The Frankenstein Controversy: The Constitutionality of a Federal Ban on Cloning

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You seek for knowledge and wisdom, as I once did; and I ardently hope that the gratification of your wishes may not be a serpent to sting you, as mine has been.\(^1\)

INTRODUCTION

So began Victor Frankenstein’s recounting of his life story to Robert Walton. Haunted by the monster that he had created, Frankenstein warned Walton of the dangers of blind fealty to science. More than just a modern day horror story, Shelley’s novel serves as a warning of the dangers associated with an unrestrained search for

\(^1\)MARY SHELLEY, FRANKENSTEIN 17 (J. Paul Hunter ed., 1996). The excerpted language is taken from Shelley’s 1818, not 1831, edition of *Frankenstein.*
knowledge. Frankenstein’s monster personifies the perils of scientific tampering with the natural order.

The Frankenstein imagery lingers just below the surface of the current debate on cloning. In early 1997, the first adult mammalian clone was born, generating an enormous public outcry about the dangers of unrestrained scientific inquiry. Subsequently named Dolly, her birth broke new scientific ground. At the same time, it tapped into a societal uneasiness about the proper limits of scientific inquiry. Scientific discoveries do not unfold in a vacuum. They play out against a cultural backdrop in which both fantasy and reality are intertwined. Tampering with the process of creation, whether it be in the form of assisted reproductive technology, genetic testing, or, at its most extreme, cloning, plays on “profound concerns regarding the nature of humankind and its relationship to other aspects of the natural world.”

It came as no surprise, then, that both Congress and numerous state legislatures hastily drafted new legislation banning various forms of cloning and withdrawing or restricting funds from certain types of scientific projects involving cloning. Within three weeks of Dolly’s birth, the United States Senate held hearings addressing the challenges posed by cloning technology. President Clinton also acted quickly. One day after scientists announced Dolly’s birth, President Clinton penned a letter to Dr. Harold Shapiro, the Chair of the National Bioethics Advisory Commission (“NBAC”), asking the Commission to report back to him after having “undertake[n] a thorough review of the legal and ethical issues associated with the use of this [cloning] technology.” Upon receiving the NBAC’s report, President Clinton sent to Congress the Cloning Prohibition Act of


4 See infra notes 146-47, 205-07.


6 CLONING HUMAN BEINGS, supra note 3, at Letter from the President.
which bans the use of somatic cell nuclear transfer, the technology used to create Dolly. Congress has not yet enacted legislation banning or regulating cloning. Any anti-cloning legislation raises a number of important constitutional issues. This Article addresses two of those issues. First, does Congress have the power pursuant to the Commerce Clause to ban or regulate cloning? Second, even if the Commerce Clause does empower Congress to prohibit all or some forms of cloning, is such a prohibition an unwarranted government intrusion on a fundamental right, so as to violate the Due Process Clause of the Fifth Amendment?

Part I of this Article begins with a description of the science of cloning and concludes with a history of cloning research, both of which provide a much needed perspective on the current national debate over cloning. Part II summarizes the President’s proposed cloning legislation, as well as the bills introduced in Congress since February of 1997, when Dolly’s birth was announced. The quality of the drafting of these proposals suggests caution, because poorly crafted legislation leads to unintended consequences. Part III examines the federal response to cloning in the context of Supreme Court Commerce Clause jurisprudence. Part III concludes that Congress may ban cloning pursuant to its power to regulate interstate commerce, notwithstanding the Supreme Court’s recent decision in United States v. Lopez. Finally, Part IV provides an analysis of the Supreme Court’s substantive due process cases involving the right of personal privacy. The trends in the Court’s case law strongly suggest that a majority of the current Court would hold that a federal government ban on cloning would not violate the Fifth Amendment’s Due Process Clause. Although the reasoning used by individual Justices may vary, it is likely that a majority of the current Court would conclude that the right to use and have access to cloning technology is not a fundamental right protected by the Constitution.

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8 See infra notes 50-56 and accompanying text.
9 This Article addresses only some of the issues raised by the federal regulation of cloning. For example, most of the federal anti-cloning bills do not address the preemption issue. It is an open question whether states could regulate cloning in a more restrictive fashion than federal law. Several states have adopted anti-cloning legislation, and bills have been introduced in a number of state legislatures. See infra notes 205-07.
I. THE NUTS AND BOLTS OF GENETICS AND CLONING

The birth of Dolly made the term "cloning" a part of everyday language, yet scientists have engaged in various forms of animal and human cell cloning for several decades. Why did these earlier experiments not generate the public outcry that followed Dolly's birth? The reason is that Dolly's birth opened the door to the possibility of cloning an entire human being from the somatic\textsuperscript{11} cell of an adult human. In order to understand the current public debate over cloning, it is important to understand how genetic information is transmitted in normal human reproduction, how cloning alters that process, and how scientific inquiry and exploration brought society to the ethical crossroads it now faces.

A. Human Reproduction\textsuperscript{12}

The cornerstone of human reproduction is deoxyribonucleic acid ("DNA"). DNA consists of two extremely long strands of nucleotides coiled around each other in what is known as a "double helix."\textsuperscript{13} A nucleotide consists of three components: (1) one of four bases: adenine, guanine, cytidine, or thymidine; (2) a sugar; and (3) a phosphate. Because adenine pairs only with thymidine and guanine pairs only with cytidine, the bases on one strand of the DNA attract the complementary bases on the other strand, resulting in the double helix formation. The importance of DNA lies in these bases along the strands of the double helix. They create a code for different types of proteins, and these proteins, in turn, are

\textsuperscript{11} There are two categories of cells in the human body: (1) somatic and (2) germ line. All of the cells in the body, except for the human reproductive cells, i.e., ovum and sperm cells, are somatic cells. Germ cells are the human reproductive cells. See Dennis S. Karjala, A Legal Research Agenda for the Human Genome Initiative, 32 Jurimetrics J. 121, 133 (1992).


\textsuperscript{13} The double helix has been described as resembling "two-ply embroidery floss, [which] is composed of two strands coiled helically about a common axis." Wagner, supra note 12, at 38.
responsible for the manifestation of different human traits or genetic characteristics.\textsuperscript{14}

Each human cell contains DNA. Without DNA, cell duplication and human growth could not occur. One cell becomes two through a process in which DNA replicates itself.\textsuperscript{15} The process begins when the two strands of the double helix separate or unwind. The bases on each individual strand attract their complementary bases, for example, adenine pairs with thymidine. Eventually, two double helices result, both copies of the original double helix. The original cell then divides into two cells, each with its own complement of double-stranded DNA.\textsuperscript{16}

The double-stranded DNA in the body's cells is “subdivided into specific stretches or regions called genes.”\textsuperscript{17} “A gene is essentially a section of a DNA molecule that codes for (directs) the production of protein products used by the organism to build up and repair its various parts, catalyze metabolic processes, or even regulate the activity of other genes.”\textsuperscript{18} The genes, in turn, are arranged along rodlike structures called chromosomes.\textsuperscript{19} In the somatic cells, chromosomes are paired. In the human body, each somatic cell contains forty-six, or twenty-three pairs, of chromosomes.\textsuperscript{20} Chromosomes are not paired in the germ cells, i.e., the ovum and the sperm; thus, germ cells contain a total of only twenty-three chromosomes.\textsuperscript{21}

The sperm fertilizes the ovum during sexual reproduction, causing each germ cell to contribute one set of twenty-three chromosomes. Fertilization begins when the egg and sperm fuse, creating a one-celled organism, known as the zygote. That one-celled organism, however, contains two nuclei\textsuperscript{22}—one from the sperm and one from the egg—labeled as pronuclei by scientists.\textsuperscript{23} However, the two nuclei do not fuse at the zygote stage.

\textsuperscript{14} See Karjala, supra note 11, at 129, 136-37.
\textsuperscript{15} See Wagner, supra note 12, at 42-43 (discussing DNA replication).
\textsuperscript{16} See id.
\textsuperscript{17} KARL DRLICA, UNDERSTANDING DNA AND GENE CLONING: A GUIDE FOR THE CURIOUS 4 (1984).
\textsuperscript{18} Karjala, supra note 11, at 129.
\textsuperscript{19} See id. at 133.
\textsuperscript{20} See Wagner, supra note 12, at 12.
\textsuperscript{21} See Karjala, supra note 11, at 133.
\textsuperscript{22} Nuclei is the plural of nucleus, “the cell structure that houses the chromosomes, and thus the genes.” CLONING HUMAN BEINGS, supra note 3, app. at 3. Typically, human cells contain only one nucleus.
\textsuperscript{23} Scientists use the term “pronuclei” to refer to the sperm and egg nuclei because each contains only 23 chromosomes, half the genetic complement of an
What actually happens is that the chromosomes in the two pronuclei duplicate themselves separately, and then copies from each come together inside the actual nuclei formed after the first cell division. It is within each of the two nuclei present in the two-cell embryo that a complete set of forty-six human chromosomes commingle for the first time. Fertilization is now complete.\textsuperscript{24}

This two-celled organism is called an embryo or a pre-embryo.\textsuperscript{25} The embryo contains two pairs of twenty-three chromosomes, one set from each genetic parent, comprising the necessary forty-six chromosomes required in somatic cells. Genetic diversity results from this pairing of chromosomes from each parent. Any child born through sexual reproduction differs genetically from \textit{both} of the child’s parents because the child’s genetic make-up is a combination of traits inherited from both parents.\textsuperscript{26}

\textsuperscript{24} \textsc{Lee M. Silver, Remaking Eden: Cloning and Beyond in a Brave New World} 38 (1997).

\textsuperscript{25} The American Fertility Society uses the term “pre-embryo.” \textit{See} Ethics Comm. of the Am. Fertility Soc’y, \textit{Ethical Considerations of Assisted Reproductive Technologies}, 62 \textit{Fertility & Sterility} 308 (Supp. 1 1994) [hereinafter \textit{Ethical Considerations}]. Others criticize the use of the term “pre-embryo.”

The term pre-embryo has been embraced wholeheartedly by IVF [\textit{in vitro} fertilization] practitioners for reasons that are political, not scientific. The new term is used to provide the illusion that there is something profoundly different between what we nonmedical biologists still call a six-day-old embryo and what we and everyone else call a sixteen-day-old embryo.

\textsc{Lee M. Silver, supra} note 24, at 39. George J. Annas, the Edward R. Utley Professor of Public Health Law at Boston University School of Public Health, argues that the American Fertility Society created the term “pre-embryo” to define out of existence the problem of IVF practitioners manipulating embryos during IVF procedures.

\textit{[T]he AFS Ethics Committee opted to “solve” their members’ problem by redefinition. The Committee decided that extracorporeal human embryos were not really embryos at all, but were “pre-embryos,” an invented term for what had previously been called preimplantation embryos. . . . All this would seem unimportant wordplay, except that redefining the preimplantation embryo as a nonembryo permitted the committee to advise its members that anything goes with these now nonembryos . . . .}


\textsuperscript{26} Children born through sexual reproduction differ genetically from both parents for \textit{two} reasons. First, as discussed in the text, each parent contributes only
1. Cloning

Cloning also involves the transmission of genetic information from "parent" to "offspring." Unlike sexual reproduction, however, cloning replicates the genetic information of only one parent so that the offspring is an exact genetic copy of that parent. All forms of cloning involve the creation of "a precise genetic copy of a molecule, cell, plant, animal, or human being." As a result, unlike sexual reproduction, cloning has the potential for reducing genetic diversity.

However, not all forms of cloning implicate the legal and ethical issues raised by the creation of an adult mammal, such as Dolly. In fact, the term "cloning," when applied to animals, actually encompasses four different scientific processes: (1) molecular or gene cloning; (2) cellular cloning; (3) blastomere separation or embryo splitting; and (4) nuclear transplantation cloning. Of these four processes, only embryo splitting and nuclear transplantation cloning raise concerns about the creation of adult human clones.

a. Molecular Cloning

Molecular cloning is the process of replicating sections of DNA. Because DNA is a molecule and genes are regions on the DNA molecule,
some scientists refer to this process of replicating portions of DNA as molecular cloning while others dub it gene cloning. The production of insulin for diabetics provides an example of how molecular cloning has made possible a host of medical and scientific breakthroughs.

Insulin regulates the metabolism of sugar in the human body. Most people produce insulin in their bodies so they have no problem in regulating their bodies' metabolism of sugar. Diabetics, however, either do not produce insulin or do so in amounts insufficient to monitor their bodies' use of sugar. Thus, diabetics must take insulin. Before molecular cloning, scientists had to obtain insulin from hog pancreases, which was expensive and yielded limited supplies of insulin. Today, molecular cloning allows scientists to produce large amounts of insulin at a lower cost.

