental health professionals concerning the wisdom and morality of disclosure).

- - - - -End Footnotes- - - - -

[*27]

Presently, numerous techniques exist which enable sex selection to take place, either pre-fertilization, pre-implantation, or post-implantation. n129 Artificial insemination, for example, makes it possible to separate androgenic (male producing) and gynogenic (female producing) sperm in order to yield a sample with a high concentration of the desired sex sperm. n130 Moreover, when IVF is used, pre-implantation techniques facilitate the discovery of the sex of the preembryo, thereby permitting the unwanted sex embryo to be discarded or never implanted. n131 Once implantation takes place, however, prenatal testing can determine an embryo or fetus's sex, presenting the possibility of abortion if the parents do not want a child of the indicated sex. n132 To the extent

that data does exist concerning sex selection, results indicate widespread preference for male children; female embryos or fetuses are not wanted. n133 It is not clear how human cloning will effect these widespread cultural and social preferences.

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n129. See Jodi Danis, Sexism and "The Superfluous Female": Arguments for Regulating Pre-Implantation Sex Selection, 18 Harv. Women's L. J. 219, 223-34 (1995) (discussing the technology of sex selection).

n130. See id. at 226.

n131. See id. at 228 (explaining that when fertilized eggs have divided into eight cells, it is possible to test the egg and determine its sex).

n132. See id. at 228-29 (noting that in the United States, where the only legal means of post-implantation sex selection is abortion and adoption, abortion is the preferred technique for "wrong sex" fetuses).

n133. See id. at 225 (mentioning that previously sex selection primarily focused on the creation of males until recently when female embryo preference began to develop).

-----End Footnotes-----

The social function of women has traditionally been delineated and limited by the fact that child-bearing is solely the province of females of the human species. n134 As a result, many feminists have responded to the advances in reproductive technology with fear, anticipating that the social changes they bring will operate to benefit men and burden women and thus perpetuate long standing inequalities. n135 Add into the mix the iron law of unintended consequences, and predicting the social and political changes that cloning will bring can be only guess-work.

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n134. See Norma Juliet Wikler, Society's Response to the New Reproductive Technologies: The Feminist Perspectives, 59 S. Cal. L. Rev. 1043 (1986) (urging the inclusion of diverse feminist perspectives in the debates and discussions in medical and legal circles on reproductive technologies).

n135. See id. at 1044 (suggesting that the use of reproductive technology functions to hinder female autonomy while promoting a patriarchal society).

-----End Footnotes-----

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B. Obstacles to Human Cloning

Before there can be successful cloning of a human being, there must be experimentation involving manipulation of human embryological development similar to when the first researchers were able to bring about the conditions for in vitro fertilization. n136 The danger of malformed fetuses resulting

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from researchers' efforts to clone a human is a strong possibility. The Scottish researchers who produced Dolly, the clonal lamb, also generated "dozens of fetuses with severe malformations" n137 and produced three cloned lambs with underdeveloped kidneys. n138 In addition to the risks concomitant upon manipulation of nuclei and eggs, there are unknown risks such as "the effects of aging, somatic mutation, and improper imprinting." n139 These effects could result in an increased probability of abnormal embryos and a high rate of failed pregnancies. n140

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n136. See generally John D. Biggers, *In Vitro Fertilization and Embryo Transfer in Human Beings*, 304 New Eng. J. Med. 336 (1981); R.G. Edwards et al., *Establishing Full-Term Human Pregnancies Using Cleaving Embryos Grown In Vitro*, 87 Brit. J. Obstetrics & Gynecology 737 (1980).

n137. Gina Kolata, *Clinton's Advisory Panel Backs Moratorium on Human Clones*, N.Y. Times, May 18, 1997, at A21 (reporting that there are possible risks of malformation with human cloning).

n138. Price, *supra* note 32, at A1.

n139. *Cloning Human Beings*, *supra* note 7, at 34.

n140. See *id.*

-----End Footnotes-----

Concerns about possible risks to the clonal embryo and fetus highlight the importance of the ongoing debate about fetal rights. In other words, one cannot consider the possibility of human cloning and deny the reality of the intense societal disagreement about the moral status of the human embryo or the pr bryo [*29] before implantation n141 and the developing fetus thereafter. n142 For example, both embryo and fetal tissue research are the subject of profound controversy. n143