The first step in the molecular cloning of insulin (or any substance) is locating the region or gene on the DNA that codes for insulin. Once the gene is located, scientists must retrieve that gene from the DNA. In order to do so, scientists must break open the cell and its nucleus and remove the DNA. Then, they excise the gene or section of the DNA that codes for insulin production. The second step involves splicing the insulin gene into a cloning vector or vehicle. Cloning vectors "are relatively short DNA molecules that can penetrate the wall of a living cell and can multiply inside that cell." The end product of this process is a recombinant DNA molecule composed of bacterial cell DNA on which the human gene for

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29 See id. at 14; Larry L. Deaven, DNA Libraries: Recombinant Clones for Mapping and Sequencing, in HUMAN GENOME PROJECT, supra note 12, at 219, 219-20.
30 See DRLICA, supra note 17, at 2.
31 See id. at 9.
32 See id.
33 See id.
34 Id. at 6-7 (stating that cloning vector DNA comes from bacterial cells).
35 A recombinant DNA molecule is "[a] stretch of DNA that includes DNA from more than one source and can be replicated by a host cell without being incorporated into the genome of the host cell." HUMAN GENOME PROJECT, supra note 12, at 336. Recombinant DNA technology created an uproar in the 1970s because the technology allowed scientists to combine DNA from different organisms. There was concern that scientists might create toxic organisms capable of causing death or other serious damage. Scientists participated in a voluntary moratorium on recombinant DNA research while scientists and government officials studied the implications of this new technology. See CLONING HUMAN BEINGS, supra note 3, at 5.
insulin is located. The recombinant DNA molecule is then inserted into a host cell, typically a yeast or bacteria cell. Yeast and bacteria cells multiply quickly, producing many duplicate yeast or bacteria cells, all with nuclei containing copies of the recombinant DNA molecule. Because the host cell DNA contains a gene for producing insulin, the host cell (and all of its numerous copies) now can produce insulin.

Thus, molecular cloning allows scientists to insert particular genes into the DNA of simple organisms, such as bacteria, and create multiple copies of the altered DNA. The technology has numerous scientific and medical applications, including the production of insulin, as described above, and other medicines, such as erythropoietin, which doctors use to treat anemia resulting from kidney dialysis, and tissue plasminogen activator (tPA), which dissolves blood clots resulting from heart attacks.

b. Cell Cloning

Cell cloning involves duplication of any of the somatic cells of the human body. One cell is cultured and duplicated in the laboratory, producing a cell line composed of identical copies of the original somatic cell. Having multiple copies of one cell allows scientists to test the impact of certain medicines on these cells before testing drugs on live human subjects.


36 See DRLICA, supra note 17, at 18.
37 The insulin example in the text is an elaboration on an example used in DRLICA, supra note 17, at 9.
38 See CLONING HUMAN BEINGS, supra note 3, at 14.
39 See id.
40 See id.
41 See id.
c. Blastomere Separation or Embryo Splitting

Blastomere separation, commonly known as embryo splitting, differs in kind, not just degree, from other forms of cloning because its goal is the production of live adult animal (or potentially human) clones. Essentially, blastomere separation creates multiple copies of a single embryo, thus artificially mimicking the natural process that results in twins or multiple births.

Blastomere separation begins with the fertilization of an egg by a sperm. Approximately a day and a half after fertilization, the one-celled fertilized egg begins to divide. A blastomere is simply "each of the cells produced when the fertilized egg cleaves into 2, then 4, 8, and 16 cells." Cell divisions continue, forming the blastocyst about four days after fertilization. The significance of the blastocyst is that each of its cells—the blastomeres—is totipotent, "possess[ing] the total potential to make an entire new organism." Only very early embryonic cells have this capacity, if separated, to develop into a completely formed adult animal or human organism. As the embryo develops, the cells begin to differentiate or develop the characteristics of specialized cells, such as muscle, heart, and liver cells. Although the birth of Dolly suggests that differentiated cells may be used to create adult clones, it is much easier to create an adult clone using cells that have not yet undergone differentiation.

Because of differentiation, blastomere separation usually occurs with embryos ranging in size from two to eight cells. An example using an adult sheep demonstrates how the process works. First, scientists remove and fertilize an ovum from an adult sheep. After fertilization, the egg divides. Suppose scientists decide to break apart the embryo at the four-cell stage. This results in four blastomeres. Each of these blastomeres is then cultured to grow into a multiple-cell embryo, which is reimplanted into an adult female sheep. If four embryos result from the four blastomeres, four adult sheep, all identical copies of one another, will be born.

Blastomere separation is not science fiction. Scientists already have created adult animal clones from a single animal embryo. They began these experiments in "artificial twinning" almost twenty years ago and have had

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43 CLONING HUMAN BEINGS, supra note 3, app. at 1.
44 Id. at 15.
45 See id. at 15-16.
success in producing normal adult sheep and cows. Five years ago, a team of scientists at George Washington University Medical Center created the first human embryonic clones. Scientists were most successful in cloning when beginning with two-celled embryos. However, none of the human embryos created by blastomere separation was allowed to develop for more than six days.

d. Nuclear Transplantation Cloning

Both blastomere separation and nuclear transplantation cloning create the potential for developing adult animal or human clones, yet the birth of Dolly through nuclear transplantation cloning created a public furor unmatched by the announcement of the first case of embryo cloning.

The difference between blastomere separation and nuclear transplantation cloning really is one of degree. Blastomere separation requires a breaking apart of the early embryo and culturing the blastomeres until they develop into individual embryos. Nuclear transplantation cloning can be done with either embryonic cells or fully differentiated adult animal or (potentially) human cells.

In Dolly's case, a team of scientists headed by Dr. Ian Wilmut and Dr. Keith Campbell of the Roslin Institute in Scotland removed mammary gland cells from an adult sheep. They cultured the mammary gland cells to facilitate replication. The scientists then removed the nuclei from the ova of adult sheep, leaving enucleated eggs, and inserted the nuclei from the adult mammary gland cells into the enucleated eggs. Dr. Wilmut and Dr. Campbell tried this experiment 277 times. In twenty-nine cases, the eggs with the mammary gland nuclei developed into sheep embryos. Of these reconstituted embryos, only one adult sheep was born, named Dolly.

46 See KOLATA, supra note 2, at 175-78.
48 See id.
49 See id.
50 See infra notes 120-23 and accompanying text.
51 See CLONING HUMAN BEINGS, supra note 3, at 15-16.
52 See id. at 22.
53 An enucleated egg is "an egg from which the nucleus has been removed." Id. app. at 2.
54 See id. at 22.
55 Dolly originally was named "6LL3." George J. Annas, Edward R. Utley Professor of Public Health Law at Boston University School of Public Health,
which was an identical copy of the sheep that had contributed its mammary gland cell for nuclear transplantation.\textsuperscript{56}

\section*{B. \textit{How Did We Get Here}\textsuperscript{57}}

\subsection*{1. \textit{A Brief History of Cloning}}

Scientists did not set out to clone human beings. Scientific interest in cloning arose out of curiosity about the intricacies of human development, and dates back more than a hundred years to the latter part of the nineteenth century.\textsuperscript{58} At that time, embryologists began experimenting with frog eggs in order to study embryological development.\textsuperscript{59} Because frogs produce thousands of eggs at a time and those eggs are much larger than human eggs, frog eggs were ideal candidates for the study of embryological

\begin{footnotesize}
\begin{enumerate}
\item For a more detailed explanation of the steps involved in nuclear transplantation cloning, see CLONING HUMAN BEINGS, supra note 3, at 15-22. \textit{See also} Gina Kolata, \textit{With Cloning of a Sheep, the Ethical Ground Shifts}, N.Y. TIMES, Feb. 24, 1997, at A1 [hereinafter \textit{Ethical Shift}] (describing the basis of Dr. Wilmut's nuclear transplantation cloning procedure and debating the ethical implications of such cloning); \textit{Whatever Next?}, ECONOMIST, Mar. 1, 1997, at 79 (describing Dr. Wilmut's unique use of certain cells to produce a nuclear transplantation clone and discussing the potential problems with the ability of a clone to age or remain healthy).
\item This discussion of the evolution of scientific inquiry in the field of cloning is drawn largely from KOLATA, supra note 2, and CLONING HUMAN BEINGS, supra note 3, at 13-22.
\item \textit{See KOLATA, supra} note 2, at 43.
\item \textit{See id.} at 44.
\end{enumerate}
\end{footnotesize}
Embryologists had large supplies to fertilize, and the eggs were large enough such that scientists did not require microscopes in order to observe developmental stages in the frog embryo. The developing frog embryos led embryologists to wonder about the process of development from fertilized egg to differentiated cells, e.g., skin, brain, and heart cells, in a multi-cell organism. What triggered the differentiation of cells? If an early embryo, for example at the four-cell stage, were divided into its four constituent cells, would four identical embryos develop? Or would only partial embryos develop because each of the four cells already had begun the process of differentiation? And, why could the process of differentiation of cells not be reversed?

In 1885, August Weismann, a zoology and comparative anatomy professor at the University of Freiberg, developed a theory to account for differentiation. He argued that as the fertilized egg divided, the resulting cells lost genetic information with each cell division. According to his theory, the fertilized egg started with the full complement of genetic material; however, with each successive cell division, more genetic information was lost. Weismann theorized that the loss of genetic information explained how cells ended up performing certain functions. The genes remaining in the cell's nucleus after cell division controlled specific functions, e.g., brain activity. The loss of other genetic information explained why the cell could perform only certain types of functions, i.e., why the cell had differentiated.

In the early 1900s, Hans Spemann, a Nobel Prize winning embryologist, disproved Weismann’s theory. Spemann took the fertilized egg of a salamander and, using a hair from his son’s head, created a noose around the middle of the egg. The “hair noose” forced the fertilized egg into a dumbbell shape, with the nucleus of the egg on only one side of the noose. Spemann watched as only the side with the nucleus engaged in cell division. When that side reached the sixteen-cell stage, Spemann opened the “hair noose,” allowing a cell (with a nucleus) from the sixteen-cell

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60 See id.
61 See id.
62 See id. at 45.
63 See id. at 50.
64 See id. at 51.
65 See id.
66 See id. at 57.
67 See id. at 57-58.
stage to move over to the side lacking a nucleus. Spemann then used the noose to separate the two sides. He discovered that two identical salamander embryos developed. Spemann’s experiment showed that cell division in early embryos did not mean a loss of genetic material as Weismann had hypothesized. Instead, at the earliest embryonic stages, Spemann found that inserting the nucleus of a salamander embryo into an enucleated cell, that is, one lacking a nucleus, directed that cell to develop into a salamander embryo.

Spemann wondered whether his experiment with early embryonic salamander cells would work with older embryonic or perhaps even adult cells. Although he did not use the term “cloning,” Spemann wanted to insert the nuclei of older cells into enucleated egg cells, which is nuclear transplantation cloning. Spemann, however, could not figure out how to do so.

In 1952, Robert Briggs, an embryologist, accomplished what Spemann had suggested twelve years earlier. Briggs and Thomas J. King, a Ph.D. student at New York University, conducted experiments on older embryonic cells taken from frog embryos having between 8000 and 16,000 cells. Briggs and King removed the nucleus from a frog ovum and then inserted the nucleus of an older embryonic cell into the enucleated frog egg. Briggs and King used 197 frog eggs, and ended up with thirty-five frog embryos. Of those thirty-five embryos, twenty-seven emerged as tadpoles. Other scientists repeated the experiments, confirming the results of Briggs and King; however, scientists discovered that the older and more differentiated the cell, the less success they had with nuclear transplantation experiments.

In 1962, John Gurdon seemed to overcome the hurdle of differentiation by creating frogs from tadpole cells. Gurdon, a developmental biologist, inserted the nuclei from the intestines of tadpoles into enucleated frog eggs. The eggs with the intestine nuclei developed into adult frogs. Gurdon’s

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68 See id. at 60.
69 See id.
70 See id.
71 See id. at 61.
72 See id. at 62-64.
73 See id. at 65.
74 See id.
75 See id. at 66; CLONING HUMAN BEINGS, supra note 3, at 17-18.
76 See KOLATA, supra note 2, at 67; CLONING HUMAN BEINGS, supra note 3, at 17.
experiment worked only two percent of the time, but it proved significant because he had used cells much more differentiated than those used by Briggs and King.

Still, tadpoles are not adult frogs. In 1975, Gurdon tried to clone adult frogs, but proved unsuccessful. He inserted the nuclei from adult frog skin cells into enucleated frog eggs. In four percent of the nuclear transfers, a tadpole resulted, but Gurdon's goal of creating an adult frog from the skin cell of an adult frog eluded him.

By the 1970s, scientists had cloned embryonic cells and had created frogs from differentiated tadpole cells and tadpoles from adult frog skin cells. However, no one had created an adult clone from the differentiated cells of an adult animal. Moreover, no one had succeeded in creating a mammalian clone.

That seemed to change in 1979 with the announcement by Karl Illmensee, a famous and well-respected scientist from the University of Geneva, that he had cloned three mice from early embryonic mouse cells. Illmensee's announcement rocked the scientific community. Although he had used embryonic cells, not skin or other highly differentiated cells from an adult mouse, Illmensee was the first to produce a clone of a mammal.

Earlier experiments had used salamanders, frogs, and tadpoles. Illmensee's results had potentially far-ranging implications for human cloning because humans, like mice, are mammals.

Illmensee's experiments came under fire. Members of Illmensee's own lab began questioning his results, and the University of Geneva appointed an international commission to investigate. Although ultimately clearing Illmensee of fraud, the commission concluded that "because of the sloppiness of Illmensee's documentation, the entire series of experiments under question [was] 'scientifically worthless.'" In addition, no other scientist proved capable of repeating Illmensee's cloning experiment. In 1984, *Science* published an article by Davor Solter, a developmental

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77 See KOLATA, supra note 2, at 67; CLONING HUMAN BEINGS, supra note 3, at 17.
78 See CLONING HUMAN BEINGS, supra note 3, at 18.
79 See KOLATA, supra note 2, at 122.
80 See id. at 122-23.
81 See id. at 140.
82 Id. at 142.
biologist, who had tried repeatedly, without success, to duplicate Ilmensee’s experiment. Solter stated that “‘[c]loning of mammals, by simple nuclear transfer, is biologically impossible.’” The international commission’s critique of Ilmensee’s working methods, coupled with Solter’s and other scientists’ results, sounded the death knell for cloning research within prestigious academic and scientific communities.

Cloning continued, but it “became a pursuit of those who worked on the edges of science. It was relegated to those who worked with farm animals.” The focus changed. In the prestigious labs and well-known universities, scientists had pursued cloning as a way to understand the process of human development. Scientists working with farm animals, however, pursued cloning in order to create “better” animals.

Animal breeders faced a quandary in their attempts to create animals with particular traits. The traditional approach is to inbreed animals that have been selected for certain traits and then mate those inbred animals, which tend to be feeble or runts, with healthy animals from the general population, thereby merging genetic selection with hybrid vigor.

But when the hybrids are mated, the valuable traits from the inbred animals tend to be diluted or lost. Embryo subdividing offered a solution: It could allow breeders to multiply the valuable animals, including hybrids, without the gamble of the genetic lottery. They could simply subdivide the selected embryos, making multiple copies of a single hybrid creature.

Theoretically, embryo splitting seemed like the solution to the genetic lottery. In reality, the success rate dropped off sharply depending on the size of the embryo. Scientists had good success with dividing embryos in half: between sixty percent and eighty percent of these embryos developed into lambs when implanted. However, when eight-cell embryos were divided into eight cells, only five to ten percent of the implanted embryos developed into live lambs.

Nuclear transplantation cloning offered a solution to the inefficient results produced by embryo splitting. In 1984, Steen Willadsen, a Danish

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84 KOLATA, supra note 2, at 146 (quoting McGrath & Solter, supra note 83, at 1319).
85 Id. at 121.
86 Id. at 178.
87 See id.
88 See id.
scientist, created two cloned lambs using nuclear transplantation. Experiments on other mammals proved that scientists could successfully produce adult sheep, cattle, pigs, and mice by inserting the nuclei from early embryonic cells into enucleated sheep, cattle, pig, and mice ova.

The technology appeared to be a gold mine. Companies such as W.R. Grace and Company and Alta Genetics expanded into the business of nuclear transplantation cloning. Companies realized that they could turn a huge profit by selling multiple copies of valuable embryos. For example, suppose a valuable cattle embryo costs $500 to purchase. If a scientist can remove the nucleus from each cell of that sixteen-cell cattle embryo, insert each nucleus into an enucleated egg, and implant the resulting sixteen embryos, the company selling the sixteen embryos would gain $8000 in revenue, rather than $500.

The pot of gold at the end of the rainbow, however, never materialized. First, nuclear transplantation cloning cost more than anticipated. Second, businesses overestimated market demand for these cloned, genetically superior animals.

Cloning research, however, did not disappear. Dr. Ian Wilmut recognized the value of cloning in his research involving transgenic animals. Transgenic animals “carry foreign genetic material placed by scientists into their genomes (or the genomes of their ancestors).” The process is similar to that for molecular cloning and involves the insertion of a gene that codes for the production of certain human drugs into the animal’s genome. As a result, an animal born with the foreign gene will produce the human drug in its milk.

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89 See id. at 183-84.
90 The success of nuclear transplantation using early embryonic cells varies depending on the stage of embryonic development and the species involved. For example, scientists have had no success in cloning adult mice using embryonic cells after the eight-cell stage. In sheep and cows, however, scientists have created adult sheep and cow clones using cells from 120-cell blastocysts. See CLONING HUMAN BEINGS, supra note 3, at 20.
91 See Cloning Hearing, supra note 5, at 12 (statement of Dr. Harold E. Varmus, Director, National Institutes of Health); CLONING HUMAN BEINGS, supra note 3, at 19-21.
92 See KOLATA, supra note 2, at 185-89.
93 This example is drawn from KOLATA, supra note 2, at 185.
94 See id. at 188.
95 See id.
96 SILVER, supra note 24, at 230.
97 Scientists at Genzyme Transgenics Corporation in Framingham, Massachusetts, have created transgenic goats that produce antithrombin III, which
In 1991, Wilmut created a breed of sheep that produced alpha-1 antitrypsin, a drug used to treat a certain type of lung disease, in its milk.\textsuperscript{98} Wilmut found, however, that the process of creating transgenic animals, which required direct injection of the transgene\textsuperscript{99} into fertilized eggs, was laborious and difficult. Wilmut did not set out to create Dolly; instead, nuclear transplantation technology offered a solution to the problems with existing transgenic technology.

\[T\]he current method of directly injecting genes into fertilized eggs is inefficient. Not all injected eggs will develop into transgenic animals, and then not all transgenic animals will express the added gene in the desired manner. The production of transgenic livestock is slow and expensive. Nuclear transfer would speed up the expansion of a successful transgenic line, but, perhaps more importantly, it would allow more efficient generation of transgenic animals in the first place. Foreign DNA, such as a human gene, could be introduced into cell lines in culture and cells expressing the transgene could be characterized and used as a source of donor nuclei for cloning, and all offspring would likely express the human gene. This, in fact, was the motivation behind the experiments that led to the production of Dolly.\textsuperscript{100}

controls blood clotting in humans. Scientists at PPL Therapeutics, the firm that funded much of Ian Wilmut's work at the Roslin Institute, have created transgenic cows, whose milk contains alpha-lactalbumin, a human nutrient supplement. See Genetic Engineering: Building to Order, ECONOMIST, Mar. 1, 1997, at 81.

Transgenically derived proteins should be safer than blood-derived products because they will not be subject to the theoretical risk of transmission of viruses, including H.I.V. and hepatitis. They should also be less costly than biotechnology drugs produced by fermentation because one large mammal can produce far more protein in her milk than the vast colonies of cells needed for current processes. Biotechnology industry analysts say these could substantially increase the market for therapeutic proteins, currently about $7.6 billion dollars a year and expected to grow to $18.5 billion dollars by 2000.

Lawrence M. Fisher, Cloned Animals Offer Companies a Faster Path to New Drugs, N.Y. TIMES, Feb. 24, 1997, at B8; see also CLONING HUMAN BEINGS, supra note 3, at 26 (discussing the scientific interest in improving farm livestock through transgenic processes).

\textsuperscript{98} See KOLATA, supra note 2, at 215.

\textsuperscript{99} Transgenes are the foreign genes added to the animal's genome. See SILVER, supra note 24, at 230.

\textsuperscript{100} CLONING HUMAN BEINGS, supra note 3, at 26; see also Famed Sheep Cloner Scoops Award, AGBIOTECH NEWS & INFO., Mar. 1998 (visited Jan. 9, 1999)
2. Why Is Dolly Different?

Dolly's birth was not the first instance in which scientists had successfully produced animal clones through nuclear transplantation. For more than sixty years, scientists have wondered whether the process of cell differentiation can be reversed. Early embryonic cells—the blastomeres—possess the capacity to each develop into fully formed adult animals. Once cell differentiation begins, however, cells, such as muscle cells, develop specialized capacities, even though the cell nucleus contains the full complement of genetic material necessary to create an adult animal (or human being). Over the past sixty years, scientists have experimented on various animals in order to determine whether differentiated cells could be used to produce adult animal clones. They have successfully produced clones of sheep, cows, and pigs.

If scientists have created other mammalian clones, then why is Dolly's birth so significant?

To understand why this is important, we need to consider some of the processes that occur during growth and development of the early embryo. Fertilization of the mammalian egg by a sperm is rapidly followed by successive cell divisions. The first few cells produced appear to be identical to each other, but by the time the sheep embryo is implanted in the womb it contains many millions of cells and several recognizable tissues. As the fetus grows the cells differentiate further so that at the end of pregnancy, the animal has hundreds of different cell types, almost all with the same original genetic information as the original fertilized egg but each with a specialized function.

Scientists have tended to assume that this gradual specialization (or differentiation) was irreversible. Our previous nuclear transfer studies in which we produced lambs derived from cells from sheep embryos showed that some of the cells in the early embryo could be "reprogrammed" to develop into all the cell types present in the whole animal. Our latest work shows that cells at a much later stage of development, including some from adult animals can also be reprogrammed in the same way.101

Thus, Dolly's birth was a scientific breakthrough: her birth confirmed scientists' suspicions that the process of cell differentiation could be reversed.

<http://www.cabi.org/whatsnew/cloneani.htm#21> (discussing the motivation behind the Dolly experiments).

101 Cloning Hearing, supra note 5, at 20 (statement of Dr. Ian Wilmut, Embryologist, Roslin Institute, Scotland).
Practically speaking, however, how does Dolly's birth differ from the birth of identical twins created through artificial twinning or embryo splitting? Perhaps the difference lies in the asexual nature of nuclear transplantation "reproduction."

In nuclear transfer experiments, the situation is different . . . Here, we have genes that come solely from one donor, so both copies of the genes are from a single individual. Now, that donor, of course, was at one time derived from two parents, but the progeny of the experiment has the same genetic constitution as the donor.

In a sense, this is like having a twin, separated in time.102

However, embryo splitting also creates an identical copy of one individual, albeit an "individual" not yet fully developed or recognized in law as a person. Similarly, embryo splitting, like nuclear transplantation, does not increase genetic diversity, which is a hallmark of sexual reproduction. While the embryo results from sexual reproduction, the cells which split off from the embryo are identical copies of that embryo and are not the product of sexual reproduction. The difference is one of timing. After all, an adult human is the product of sexual reproduction, just as the embryo is. In the case of embryo splitting, the cloning simply occurred closer in time to the sexual reproduction.

An additional concern raised about cloning is that it deprives children born as a result of cloning of the "right to an open future."

In an era not only of genetic determinism but also of potential genetic discrimination, children saddled with another person's DNA might face psychological and financial risks. Cloning is all too likely to violate what the University of Arizona philosopher Joel Feinberg has called the child's "right to an open future."103

However, nuclear transplantation cloning using adult cells is not the only form of cloning that carries this potential. For example, given advances in cryopreservation,104 couples undergoing *in-vitro* fertilization105 could create

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102 *Id.* at 13 (statement of Dr. Harold E. Varmus, Director, National Institutes of Health).


104 Cryopreservation refers to freezing a living being with the hope of thawing it in the future to bring it back to life. See *Silver*, supra note 24, at 78.

105 *In vitro* fertilization is "an assisted reproduction technique in which fertilization is accomplished outside the body." *CLONING HUMAN BEINGS*, supra
several copies of one embryo, implant one embryo, and cryopreserve the remaining copies for later implantation, creating the possibility that identical twins could be born, separated in time. Therefore, embryo splitting and nuclear transplantation cloning of both adult and embryonic cells raise the specter of a generation of children born with predetermined "genetic" destinies.

Lee Silver, a professor at Princeton University, argues that cloning, when coupled with genetic engineering, has made possible the genetic alteration of human chromosomes. Tinkering with human genes has far-reaching implications for the species, i.e., the ability to create persons with enhanced genetic traits.

There is a final consequence of cloning that is more significant and powerful than any other use of the technology, one that has the potential to change humankind: the genetic engineering of human beings. Without cloning, genetic engineering is simply science fiction. But with cloning, genetic engineering moves into the realm of reality. . . . Multiple cells grown from a single embryo could be subjected to genetic engineering. . . . Those that appear to be engineered as desired could be recognized and picked out. Each single selected cell could be expanded by itself into a clone of cells that provides sufficient material for the confirmation of genetic integrity. Then, and only then, would one cell from this mass of cells be used by means of nuclear transplantation to produce a new embryo, which would develop into a new human being, with a special genetic gift.