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n141. The Ethics Committee of the American Fertility Society uses the terms pre-embryo and pre-zygote to describe the products of fertilization that are transferred to the uterus of the gestational mother. See Howard W. Jones, Jr., *And Just What is a Pre-embryo?*, 52 Fertility & Sterility 189-91 (1989); Marcia Joy Wurmbrand, Note, *Frozen Embryos: Moral, Social, and Legal Implications*, 59 S. Cal. L. Rev. 1079, 1088-91 (1986); John A. Robertson, *In the Beginning: The Legal Status of Early Embryos*, 76 Va. L. Rev. 437, 441-44 (1990) (explaining the difference between a pre-embryo and an embryo by referencing Clifford Grobstein, *The Early Development of Human Embryos*, 10 J. Med. & Phil. 213 (1985)). See also Robertson, *supra* note 93, at 972 (stating the belief that human tissue should not be afforded the same rights as a born person); Bonnie Steinbock, *The Moral Status of Extracorporeal Embryos: Pre-born Children, Property or Something Else*, in *Ethics and Biotechnology* 79, 81 (Anthony Dyson & John Harris eds., 1994) ("Without conscious awareness, beings cannot care about anything. They cannot have desires, preferences, hopes, aims or goals Whether they are preserved or destroyed, cherished or neglected is of no concern to them.").

n142. See, e.g., *Davis v. Davis*, 842 S.W.2d 588, 596 (Tenn. Sup. Ct. 1992). The court in *Davis* adopted the position of the American Fertility Society:

Three major ethical positions have been articulated in the debate over pre-embryo status. At one extreme is the view of the pre-embryo as a human subject after fertilization, which requires that it be accorded the rights of a person. This position entails an obligation to provide an opportunity for implantation to occur and tends to ban any action before transfer that might harm the pre-embryo or that is not immediately therapeutic, such as freezing and some pre-embryo research.

At the opposite extreme is the view that the pre-embryo has a status no different from any other human tissue. With the consent of those who have decision-making authority over the pre-embryo, no limits should be imposed on actions taken with pre-embryos.

A third view - one that is most widely held - takes an intermediate position between the other two. It holds that the pre-embryo deserves respect greater than that accorded to human tissue but not the respect accorded to actual persons. The pre-embryo is due greater respect than other human tissue because of its potential to become a person and because of its symbolic meaning for many people. Yet, it should not be treated as a person, because it has not yet developed the features of personhood, is not yet established as developmentally individual, and may never realize its biologic potential. *Id.*

n143. See generally Nat'l Insts. of Health, Final Report of the Human Embryo Research Panel (1994).

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Furthermore, there is no shared understanding about what to do with the thousands of surplus embryos that are being stored in tanks of liquid nitrogen at fertility centers throughout the country. n144 In turn, the debate about the treatment and disposal of [*30] superfluous embryos and whether flawed embryos should be discarded is part of the larger battle over induced abortion, much of which is bottomed in diametrically opposing views about the status of the embryo/fetus as an entity deserving of legal protection. n145 The reluctance to allow federal funds to be spent on research involving human embryos or fetuses and the many state laws limiting or prohibiting fetal and embryological research underscore the deeply divided views regarding the status of the embryo and the fetus. n146 The recommendations of the presiden [*31] tial commission that seem to permit the use of human cloning techniques for research in the lab but not for implantation for gestation have already been attacked by pro-life forces as "'protecting a clone-and-kill option.'" n147

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n144. See, e.g., Kolata, *Medicine's Troubling Bonus*, *supra* note 115, at 1 (maintaining that 10,000 surplus embryos have been put into storage each year for the past five years). The alternatives range from treating them as waste material to be discarded at some point, to recognizing that the genetic "parents" have an interest in their fate, to according them the same legal and moral status as children. Yet, there is little legislation on the subject. A Louisiana statute entitled "Human Embryos," among other things, forbids the

intentional destruction of a cryopreserved IVF embryo, La. Rev. Stat. Ann. 9:129 (West 1991), as well as prohibiting the farming of any embryo to a research facility. La. Rev. Stat. Ann. 9:122 (West 1991). Moreover, a fertilized human embryo in Louisiana is given "an identification by the medical facility for use within the medical facility which entitles such ovum to sue or be sued." Id. at 9:124. Louisiana has adopted laws that declare an embryo produced through IVF a juridical person until implantation and prohibit intentional destruction of viable embryos. La. Rev. Stat. Ann. 9:122, 9:123, 9:125, 9:129 (West 1991). "The lack of a clearly defined biologic embryo until after implantation ... led the American Fertility Society Ethics Committee to conclude that the pre-embryo is not a person or entity possessing rights or interests in its own behalf." Tamara L. Davis, Comment, Protecting the Cryopreserved Embryo, 57 Tenn. L. Rev. 507, 527 (1990) (providing some of Professor John A. Robertson's expert testimony at the Davis trial).