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note 3, app. at 2.

106 In vitro fertilization is an expensive process with a low success rate—approximately 19% per cycle of egg retrieval and implantation. See Ethical Considerations, supra note 25, at 38S. Implanting more than one fertilized ova increases the chances of a successful pregnancy. In order to implant more than one fertilized ova, however, a woman must produce more than one egg per menstrual cycle. Thus, many women take hormones in order to stimulate their ovaries to produce multiple ova each menstrual cycle. Blastomere separation offers an alternative to taking such hormones. Rather than using hormones to stimulate the production of multiple eggs per cycle, scientists could fertilize one extracted egg and create multiple clones through embryo splitting. See Fackelmann, supra note 47, at 276.

107 See Andrews, supra note 103, at B5.


109 SILVER, supra note 24, at 129-30; see also Ethical Shift, supra note 56, at A1 (discussing the genetic engineering implications of cloning).
Professor Silver’s assertion about the real implications of cloning has already proven to be true, at least for animals. In the summer of 1997, Drs. Wilmut and Campbell announced the birth of Polly, a genetically engineered clone.110 All of Polly’s body cells contained a human gene.111 Scientists at ABS Global, a Wisconsin corporation, have used similar technology to create Gene, a genetically altered cloned calf.112 Cloning coupled with genetic engineering no longer is the stuff of science fiction.

Of course, cloning genetically altered animals does not mean that the technology can or will be used in humans. However, news from the Human Genome Project113 about the scientific identification of genes114 that control specific human traits may increase the public concern about using cloning to “play God”115 or to alter “God-given” genetic traits.116 In addition, Richard Seed, the Illinois physicist who announced his intention to open a clinic to create human clones, clearly fueled public fears about man interfering with God’s role in human creation when he asserted that cloning gave man the ability to become God.

“In the first two chapters of the Old Testament, we learned that God made man in his own image. He intended the union of man and God. Is this union spiritual or in body? I think it is talking about the body. That we would become God in body and spirit.”

Cloning is the first step, Seed says. The second step is manipulation of the genetic material to reset the human body clock, to end the aging of cells. “Indefinite life extension,” he calls it. Man becomes God.117

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112 See id.
113 See Lawton, supra note 12, at 371 (“The Human Genome Project is an international research project, whose goal, simply stated, is to identify the location of the 50,000 to 100,000 human genes that code for various human genetic traits by mapping and sequencing the entire human genome.”).
114 See id. at 376 n.31, 377 nn.34-35.
115 See CLONING HUMAN BEINGS, supra note 3, at 44-45.
117 Gene Weingarten, Strange Egg; A House Call to the Mysterious Doctor Seed, the Man Who Wants to Clone Humans, WASH. POST, Jan. 25, 1998, at F1.
Seed’s brash statements about cloning struck many as the ultimate hubris, and his stated intention to open a human cloning clinic terrified most listeners.

Nevertheless, the potential to combine cloning and genetic engineering existed prior to Dolly’s birth. For more than a decade, scientists have been able to clone mammalian embryos using nuclear transfer technology. And genetic engineering dates back to the early 1970s.\textsuperscript{8} In fact, because of their totipotency, embryonic cells, not adult cells like Dolly’s, produce higher success rates in cloning.\textsuperscript{9}

Although Drs. Wilmut and Campbell clearly broke a scientific barrier with Dolly’s birth, it is less clear whether Dolly’s creation actually raised novel legal and ethical issues.

Some commentators have suggested that the furor aroused by the new possibility for cloning is out of proportion to most of the ethical, legal, and moral issues it raises, since these same issues have been raised by previous developments and are simply emerging again in a novel and striking form.\textsuperscript{10}

Dolly’s birth, however, struck a chord in the general population. Public reaction might be partially due to the fact that enucleated eggs used in nuclear transplantation cloning undergo division only after being exposed to a signal external to the egg, such as an electrical current.\textsuperscript{11} Creating life from cells stimulated by electricity conjures up images of Frankenstein.\textsuperscript{12}

\textsuperscript{8} See KOLATA, \textit{supra} note 2, at 108.

\textsuperscript{9} See \textit{supra} note 45 and accompanying text.

\textsuperscript{10} CLONING HUMAN BEINGS, \textit{supra} note 3, at 2.

\textsuperscript{11} See id. at 21.

\textsuperscript{12} At the hearing held on cloning by the Subcommittee on Public Health and Safety of the Senate Committee on Labor and Human Resources, George J. Annas remarked that “[a] number of Senators have commented on Frankenstein and other literary examples that have inflamed the public, and I cannot help but say that I think they properly influence the public.” Cloning Hearing, \textit{supra} note 5, at 42 (statement of George Annas, Edward R. Utley Professor of Public Health Law, Boston University School of Public Health). Dr. Willard Gaylin, an ethicist at the Hastings Center in New York, commented that “the Frankenstein factor” accounted for the public’s reaction to Dr. Richard Seed, the Illinois physicist who announced in late 1997 that he intended to open a clinic in order to produce the first human clones. See Gina Kolata, \textit{Proposal for Human Cloning Draws Dismay and Disbelief}, N.Y. TIMES, Jan. 8, 1998, at A22 [hereinafter Kolata, \textit{Human
It is more likely, however, that Dolly’s birth simply surprised scientists, who thought that cloning using adult somatic cells was impossible. Drs. Wilmut and Campbell accomplished what scientists had dreamed of for more than half a century. Many had dismissed as impossible the reversal of cell differentiation in adult animal somatic cells. Looked at in this light, the publicity generated by Dolly’s birth was no surprise. Because few people outside the world of science really followed the vagaries of cloning research, the birth came as a shock. Thus, Dolly’s creation touched people on a visceral level, making real those possibilities that once were viewed as the province of nightmares and science fiction, “in which cloning leads to dire, doomsday consequences.”

II. CURRENT EFFORTS TO BAN CLONING

A. The President’s Reaction

The federal government’s response to the announcement by Drs. Wilmut and Campbell that they had created the first mammalian clone was immediate. On February 24, 1997, President Clinton wrote to Dr. Harold Shapiro, the Chair of the NBAC, and charged that body with the task of examining the implications of Dolly’s birth. President Clinton gave the NBAC ninety days to explore the legal and ethical issues associated with cloning and to formulate recommendations aimed at preventing the abuse of cloning technology. Concerned by what he perceived as a gap in current federal funding bans on embryo research, President Clinton also issued a directive to all executive departments and agencies prohibiting the use of federal funds to clone human beings.

Cloning Proposal], Cloning Human Beings, supra note 3, at 6 n.3 (referring to such popular works as Aldous Huxley’s Brave New World, as well as the films The Boys from Brazil and Jurassic Park).


See Cloning Human Beings, supra note 3, at Letter from the President.

On June 9, 1997, Dr. Shapiro presented the NBAC's report, entitled *Cloning Human Beings*,127 to President Clinton at a press conference in the Rose Garden. The NBAC report recommended adoption of federal legislation to ban the use of somatic cell nuclear transfer cloning to create children,128 but the Commission cautioned against legislation that would permanently preclude the use of somatic cell nuclear transfer to create cloned children.

As somatic cell nuclear transfer cloning could represent a means of human reproduction for some people, limitations on that choice must be made only when the societal benefits of prohibition clearly outweigh the value of maintaining the private nature of such highly personal decisions. Especially in light of some arguably compelling cases for attempting to clone a human being using somatic cell nuclear transfer, the ethics of policy making must strike a balance between the values society wishes to reflect and issues of privacy and the freedom of individual choice.129

The NBAC concluded that serious questions about the use of somatic cell nuclear transfer to clone a child justified a limited ban on the technology.130 The Commission wanted any legislation to include an expiration date. The Commission believed that a permanent ban might unnecessarily infringe on an individual's right to make decisions about procreation.131 The NBAC also cautioned that any legislation should be carefully drafted in order to avoid limiting scientific research that does not implicate the issues raised by human cloning.132

On the basis of the NBAC's recommendations, President Clinton sent to Congress draft legislation, entitled the Cloning Prohibition Act of 1997 ("CPA"),133 that bans the use of nuclear transplantation technology to create a human being. The legislation covers both the private and public sectors through the exercise of Congress's power to regulate interstate commerce.134

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127 See CLONING HUMAN BEINGS, supra note 3.
128 See id. at 109.
129 Id. at 107.
130 See id. at 109.
131 See id.
132 See id.
134 See id. § 2(c), at 6; infra Part III.A.
The CPA makes it unlawful for "any person or other legal entity, public or private, to perform or use somatic cell nuclear transfer with the intent of introducing the product of that transfer into a woman's womb or in any other way creating a human being."\(^{135}\) The proposed legislation defines "somatic cell nuclear transfer" as "the transfer of a cell nucleus from a somatic cell into an egg from which the nucleus has been removed,"\(^{136}\) which is the equivalent of nuclear transplantation cloning. Thus, the CPA does not include blastomere separation as a form of prohibited cloning activity. In addition, the CPA does not preclude the creation of clones from human embryonic or adult cells, so long as the clone is not implanted in a woman's uterus.

It is unclear why the CPA's prohibition contains the clause "or in any other way creating a human being."\(^{137}\) The absence of a comma prior to "or" suggests that the prohibition extends to the creation of cloned children by implantation in a woman's womb or by other, as yet unspecified methods, such as development in a laboratory. What is clear, however, is that the CPA allows all forms of human cloning research.\(^{138}\) It simply prohibits researchers from taking the next step and creating a newborn human clone.

The CPA contains an expiration date, as suggested by the report of the NBAC. The Act provides that its prohibitions only apply for five years following enactment.\(^{139}\) In addition, the NBAC is required to provide to the President, within four and a half years of the CPA's enactment, information about the scientific, ethical, and social implications of cloning, as well as a recommendation about re-enacting prohibitions on cloning.\(^{140}\)

The CPA imposes fines for persons found liable for violating the Act.\(^{141}\) In addition, it provides for forfeiture of real or personal property used in violating the Act.\(^{142}\) Finally, the Act gives the Attorney General the right to seek injunctive relief against any person about to violate the CPA's prohibition on nuclear transplantation cloning.\(^{143}\) Responsibility for

\(^{135}\) H.R. Doc. No. 105-97 § 5, at 7.
\(^{136}\) Id. § 4 (c), at 6-7.
\(^{137}\) Id. § 5, at 7.
\(^{138}\) See id. § 6, at 7.
\(^{139}\) See id. § 8, at 8.
\(^{140}\) See id. § 9, at 8.
\(^{141}\) See id. § 7(a), at 7.
\(^{142}\) See id. § 7(c), at 7-8.
\(^{143}\) See id. § 7(b), at 7.
enforcement rests with the Attorney General’s Office,\textsuperscript{144} and no private cause of action lies for violation of the Act.\textsuperscript{145}

B. The Legislative Response

Within two weeks of the announcement of Dolly’s birth, Senator Christopher Bond of Missouri and Representative Vern Ehlers of Michigan introduced the first pieces of anti-cloning legislation in the Senate and House, respectively.\textsuperscript{146} Since Drs. Wilmut and Campbell announced Dolly’s birth, a total of nine anti-cloning bills have been introduced in Congress.\textsuperscript{147} Congress has yet to enact any anti-cloning legislation, in part due to fundamental differences about the status of the human embryo. The debate over cloning is being framed as a debate about abortion and embryo research. As a result, it is unlikely that Congress will act anytime soon to prohibit cloning.

Only three types of cloning raise questions about genetic determinism, human individuality, and the proper scope of scientific inquiry: (1) human embryo splitting; (2) nuclear transfer involving human embryonic cells; and (3) nuclear transfer involving adult human cells. Only one piece of legislation arguably addresses all three forms of cloning.\textsuperscript{148} An important issue concerns why the current legislative efforts draw distinctions among these three forms of cloning. In part, the answer lies in poor drafting. Setting aside drafting errors, however, a more fundamental divide emerges. There appear to be two lines of thought about the scope of federal anti-cloning legislation. One group of legislators opposes embryo research. They believe that embryos deserve respect as human life and that tampering with human embryos violates fundamental precepts of a good society.

\textsuperscript{144} See id. § 7(d), at 8.

\textsuperscript{145} See id. § 10, at 8.


\textsuperscript{148} See infra notes 198-201 and accompanying text.
As a result, they object to any form of human cloning, whether it involves pure research or efforts to implant cloned embryos in order to create an adult human clone. Other members of Congress are concerned with the end result of cloning, which is the creation of an adult human clone. As a result, implantation of cloned embryos, not creation of those embryos, is the focus of their legislative efforts. Of course, this debate is also shaped, in part, by current federal funding bans on embryo research. Thus, legislative restrictions may vary depending on whether the proposed bill merely bans federal funding for cloning or imposes an outright prohibition on cloning by both public and private entities. In order to understand the controversy underlying the cloning debate, it is necessary to understand what activities the various pieces of legislation actually prohibit.

1. Prohibition of Adult Cell Nuclear Transplantation Cloning

While the NBAC began its work, Senator Christopher Bond of Missouri introduced the first piece of federal anti-cloning legislation in the U.S. Senate. On February 27, 1997, Senator Bond introduced a bill ("Bond Act") that would ban the use of federal funds "for research with respect to the cloning of a human individual." The Bond Act defines "cloning" as "the replication of a human individual by the taking of a cell with genetic material and the cultivation of the cell through the egg, embryo, fetal, and newborn stages into a new human individual." The Bond Act was referred to the Senate Committee on Labor and Human Resources.

At first blush, the definition of cloning provided in the Bond Act appears to cover both blastomere separation and nuclear transplantation cloning because it includes the use of any cell with genetic material. Unfortunately, the use of the term "human individual" raises questions. Does the bill only cover the use of cells with genetic material from human individuals who have been born, i.e., considered persons under the law? The Act’s own language supports this conclusion. Section 1(b) defines cloning as the duplication of the cell of a human individual and “cultivation of the cell through the egg, embryo, fetal, and newborn stages into a new human individual.” Thus, a human individual emerges only after

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149 See infra notes 219-21 and accompanying text.
150 See infra notes 187-93 and accompanying text.
151 See infra note 222 and accompanying text.
152 S. 368, 105th Cong. § 1(a) (1997).
153 Id. § 1(b).
154 See S. 368.
155 Id. § 1(b) (emphasis added).
completion of the embryonic, fetal, and newborn stages. If this interpreta-
tion is correct, then the Bond Act restricts funding only to the cloning
technology used to create Dolly: it does not ban the use of federal funds for
nuclear transplantation cloning of embryos or embryo splitting. In addition,
it does not preclude the use of federal funds for cloning research, so long
as the scientists involved do not implant the clone in an effort to create a
new human individual. Yet, Senator Bond was one of the first members of
Congress to criticize the NBAC’s failure to address embryonic cloning in
its report to the President.

The [NBAC] report drew quick fire from Sen. Christopher S. Bond (R-
Mo.), who expressed disappointment that the commission did not call for
outlawing the cloning of human embryos for research—a practice opposed
by some who believe that life begins at conception.

“I had hoped the federal ethics commission would not be afraid to
make a strong moral statement,” Bond said in a news release. “But when
it came to the tough questions, they punted, and now it will be up to
Congress and state legislatures to resolve those issues.”

Given his strong response to the NBAC’s report, it is clear that Senator
Bond intended to cover embryonic cloning in his proposed legislation, but
failed to properly define cloning to cover the activities that he intended to
ban.

2. Prohibition of Adult Cell and
Embryonic Nuclear Transplantation Cloning

Early in March of 1997, Representative Vern Ehlers of Michigan
introduced the first two anti-cloning bills in the House, one imposing a
federal funding ban on cloning and one banning cloning entirely. Ehlers’s
Human Cloning Research Prohibition Act\(^{158}\) ("Funding Act") originally
banned the use of federal funds "to conduct or support any project of
research that involves the use of a human somatic cell for the process of
producing a human clone."\(^{159}\)


\(^{157}\) *See infra* Part II.B.4.b.


\(^{159}\) *Id.* § 2.
The Funding Act was referred to both the House Commerce and House Science Committees. In July of 1997, the Science Committee, on a voice vote, approved an amended version of Ehlers’s Funding Act ("Amended Funding Act"). The Amended Funding Act refines the federal funding prohibition to cover research "that includes the use of human somatic cell nuclear transfer technology to produce an embryo." Ehlers’s Funding Act only covered research that produced a human clone: it did not ban the use of federal funds for cloning experiments on human embryos. Thus, the Funding Act would not have precluded federal funding for researchers who use nuclear transplantation on embryos, but do not implant the cloned embryos, because a human clone would not result. The Amended Funding Act makes it clear that the funding ban extends to nuclear transfer cloning experiments involving human embryos.

The Amended Funding Act also defines "human somatic cell nuclear transfer" as "transferring the nucleus of a human somatic cell into an oocyte from which the nucleus has been removed or rendered inert." Defining "somatic cell" to include the "cell of an embryo, fetus, child, or adult" clearly signals the intent to prohibit nuclear transplantation cloning using either adult or embryonic cells. To allay fears of the biotechnology industry, the Amended Funding Act specifically provides that the Act shall not restrict scientific research involving "the use of somatic cell nuclear transfer or other cloning technologies to clone molecules, DNA, cells other than human embryo cells, or tissues[]."

Representative Ehlers also introduced the Human Cloning Prohibition Act ("Cloning Act"), which imposes an outright ban on nuclear

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160 On January 28, 1998, Representative Cliff Steams of Florida and Representative Roger Wicker of Mississippi introduced the Human Cloning Research Prohibition Act ("Stearns/Wicker Act"), legislation almost identical to Ehlers’s Amended Funding Act. See Human Cloning Research Prohibition Act, H.R. 3133, 105th Cong. (1998). The main difference is a change in the language describing the prohibited activities. The Stearns/Wicker Act prohibits the use of federal funds for "research that includes the use of human somatic cell nuclear transfer technology to produce an oocyte that is undergoing cell division toward development of a fetus." Id. § 2(a). Ehlers’s Amended Funding Act contains a prohibition on federal funding of somatic nuclear transfer "to produce an embryo." H.R. 922 § 2(a).

161 H.R. REP. NO. 105-239, at 2 (1997) (stating the amended version of H.R. 922 § 2(a)).
162 Id. (stating the amended version of H.R. 922 § 2(a)(1)).
163 Id. (stating the amended version of H.R. 922 § 2(a)(2)).
164 Id. (stating the amended version of H.R. 922 § 4(1)).
transplantation cloning. The Cloning Act deems it unlawful "for any person to use a human somatic cell for the process of producing a human clone" and imposes a maximum fine of $5000 for such unlawful conduct.

Despite the early flurry of legislative activity, congressional attention to cloning waned as the fall of 1997 approached. Congress's reaction seemed to mirror that of the general public. Lori Andrews, a noted legal scholar on issues of reproduction, observed that the time from "horrified negation" to "very slow but steady acceptance" of cloning by the public as a "reproductive technology" had been strikingly brief. "I absolutely think the tenor has changed," Ms. Andrews said. People who said human cloning would never be done "are now saying, "Well, the risks aren't that great," she said." This short-lived "acceptance" (or perhaps inattention) to cloning changed with the appearance of Dr. Seed.

In December of 1997, Dr. Richard Seed, an Illinois physicist, told the audience at a Chicago meeting on the legal and ethical implications of cloning that he planned to open a clinic to perform human cloning. Apparently, members of the audience ignored him, but an interview on National Public Radio in early January of 1998 made Dr. Seed a household name and revived the debate on cloning.

Dr. Seed does not consider cloning to be unethical. In his opinion, cloning offers a way for "man to become one with God." By cloning himself, man can "have almost as much knowledge and almost as much

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166 Id. § 2(a).
167 See id. § 2(b).
168 Dr. Sophia Kleegman and Dr. Sherwin Kaufman have developed a theory that the public moves through different stages toward acceptance of new reproductive technologies. At first, the public reacts with "horrified negation." After a period of time, however, the public passes into a stage known as "negation without horror." Finally, the public comes to accept the new technology, passing from "slow and gradual curiosity, study, evaluation" to "a very slow and steady acceptance." See Kolata, Why Not, supra note 111, at A17 (discussing SOPHIA J. KLEEGMAN & SHERWIN A. KAUFMAN, INFERTILITY IN WOMEN: DIAGNOSIS AND TREATMENT (1966)).
169 Id. (quoting Lori Andrews, Professor of Law at Chicago-Kent College of Law).
170 Id. (quoting Lori Andrews, Professor of Law at Chicago-Kent College of Law).
171 See Kolata, Human Cloning Proposal, supra note 122, app. at 22.
173 Id.
power as God." The outrageousness of Dr. Seed's statements thrust him into the limelight. Major newspapers and television and radio shows all carried stories about him. Some questioned whether Dr. Seed, a physicist with many failed business endeavors, no capital of his own, and a personality kindly described as "eccentric," could actually clone a human being. The media certainly created a frenzy with its reporting on Dr. Seed. Nonetheless, this coverage had an important effect--it revived the public discussion of cloning. And Congress, once again, responded with a flurry of legislation.

On February 3, 1998, Senator Bond introduced another piece of anti-cloning legislation, entitled the Human Cloning Prohibition Act of 1998, which was referred to the Committee on the Judiciary. On the same day, Senate Majority Leader Trent Lott introduced identical legislation, entitled the Human Cloning Prohibition Act ("Bond/Lott Act"), which, on February 4, was placed on the Senate's calendar.

The Bond/Lott Act imposes criminal and civil penalties against "any person or entity, public or private, in or affecting interstate commerce, [who] use[s] human somatic cell nuclear transfer technology." The Act also defines "human somatic cell nuclear transfer technology" as the transfer of human somatic cell nuclear material into an enucleated human egg to produce an embryo; thus, embryo splitting is not within the

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174 Id.
176 See Johnson, supra note 175; Nash, supra note 175.
179 A person convicted under the Human Cloning Prohibition Act is subject to a maximum of 10 years in prison, fines amounting to twice the gross pecuniary gain obtained from the illegal cloning activity, or both. See id. § 3(a).
180 Id.
181 Id.
Act’s purview. Finally, the Bond/Lott Act creates the National Commission to Promote a National Dialogue on Bioethics, explains the Commission’s duties, and provides the qualifications and selection methods for Commission members. 182 Additionally, the Act requires the Commission to report annually to Congress. 183

In an unusual move, the Bond/Lott Act came up for debate on the Senate floor without first wending its way through a Senate committee. 184 Senator Kennedy of Massachusetts and Senator Dianne Feinstein of California filibusted the Act in order to prevent floor debate. 185 Supporters of the Bond/Lott Act proved unable to obtain the necessary sixty votes to end the filibuster, in part because many senators expressed concern that the Act would unnecessarily impede scientific research. 186

The cloning legislation introduced by Senators Feinstein and Kennedy represents a very different conception of the balance between scientific inquiry and embryonic rights than the view reflected in the Bond/Lott Act. In early February of 1998, Senators Feinstein and Kennedy introduced the Prohibition on Cloning of Human Beings Act of 1998 (“Feinstein/Kennedy Act”). 187 The Feinstein/Kennedy Act is quite similar to the CPA. It imposes stiff fines against any person or legal entity that attempts to implant an embryo created by nuclear transplantation cloning. 188 Both acts contain the
same congressional findings, although the Feinstein/Kennedy Act adds findings demonstrating cloning’s effect on interstate commerce. Unlike the CPA, the Feinstein/Kennedy Act clearly prohibits only the implantation of a cloned embryo created through nuclear transplantation technology, stating, “[i]t shall be unlawful for any person or other legal entity, public or private—(1) to implant or attempt to implant the product of somatic cell nuclear transfer into a woman’s uterus . . . .” The Act also prohibits the use of federal funds to create human clones for such implantation.

This language permits research on both human embryonic and adult cells using nuclear transfer technology, provided scientists do not implant the resulting clone. In addition, nothing in the Feinstein/Kennedy Act prevents clinics from engaging in embryo splitting research or creating a human clone through embryo splitting.

The Feinstein/Kennedy Act, like the CPA, requires the NBAC to report on the scientific, ethical, and social implications of cloning. Unlike the Bond/Lott Act, the Feinstein/Kennedy Act does not permanently ban the implantation of embryos created through nuclear transfer. The Feinstein/Kennedy Act’s prohibitions expire within ten years of enactment; the CPA’s prohibitions terminate within five years of enactment. Finally, unlike any other piece of anti-cloning legislation, including the CPA, the Feinstein/Kennedy Act contains a preemption provision, making clear its intent to preempt all state and local laws prohibiting or restricting somatic cell nuclear transfer or other forms of cloning research.

is greater. Id. The Attorney General may apply for injunctive relief against violators. See id. Finally, both real and personal property used in violating the Act is subject to forfeiture. See id.