For further legal-medical literature analyzing this issue refer to: Lori B. Andrews, The Legal Status of the Embryo, 32 Loy. L. Rev. 357 (1986); Elisa Kristine Poole, Allocation of Decision-Making Rights to Frozen Embryos, 4 J. Amer. Fam. L. 67 (1990); John A. Robertson, Resolving Disputes over Frozen Embryos, Hastings Ctr. Rep., Nov-Dec. 1989, at 7; Colleen M. Browne & Brian J. Hynes, Note, The Legal Status of Frozen Embryos: Analysis and Proposed Guidelines for a Uniform Law, 17 J. Legis. 97 (1990).

n145. See John A. Robertson, Procreative Liberty and Human Genetics, 39 Emory L.J. 697, 707 (1990) (summarizing the ethical issue of pre-implantation screening and the ultimate decision of what to do with discarded embryos). See also, e.g., Bonnie Steinbock, Life Before Birth: The Moral and Legal Status of Embryos and Fetuses (1992) (concluding that under an interest analysis, embryos and fetuses in early stages of development do not have a claim to moral status).

n146. See June Coleman, Comment, Playing God or Playing Scientist: A Constitutional Analysis of State Laws Banning Embryological Procedures, 27 Pac. L.J. 1331, 1349-59 (1996) (discussing state restrictions on fetal or embryological research). Federal funds have not been available for embryological research since 1980. Id. at 1338. A Human Embryo Research Panel was established by the National Institute of Health in order to consider the ethical and moral issues raised by such research and to develop guidelines for reviewing funding requests. Id. at 1339. Despite the fact that the NIH Report had permitted research in restricted circumstances, President Clinton directed the NIH "to forego funding on research projects that involved creating embryos solely for the purpose of research." Id.

n147. Price, supra note 32, at A1 (quoting John Cavanaugh-O'Keefe, Director of the American Bioethics Advisory Commission).

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IV. Ground Rules: Governmental and Private Industry Controls

A. Ground Rules: Assisted Reproduction

When viewing cloning in the context of assisted reproduction, it is evident that infertility specialists and entrepreneurs will control which genes are passed on. When other reproductive technologies are used, such as sperm or egg donation,

clinics, individual physicians or sperm bank personnel determine who is fit to be a gamete donor. The choice of sperm by those utilizing artificial insemination is usually based on the personal characteristics of the donor. In fact, some would-be procreators simply advertise for donors with the traits they desire.

Moreover, it is highly questionable whether it is within the legitimate power of government to curtail procreation undertaken for selfish reasons. Nothing in the United States Supreme Court's jurisprudence on reproduction supports the notion that procreating for bad reasons may be curtailed by the state. n148 This is not to say that the state may never limit procreation; n149 rather, it suggests that our notions of autonomy and protection from government intrusion into decisions so fundamental as whether to bear or beget a child n150 do not permit the vetting of these decisions by the judiciary or the legislature. Notwithstanding President Clinton's view that we should "resist the temptation to replicate ourselves," n151 it is not the executive branch's role to determine acceptable reasons for reproduction.

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n148. See infra notes 200-237 and accompanying text.

n149. See, e.g., *In re Sterilization of Moore*, 221 S.E.2d 307 (N.C. Sup. Ct. 1976) (upholding the constitutionality of legislation allowing for the sterilization of the mentally retarded in institutions); *North Carolina Assoc. for Retarded Children v. North Carolina*, 420 F. Supp. 451 (M.D.N.C. 1976) (declaring that North Carolina's sterilization statute, which limits the ability of the mentally retarded to procreate, does not violate the constitutional rights of the mentally handicapped).

n150. See, e.g., *Eisenstadt v. Baird*, 405 U.S. 438 (1972) (noting that the right to privacy includes an individual's right to decide whether to bear or beget a child).

n151. Seelye, *supra* note 20, at A13.

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In those instances in which the state has been permitted to prevent procreation by certain individuals the interests asserted by the state involved the protection of children from deficient parenting and avoiding the burden on society to care for children whose biological parents are unable to provide a minimal level of care. n152 There is no legal precedent suggesting that individual reasons for procreating are sufficient to merit the state's curtailing their doing so. It is true that the deplorable precedent of *Buck v. Bell*, n153 in which the United States Supreme Court rejected a procedural and substantive due process challenge to Virginia's statutory scheme for the compulsory sterilization of institutionalized social misfits, suggests that there is no absolute right to reproduce. At the same time, however, the reasons sufficient to justify the scheme were not a matter of individual motives for procreation but were instead based on protecting the population against the perceived threat of bad genes. In the infamous words of Justice Holmes, "three generations of imbeciles [was] enough." n154