189 See id. § 2(13).
190 See supra note 137 and accompanying text.
191 S. 1611 § 4.
192 See id.
193 See id.
195 See S. 1611 § 4.
197 See S. 1611 § 4.
3. Prohibition of Nuclear Transplantation Cloning and Embryo Splitting

The Human Cloning Prohibition Act ("Campbell Act"), introduced by Senator Ben Nighthorse Campbell of Colorado,198 is the only anti-cloning bill that arguably covers embryo splitting, as well as nuclear transfer using human embryonic or adult cells. Because the Act is so poorly drafted, however, Senator Campbell's legislative intentions are less than clear.199

The Campbell Act bans the use of federal funds to "knowingly conduct or support any project of research the purpose of which is to clone a human being or otherwise create a human embryo."200 The Act also imposes civil penalties not exceeding $5000 for each violation, and makes violators ineligible for any federal research money for a period of five years following the violation.201

4. Evaluation of Current Legislative Efforts

A number of problems plague the current legislative proposals to regulate or ban cloning. First, a number of states have either enacted or introduced cloning legislation, yet few of the federal bills address the preemption question. Second, several bills suffer from sloppy or imprecise drafting, resulting in unintended consequences. Finally, even those bills that accurately reflect their sponsors' intent do not provide adequate philosophical justification for distinguishing among the various forms of cloning.

a. Preemption202

Only the Feinstein/Kennedy Act contains a preemption provision. The Act provides for the preemption of "any State or local law that prohibits

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199 See infra Part II.B.4.b.
200 S. 1574 §3(b). The bill contains a typographical error so that there are two section 3s. The first is entitled "Prohibition on Human Cloning," while the second is called "Enforcement." The prohibitions referred to above appear in the first "section 3."
201 See id. §3(a), (b). The fines and ineligibility provisions referred to above appear in the second "section 3."
202 This Article does not address the state Commerce Clause issues. First, if Congress does not regulate or ban cloning, may the states do so, or would state regulation violate the dormant Commerce Clause? Second, if Congress does regulate, but fails to include express language preempting state regulation, would federal law preempt state legislation?
or restricts research regarding, or practices constituting, somatic cell nuclear transfer, mitochondrial or cytoplasmic therapy, or the cloning of molecules, DNA, cells, tissues, organs, plants, animals, or humans.’

This broad preemption language would apply to most of the current state anti-cloning laws and proposed legislation. First, the Act preempts state laws that restrict nuclear transfer research of any kind. Second, it also preempts state laws that ban any form of human cloning, including embryo splitting. The Feinstein/Kennedy Act clearly indicates that the states should not regulate in this area, at least for the ten-year period of the Act.

There are important reasons for Congress to address expressly the preemption question in any anti-cloning legislation. First, California, Rhode Island, and Michigan already have enacted legislation that either bans human cloning or imposes a moratorium on cloning activities within the state, while Missouri bans the use of state funds for human cloning research. In addition, legislators in a number of other states have

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204 See id.
205 In 1997, California adopted a five-year moratorium on nuclear transplantation cloning. See CAL. HEALTH & SAFETY CODE § 24185 (West Supp. 1998). The law amends California’s Health and Safety Code to provide monetary penalties for cloning. See id. § 24187. Cloning is defined as the transfer of the nucleus of an adult differentiated cell into an enucleated human ovum. Penalties range from $250,000 for individual offenders to $1 million for corporate offenders, including hospitals and clinics. See id. California law also provides that businesses licensed pursuant to the provisions of California’s Business and Professions Code will have their licenses revoked for violating the law’s five-year cloning moratorium. See CAL. BUS. & PROF. CODE §§ 16004, 16105 (West 1997).

In 1998, Rhode Island followed California’s lead by imposing a five-year moratorium on human cloning. Unlike California, however, Rhode Island enacted legislation that covers embryo splitting, as well as nuclear transplantation cloning of both embryonic and adult cells. See R.I. GEN. LAWS § 23-16.4-1 (1998) (“The purpose of this legislation is to place a ban on the creation of a human being through division of a blastocyst, zygote, or embryo or somatic cell nuclear transfer . . . .”). The Act’s definition of “somatic cell” as “any cell of a conceptus, embryo, fetus, child or adult” makes clear the legislature’s intent to prohibit nuclear transplantation cloning using either embryonic or adult human somatic cells. Id. § 23-16.4-2(B). Penalties range from $250,000 for individual offenders to $1 million for corporate offenders. See id. § 23-16.4-3(A), (B).

Michigan also enacted anti-cloning legislation in 1998. Unlike California and Rhode Island, Michigan did not include a sunset clause in its legislation. Instead, Michigan has imposed an outright ban on nuclear transplantation cloning,
introduced various anti-cloning bills. Most of the bills make cloning a

apparently involving either embryonic or adult human somatic cells. See Mich. Comp. Laws § 333.16274(5)(c) (1998) (defining a human somatic cell as "a cell of a developing or fully developed human being"). Thus, embryo splitting is not a prohibited activity under Michigan law. Michigan also bans the use of state funds for cloning. See id. § 333.26403. Finally, Michigan provides administrative and civil penalties for violation of the law's cloning prohibition by health professionals licensed pursuant to the state's Public Health Code. See id. §§ 333.16274(3), 333.16275.

While Missouri does not ban human cloning, the state recently enacted legislation prohibiting the use of state money to fund human cloning research. See Mo. Rev. Stat. § 1.217 (1998). Cloning is defined as "the replication of a human person by taking a cell with genetic material and cultivating such cell through the egg, embryo, fetal and newborn stages of development into a new human person." Id.

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Given the variety of state anti-cloning bills, Congress needs to make clear what role the states may play, if any, in restricting or banning various kinds of cloning technology.

Second, uniformity is critical in this area of law. To begin with, poorly drafted legislation on the state level may unnecessarily impede legitimate scientific work. More importantly, cloning is unlike other problems such as gun control. The first human clone has not yet been created. This provides policymakers with a period of time in which to investigate the legal, ethical, and social implications of cloning. If there is a patchwork of state legislation, with some states allowing certain technologies and others banning them, there may be a "race to the bottom." In other words, a state may lower legal, ethical, and social safeguards...
against human cloning in order to attract revenues for the state. Once the first human clone has been created, it will prove extraordinarily difficult to turn back the clock.

b. Drafting Errors

Most of the current legislative proposals to regulate or ban cloning suffer, in varying degrees, from either sloppy drafting and/or questionable distinctions. The Bond Act, Ehlers’s Funding Act, and Ehlers’s Cloning Act are less than 100 words long, hardly adequate to address a subject as complex as cloning. In addition, neither Ehlers’s Funding Act nor his Cloning Act defines the terms “clone” or “somatic cell.”

A number of the bills are poorly written, leading to unintended consequences. Both the Bond Act and the Campbell Act use circular definitions of cloning, thereby excluding activities that the sponsors apparently desired to include in the bills’ prohibitions. For example, the Campbell Act defines “cloning” as the creation of a human being by using somatic cell nuclear transfer to “initiate a pregnancy that could result in the birth of a human being.” This definition only prohibits cloning that results in the live birth of a cloned child; it does not restrict any form of cloning research. Yet, the Campbell Act prohibits “research for the purpose of cloning a human being or otherwise creating a human embryo.” The absence of a comma before the “or” indicates that the drafter intended to ban research that otherwise would create a human embryo. It makes little sense to define “cloning” to allow all forms of cloning, including embryonic cloning, so long as a child is not born as a result, yet ban any research that leads to the creation of a human embryo. The two prohibitions conflict with one another. In addition, the Campbell Act seems to ban in vitro fertilization, which creates a human embryo by combining human sperm and egg outside the human body.


See, e.g., supra Part II.B.1.


Id. § 3(a)(2) (emphasis added).

The Campbell Act has at least two other drafting errors. First, the Act’s definition of cloning is grammatically incorrect, leading to a nonsensical prohibition.

[T]he terms “clone” and “cloning” mean the practice of creating or
The language of Ehlers's Funding Act also is problematic. Ehlers, however, recognized some of the semantic shortcomings in his Funding Act and offered substitute language in the nature of an amendment to the Science Committee. The Amended Funding Act bans federal funding of nuclear transplantation cloning using either embryonic or adult human cells. Ehlers amended the Funding Act to make clear his intention to cover embryonic cloning; however, he did not accomplish his purpose because the language of the Amended Funding Act does not cover embryo splitting, a form of cloning. Embryo splitting does not involve the transfer of either adult or embryonic cell nuclei into enucleated eggs. As a result, funding bans on nuclear transfer do not cover embryo splitting.

The Bond/Lott Act suffers from the same problem. It defines the prohibited activity as nuclear transfer, which, by definition, does not apply to embryo splitting. Yet, both Bond and Ehlers clearly favor bans on embryonic research. The Bond/Lott Act contains a finding clearly indicating an intent by the drafters to prohibit research on embryos: "[I]t is right and proper to prohibit the creation of cloned human embryos that would never have the opportunity for implantation and that would therefore be created solely for research that would ultimately lead to their destruction."

Bond also told reporters that those who favor embryo research "'would lead us down the slippery slope that would allow the creation of masses of human embryos as if they were assembly line products, not human life.'" In commenting on the difference between the Bond/Lott Act and the Feinstein/Kennedy Act, Ehlers remarked that Feinstein and Kennedy attempting to create a human being by transferring the nucleus from a human cell from whatever source into a human egg cell from which the nucleus has been removed for the purpose of, or to implant, the resulting product to initiate a pregnancy that could result in the birth of a human being.

Id. § 3(c) (emphasis added). Eliminating the words inside the commas leaves the language, "the purpose of... the resulting product to initiate a pregnancy," which makes no sense. Second, because the Campbell Act contains two section 3s, the Act's enforcement section creates penalties for violation of the Act's findings, not the Act's prohibited activities. See supra notes 199-200.

215 See supra note 163 and accompanying text.
216 See supra Part I.A.1.c.
217 See supra Part I.A.1.c.
218 See supra note 181 and accompanying text.
220 Lewis, supra note 186 (quoting Senator Christopher Bond).
"'want to continue research with embryos and we want to stop it.'”

Therefore, the question is why both the Bond/Lott Act and Ehlers's Amended Funding Act do not expressly ban embryo splitting.

One explanation for these legislative oversights is that Bond, Lott, and Ehlers considered a ban on embryo splitting unnecessary given the current ban on federal funding for non-therapeutic embryo research. Since all forms of cloning research require experimentation on embryos, a federal funding ban on embryo research amounts to a federal funding ban on all human cloning research.

This explanation, however, does not account for the Bond/Lott Act, which bans research involving nuclear transplantation cloning, whether carried out by public or private entities. The federal funding ban on embryo research does not extend to persons or entities that do not accept federal funds. Therefore, the Bond/Lott Act leaves an important, unintended gap in coverage: research involving embryo splitting and creation of human clones through embryo splitting are not banned, provided federal funds are not used.

Moreover, it is clear that Ehlers intended to create a funding prohibition coextensive with current federal bans on embryo research. During the markup of his Amended Funding Act, Ehlers noted that

the issue of embryo research is a very difficult issue. I decided the best way out of this was simply to use the language that has been used before by the Congress, that was passed by the Congress and signed into law by the President in the annual appropriations bills of Labor/HHS [Health and Human Services].

In addition, the Amended Funding Act defines protected scientific research as "somatic cell nuclear transfer or other cloning technologies to clone . . .


223 See supra notes 180-81 and accompanying text.

cells other than human embryo cells." Using this definition, embryo splitting, which is a form of cloning technology used to clone human embryonic cells, does not qualify as protected scientific activity. Yet, the Amended Funding Act does not ban the use of federal funds for embryo splitting. Thus, Ehlers did not want to protect research involving embryo splitting, but that is exactly what his definition of cloning accomplishes.

This is important if Ehlers intends his Cloning Act to ban all forms of cloning, including research on embryos. Given Ehlers’s views on embryo research, the definition of cloning in his Amended Funding Act is problematic. The current federal ban on funding for embryo research partially fills in the gaps left by the Amended Funding Act’s definition of cloning. The federal funding ban, however, would not cover a similar definitional gap in the Cloning Act because that Act is an outright ban on both private and public activity, not a withdrawal of federal funds for certain forms of research.

c. Philosophical Distinctions

Both the CPA and the Feinstein/Kennedy Act only prohibit the use of nuclear transplantation cloning and only if the product of that cloning is implanted in a woman’s uterus to give birth to the clone. This narrow prohibition raises two important questions. First, why do the CPA and the Feinstein/Kennedy Act ban only nuclear transplantation cloning? Second, why does the prohibition in both Acts apply only to the implantation and actual creation of a newborn human clone?

Neither the CPA nor the Feinstein/Kennedy Act bans the creation of human clones accomplished through embryo splitting. If a scientist transfers the cell nucleus from a human somatic cell into an enucleated ovum and implants the resulting clone, he or she would violate the CPA and the Feinstein/Kennedy Act. If the same scientist "breaks apart" a four-celled embryo, cultures each of the four totipotent cells, and implants each, four identical children will be born, but she will not violate the CPA or the

225 Id. at 2 (citing H.R. 922, 105th Cong. § 4(1) (1997)) (emphasis added).
226 The CPA and the Feinstein/Kennedy Act ban the implantation of a clone created by nuclear transfer technology. The CPA, however, also bans the use of nuclear transplantation to "in any other way creat[e] a human being." H.R. Doc. No. 105-97, § 5, at 7 (1997). The CPA, then, seems to address the possibility of creating human clones outside the human body, e.g., in the laboratory.
Feinstein/Kennedy Act. Therefore, the two Acts ban human cloning only when certain technology is used, that is, nuclear transplantation cloning.

One explanation for this distinction is that the sponsors of the bills, unlike the sponsors of the Bond/Lott Act, may have intended to distinguish between embryo splitting and nuclear transplantation cloning. It is less than clear, however, why such distinctions would be drawn. The same dangers—negative eugenics, the loss of individuality, and the objectification of children—result not only from use of individual somatic cells, whether drawn from adult humans or adult embryos, but also from embryo splitting. The goal of embryo splitting is increasing the efficiency of assisted reproductive techniques. The couple’s interests prevail over any potential concern about genetic selection of good embryos or about the individuality of offspring that are created through artificial twinning. While differences do exist between nuclear transplantation cloning and embryo splitting, both raise the specter of negative eugenics and the potential loss of what President Clinton, in his message accompanying the CPA, calls our “God-given individuality.”

The second problem with the Feinstein/Kennedy Act and the CPA is the focus on creation of a human clone. The assumption is that the only harm involved in cloning is the end result—the birth of a human clone. At the moment, cloning is considered unsafe, yet if Congress allows research on embryonic and adult cell cloning to continue, scientists may overcome these safety concerns. The issue, then, is not safety alone. Should society allow cloning if it is medically safe, i.e., no physical harm to the clone? Such a narrow definition of harm ignores other important values, such as the “right to an open future.” If scientists perfect cloning techniques to eliminate physical harms, it is likely that fertility specialists and infertile couples will exert pressure to actually use the technology, asserting a right of individual choice. “The American attitude is one of ‘show me the money, and the technology will become available somehow.’

228 See discussion supra Parts I.A.1.d and I.B.2.
229 See supra note 106.
230 On June 9, 1997, President Clinton held a news conference in the Rose Garden at the White House to announce his transmittal to Congress of the CPA. President Clinton noted that his legislation would “reaffirm our most cherished belief about the miracle of human life and the God-given individuality each person possesses.” Remarks Announcing the Proposed “Cloning Prohibition Act of 1997,” 33 WKLY. COMP. PRES. DOC. 844, 845 (June 9, 1997).
231 See CLONING HUMAN BEINGS, supra note 3, at 108.
232 See supra note 103 and accompanying text.
... [W]e need to give serious thought to whether our *laissez-faire* market mechanisms are the best determinants of how children should be brought into the world.\textsuperscript{233} The absence of effective controls on other forms of reproductive technology has created this “anything goes” mentality, fed by couples desperate to conceive. At a minimum, the lessons learned from the excesses of other assisted reproductive technology techniques\textsuperscript{234} should advise caution in crafting underinclusive prohibitions on cloning technology.

III. THE COMMERCE CLAUSE ANALYSIS

A. Congress's Power to Regulate Commerce\textsuperscript{235}

Congress derives its power to regulate interstate commerce from Article I of the Constitution, which empowers Congress to “regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.”\textsuperscript{236} The representatives to the Constitutional Convention did not debate the meaning of the Commerce Clause; hence, no record exists of its meaning.\textsuperscript{237} Nevertheless, there is a long history of Supreme Court case law on the Commerce Clause that addresses the legitimacy of both the power of Congress and the power of the states to enact legislation that affects interstate commerce.

Between the adoption of the Constitution and the Civil War, the Supreme Court did not find any federal commercial legislation to be constitutionally invalid.\textsuperscript{238} However, the Court did speak to the issue of congressional power to regulate interstate commerce during this time. The most famous case is *Gibbons v. Ogden*,\textsuperscript{239} decided in 1824. *Gibbons* originated as an action for injunctive relief by Aaron Ogden, who had been

\begin{enumerate}
\item Andrews, *supra* note 103, at B5.
\item See *Cloning Human Beings, supra* note 3, at 98 (“The history of infertility treatment—especially that of in-vitro fertilization—demonstrates that where there is a sizeable and well financed demand for a novel service, there will be professionals willing to provide it.”).
\item For a general history of the Supreme Court’s Commerce Clause jurisprudence, see John E. Nowak & Ronald D. Rotunda, *Constitutional Law* §§ 4.1–4.9, at 131–64 (5th ed. 1995).
\item U.S. Const. art. I, § 8, cl. 3.
\item See Nowak & Rotunda, *supra* note 235, § 4.3, at 137.
\item See id. § 4.4, at 139–40.
\item Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1 (1824).
\end{enumerate}
assigned an exclusive right pursuant to New York state law to operate steamboats on New York waterways. Ogden sought an injunction to enforce this right against Thomas Gibbons, who operated two steamboats between New Jersey and New York pursuant to an act of Congress.

In an opinion authored by Chief Justice John Marshall, the Supreme Court held that the New York law was unconstitutional because it violated the Supremacy Clause. In the course of his opinion, however, Marshall established general principles that, to this day, govern in Commerce Clause adjudication. First, Marshall gave an expansive, rather than a restrictive, definition of commerce.

The counsel for [Ogden] would limit [commerce] to traffic, to buying and selling, or the interchange of commodities, and do not admit that it comprehends navigation. This would restrict a general term, applicable to many objects, to one of its significations. Commerce, undoubtedly, is traffic, but it is something more: it is intercourse. It describes the commercial intercourse between nations, and parts of nations, in all its branches, and is regulated by prescribing rules for carrying on that intercourse.

Defining commerce, however, was not the end of the inquiry for Marshall. The Commerce Clause provides that Congress may regulate commerce "among the several States." For Marshall, the question was how far Congress could regulate. In other words, did Congress’s power to regulate interstate commerce stop at a state’s boundaries? Marshall answered this question in the negative: if a commercial transaction begins in interstate commerce, simply because it ultimately rests within a state’s internal boundaries does not except such commerce from Congress’s power. Marshall did, however, recognize that Congress’s power to regulate commerce did not extend to “the exclusively internal commerce of a State.” Finally, Marshall stated that the only limitations on congressional

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240 See id. at 2.
241 See id. (noting that Gibbons responded by asserting that his boats “were duly enrolled and licensed, to be employed in carrying on the coasting trade, under the act of Congress, passed the 18th of February, 1793, c. 8, entitled ‘An act for enrolling and licensing ships and vessels to be employed in the coasting trade and fisheries, and for regulating the same’.”).
242 Id. at 189-90.
243 U.S. CONST. art. I, § 8, cl. 3.
244 See Gibbons, 22 U.S. (9 Wheat.) at 194-96.
245 Id. at 195.
power to regulate interstate commerce were those provided in the text of the Constitution itself.\textsuperscript{246}

Marshall's expansive vision of Congress's Commerce Clause powers governs today, but that has not always been the case.\textsuperscript{247} During the first 100 years of the nation's history, Congress enacted few commercial laws; hence, there was little Commerce Clause case law by the Supreme Court.\textsuperscript{248} In the period between 1888 and 1933, the Tenth Amendment,\textsuperscript{249} which reserves to the states those powers not specifically delegated to the federal government, drove the Supreme Court's Commerce Clause case law.\textsuperscript{250} As a result, the Court struck down legislation that interfered with the reserved powers of the states, unless Congress demonstrated a "direct" connection to interstate commerce.\textsuperscript{251}

The Supreme Court and the executive branch collided during the 1930s because the Court invalidated a number of pieces of New Deal legislation.\textsuperscript{252} In early 1937, the Court's willingness to find federal legislation unconstitutional changed with President Roosevelt's proposal to "pack" the Court.\textsuperscript{253} Although Congress rejected his plan, it had the desired effect: the Court restrained its inclination to declare acts of Congress unconstitutional.\textsuperscript{254}

Today, the Supreme Court accords great deference to congressional statutes enacted pursuant to the Commerce Clause. Over the past sixty years, the Court rarely has invalidated a piece of federal legislation on the grounds that Congress exceeded its authority under the Commerce Clause. Thus, prior to the Supreme Court's recent decision in \textit{United States v. Lopez},\textsuperscript{255} most lawyers and constitutional scholars realized that most federal legislation, if challenged as violative of the Commerce Clause, would survive constitutional scrutiny. However, commentators struggled to articulate a coherent rationale underlying the Supreme Court's Com-

\textsuperscript{246} See id. at 196.

\textsuperscript{247} See NOWAK & ROTUNDA, supra note 235, § 4.4, at 141.

\textsuperscript{248} See id. § 4.4, at 139.

\textsuperscript{249} U.S. CONST. amend. X ("The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.").

\textsuperscript{250} See NOWAK & ROTUNDA, supra note 235, § 4.4, at 145.

\textsuperscript{251} See id.

\textsuperscript{252} See id. § 4.7, at 151-55.

\textsuperscript{253} See id. § 4.7, at 154-55.

\textsuperscript{254} See id. § 4.7, at 155.

The Supreme Court’s failure to articulate clear limitations on congressional authority under the Commerce Clause has created much confusion, which the Court’s decision in _Lopez_ has done little to eliminate.

_Lopez_ has generated a flurry of scholarly debate. It is unclear how _Lopez_ will shape the future of federal Commerce Clause litigation, but an analysis of the opinion suggests that _Lopez_ does not herald a radical shift in the deference the Court has accorded to federal legislation enacted pursuant to the Commerce Clause.

1. United States v. _Lopez_258

_Lopez_ involved a challenge to section 922(q) of the Gun-Free School Zones Act of 1990,259 which criminalized the possession of “a firearm at a place that the individual knows, or has reasonable cause to believe, is a school zone.”260 In March of 1992, Lopez, a twelfth grade student, was arrested and charged with violating section 922(q).261 Lopez sought

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257 See generally Kathleen F. Brickey, _Crime Control and the Commerce Clause: Life After Lopez_, 46 CASE W. RES. L. REV. 801 (1996) (examining the effect of _Lopez_ on federal criminal law and on the congressional effort to federalize crime); Lino A. Graglia, United States v. _Lopez_: _Judicial Review Under the Commerce Clause_, 74 TEX. L. REV. 719 (1996) (suggesting that the Court should withdraw from review of congressional legislative authority); Regan, _supra_ note 256 (suggesting that the Court should evaluate congressional commerce power based upon the need for federal action and the inability of the states to address the problem); Robert Wax, Comment, United States v. _Lopez_: _The Continued Ambiguity of Commerce Clause Jurisprudence_, 69 TEMPLE L. REV. 275 (1996) (arguing that the Court both misused precedent and distorted various tests in _Lopez_, resulting in an ambiguous and inefficient interpretation of the Commerce Clause).


260 _Id_. § 922(q)(2)(A).

261 See _Lopez_, 514 U.S. at 551.
dismissal of the charges on the grounds that Congress lacked the authority
to legislate with regard to local public schools.\textsuperscript{262} The federal district court
denied the motion and, at the conclusion of a bench trial, sentenced Lopez
to six months in prison.\textsuperscript{263} Lopez appealed, and the Court of Appeals for the
Fifth Circuit reversed his conviction.\textsuperscript{264} The Fifth Circuit found section
922(q) to be an invalid exercise of Congress’s Commerce Clause powers.\textsuperscript{265} The Supreme Court granted certiorari, and in a five-to-four decision, the
Court upheld the Fifth Circuit’s decision.

Justice Rehnquist began the majority opinion with a brief history of the
Supreme Court’s decisions on the federal Commerce Clause.\textsuperscript{266} From those
decisions he gleaned three categories of activities that the Court has found
are permissible areas for federal regulation.

First, Congress may regulate the use of the channels of interstate
commerce. Second, Congress is empowered to regulate and protect the
instrumentalities of interstate commerce, or persons or things in interstate
commerce, even though the threat may come only from intrastate
activities. Finally, Congress’ commerce authority includes the power to
regulate those activities having a substantial relation to interstate
commerce, i.e., those activities that substantially affect interstate
commerce.\textsuperscript{267}

After quickly rejecting the first two possibilities as applicable to
section 922(q), Rehnquist proceeded to analyze the third source of
congressional commerce authority—substantial effect on interstate
commerce.\textsuperscript{268} Rehnquist concluded that the activity proscribed by section
922(q) did not substantially affect interstate commerce based upon three
separate arguments.\textsuperscript{269}

First, he concluded that the possession of a handgun constitutes
criminal, not commercial activity. “Section 922(q) is a criminal statute that
by its terms has nothing to do with ‘commerce’ or any sort of economic

\textsuperscript{262} See id. at 552.
\textsuperscript{263} See id.
\textsuperscript{264} See United States v. Lopez, 2 F.3d 1342 (5th Cir. 1993), aff’d, 514 U.S. 549
\textsuperscript{265} See id. at 1367-68.
\textsuperscript{266} See Lopez, 514 U.S. at 552-59.
\textsuperscript{267} Id. at 558-59 (citations omitted).
\textsuperscript{268} See id. at 559.
\textsuperscript{269} See id. at 560-63.
enterprise, however broadly one might define those terms.\textsuperscript{270} Second, he found that the statute did not require proof that the possession of the firearm had "an explicit connection with or effect on interstate commerce."\textsuperscript{271} Finally, Rehnquist admitted that Congress normally does not need to make findings as to the burdens a proscribed activity has on interstate commerce.\textsuperscript{272} However, he noted that where the impact of an activity on interstate commerce is not "visible to the naked eye,"\textsuperscript{273} the absence of such findings makes it more difficult for the Court to make the connection to interstate commerce.

Justices Thomas and Kennedy wrote concurring opinions,\textsuperscript{274} but it is Justice Kennedy's opinion that suggests that Lopez is not a radical departure from prior Supreme Court Commerce Clause jurisprudence. As did Justice Rehnquist, Justice Kennedy identified the proscribed behavior in Lopez as noncommercial and without an "evident commercial nexus."\textsuperscript{275} In addition, he found that section 922(q) intruded into an area traditionally considered to be within the realm of state control—education.\textsuperscript{276} However, Justice Kennedy cautioned against a return to an earlier conception of commerce that worked in the eighteenth century, but which would fail if used in today's national, unified market.

[T]he Court as an institution and the legal system as a whole have an immense stake in the stability of our Commerce Clause jurisprudence as

\textsuperscript{270} Id. at 561 (footnote omitted). One commentator has criticized Rehnquist's reading of the Commerce Clause for requiring the prohibited activity to be commercial in nature.

But even if the leading cases involve commercial behavior, they do not rely on Justice Rehnquist's commercial-noncommercial distinction.... The focus is on effects on commerce, not on the commercial nature of the behavior regulated. So Justice Rehnquist's suggestion, while not inconsistent with the existing cases, is a highly tendentious gloss on them. Regan, supra note 256, at 564 (footnote omitted).

\textsuperscript{271} Lopez, 514 U.S. at 562. Rehnquist relied upon United States v. Bass, 404 U.S. 336 (1971), in which the Supreme Court overturned a conviction for firearm possession because the federal government had failed "to show the requisite nexus with interstate commerce." Lopez, 514 U.S. at 562 (quoting Bass, 404 U.S. at 347).

\textsuperscript{272} See Lopez, 514 U.S. at 562.

\textsuperscript{273} Id. at 563.

\textsuperscript{274} See id. at 568 (Kennedy, J., concurring); id. at 584 (Thomas, J., concurring).

\textsuperscript{275} Id. at 580 (Kennedy, J., concurring).

\textsuperscript{276} See id. at 580-81 (Kennedy, J., concurring).
it has evolved to this point. *Stare decisis* operates with great force in counseling us not to call in question the essential principles now in place respecting the congressional power to regulate transactions of a commercial nature. That fundamental restraint on our power forecloses us from reverting to an understanding of commerce that would serve only an 18th-century economy . . . ; it also mandates against returning to the time when congressional authority to regulate undoubted commercial activities was limited by a judicial determination that those matters had an insufficient connection to an interstate system. Congress can regulate in the commercial sphere on the assumption that we have a single market and a unified purpose to build a stable national economy.  

This hesitation to revisit Commerce Clause history, when coupled with the four dissenting votes cast in *Lopez*, makes it unlikely that the decision heralds a new era in Commerce Clause litigation.

2. **Will Federal Cloning Legislation Survive Scrutiny under Lopez?**

Despite the confusion surrounding *Lopez*, the decision appears to impose no impediment to passage of the CPA, the Feinstein/Kennedy Act, or the Bond/Lott Act. First, human cloning research is not a purely intrastate activity. The difficulty that the Supreme Court encountered in *Lopez* was in concluding that an intrastate activity—possession of a firearm—substantially affected interstate commerce. The Supreme Court developed the “affecting commerce” test “to define the extent of Congress’s power over purely intrastate commercial activities that nonetheless have substantial interstate effects.” As a result of *Lopez*, Congress may regulate the movement of persons or goods across state lines without demonstrating a substantial impact on interstate commerce. Thus, the “affecting commerce” test only comes into play when Congress

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277 *Id.* at 574 (Kennedy, J., concurring).

278 Justices Stevens, Souter, and Breyer each wrote separate dissenting opinions. *See id.* at 602 (Stevens, J., dissenting); *id.* at 603 (Souter, J., dissenting); *id.* at 615 (Breyer, J., dissenting). In addition, Justices Stevens, Souter, and Ginsburg joined in Justice Breyer’s dissent. *See id.* at 615 (Breyer, J., dissenting).

279 *See infra* notes 290-98 and accompanying text.


281 *See Regan,* *supra* note 256, at 560 (footnote omitted) (“Congress may prohibit the movement across state lines of anything it pleases.”).
regulates intrastate, noncommercial activity with a questionable commercial impact.

But cloning is clearly a commercial activity. Treating infertility is big business. Each cycle of in vitro fertilization (“IVF”) can cost between $5000 to $10,000. Because IVF is inefficient, it may cost a couple anywhere from $40,000 to $200,000 to have a child using IVF technology. Other costs, such as the rapidly increasing price of donor eggs, may add to the basic fees for IVF.

Cloning may increase the efficiency of IVF. At present, a woman undergoing IVF must take hormones in order to stimulate her ovaries to produce multiple eggs per menstrual cycle. Cloning eliminates the need for ovarian stimulation. One egg can be fertilized outside the body and divided in half through embryo splitting, resulting in identical embryos for implantation. Alternatively, the nuclei from the cells of one embryo may be inserted into donor eggs, resulting in multiple clones of one fertilized ovum. These services, which potentially increase the efficiency of IVF and decrease the risks involved for the woman, could create a whole new market for fertility experts to exploit.

Moreover, the experiments that led to Dolly’s birth clearly reveal the commercial implications and nature of cloning. PPL Therapeutics (“PPL”), a pharmaceutical company working to find more efficient methods to produce human drugs, helped finance the cloning research of Dr. Wilmut and Dr. Campbell. After the announcement of Dolly’s birth, the price of PPL’s stock increased by sixty-seven percent. PPL also has filed for a patent on the cloning technology that resulted in Dolly’s birth.

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283 The success rate, measured by the number of live births for each cycle of egg retrieval and implantation, is approximately 19%. See Ethical Considerations, supra note 25, at 38S.
284 See Silver, supra note 24, at 69.
285 As women age, the probability of becoming pregnant decreases. Thus, some women may choose to use eggs donated by younger women in order to become pregnant. See Lisa Belkin, Pregnant with Complications, N.Y. TIMES MAG., Oct. 26, 1997, at 35. The price of donor eggs for in vitro fertilization recently made the news when a New Jersey fertility clinic offered to pay $5000 for a month’s supply of eggs. See Gina Kolata, Price of Donor Eggs Soars, Setting Off a Debate on Ethics, N.Y. TIMES, Feb. 25, 1998, at A1.
286 See supra note 106.
287 See KOLATA, supra note 2, at 213.
289 See KOLATA, supra note 2, at 220.
Furthermore, cloning research and the facilities that conduct such research do not involve small, intrastate activities. First, research facilities that conduct cloning need scientists. It is unlikely that such facilities would advertise solely within the state in which the facility is located, especially given the scientific training and knowledge required.\(^{290}\) Research also progresses through the sharing of information. Scientists at one facility may communicate with those at facilities in other states, sharing information or even working on collaborative research projects. Second, research institutions cost substantial amounts of money to operate. Without federal funds, these facilities will look to the private sector. It is unlikely that the funding for such facilities will be limited to intrastate sources, and the money certainly will be available. The federal government stopped funding IVF research more than twenty years ago, yet clinics performing IVF have thrived.\(^{291}\)

Finally, existing reproductive facilities draw patients from outside the states in which they operate. The Feinstein/Kennedy Act recognizes the interstate character of reproductive services such as cloning. The Act's findings\(^{292}\) provide that "patients travel regularly across State lines in order to access reproductive services facilities."\(^{293}\) The travel involved in obtaining assisted reproductive services means that not only the patients, but also the "products of biomedical research"\(^{294}\) will move in interstate commerce. This is exactly what happened in York v. Jones.\(^{295}\) In that case, the Yorks, who were residents of New Jersey, underwent in vitro fertilization at a clinic in Virginia.\(^{296}\) When the Yorks moved to California, they

\(^{290}\) See Silver, supra note 24, at 69-70.

\(^{291}\) See Andrews, supra note 103, at B4.

\(^{292}\) Congress ordinarily need not make findings about the effect of a regulated activity on interstate commerce. See Katzenbach v. McClung, 379 U.S. 294, 304 (1964) (citing United States v. Carolene Products Co., 304 U.S. 144, 152 (1938)). This is especially true in a case involving direct movement of persons and goods across state lines, as opposed to a case involving intrastate activity having a substantial effect on interstate commerce. See United States v. Lopez, 514 U.S. 549, 563 (1995) ("But to the extent that congressional findings would enable us to evaluate the legislative judgment that the activity in question substantially affected interstate commerce, even though no such substantial effect was visible to the naked eye, they are lacking here.").


\(^{294}\) Id. § 2(13)(B).


\(^{296}\) See id. at 423.
sued the Virginia clinic, seeking release of one remaining cryopreserved embryo.\textsuperscript{297} Although York did not involve cloning, it demonstrates the interstate nature of such "reproductive services."\textsuperscript{298}

Even if the courts conclude that cloning is an intrastate activity, it differs substantially from the activity that Congress attempted to regulate in Lopez. The Bond/Lott Act provides for criminal penalties, as did section 922(q) of the Gun-Free School Zones Act, and the CPA and Feinstein/Kennedy Act provide stiff monetary penalties for violations.\textsuperscript{299} However, none of the federal cloning bills penalizes an activity that can be described as noncommercial in nature. Section 922(q) penalized the mere possession of a firearm.\textsuperscript{300} The federal anti-cloning bills make unlawful an activity with significant commercial ramifications. Embryonic cloning already has a ready market—infertile couples who would use such cloning in order to increase their chances of bearing a child with their genetic imprint.\textsuperscript{301}

More importantly, the reasons expressed in Justice Kennedy's concurrence in Lopez simply do not apply with equal force to prohibitions on cloning. To begin with, it is not clear that the regulation of medical and scientific research is a subject traditionally reserved to the states, as is education. Moreover, given the overlap between state and federal regulation, how clearly can traditional areas of state concern be delineated?

The Court made another attempt, not twenty years ago, to exploit the concept of areas of traditional state concern, and it gave up the attempt only nine years later because of the indeterminateness of that concept.\ldots 

\textit{[E]ven if we accept for purposes of argument that there are recognizable areas of traditional state concern, in which the Court should be specially solicitous to protect a proper balance of federal and state power, that tells us nothing about how to identify the proper balance, or to know when it is destroyed. Justice Kennedy gives us little indication of how to answer what is, on his formulation, the central question.}\textsuperscript{302}

\textsuperscript{297}See id. at 422.
\textsuperscript{298}It is not clear that cloning is a form of reproduction, as opposed to replication. But the analogy to assisted reproductive technologies is appropriate, considering the fact that embryo cloning has been proposed as an efficient way to solve certain problems associated with \textit{in vitro} fertilization. See Fackelmann, \textit{supra} note 47, at 276.
\textsuperscript{299}See \textit{supra} notes 141-42, 179, 188 and accompanying text.
\textsuperscript{300}See \textit{supra} note 260 and accompanying text.
\textsuperscript{301}See \textit{supra} notes 104-06 and accompanying text.
\textsuperscript{302}Regan, \textit{supra} note 256, at 566 (footnotes omitted).
Even if regulation of medical and scientific discovery falls within the traditional purview of state regulatory power, however, the Court would only reach that issue if it determined that cloning was not a commercial activity. Justice Kennedy objected to the reach of section 922(q) because it not only involved what he concluded was a noncommercial activity, but also intruded into an area traditionally reserved to the states.\textsuperscript{303}

Justice Kennedy also believed it was important to allow the states to experiment with solutions to the problem of guns in the schools. He argued that if "considerable disagreement exists about how to best accomplish [a] goal . . . the theory and utility of our federalism are revealed, for the States may perform their role as laboratories for experimentation to devise various solutions."\textsuperscript{304} Violence in the schools, however, is a far different problem than cloning. The complexity of the scientific, legal, and ethical issues involved in cloning suggests that a federal response might be appropriate. President Clinton already has directed the NBAC to study the issue.\textsuperscript{305} Thus, a qualified panel of experts exists to examine the problems involved and to make coherent recommendations on how to approach the legal and ethical issues.

In addition, the costs of nonuniform regulation must be weighed against the benefits of allowing states to experiment with what forms of cloning they wish to permit. After all, attempting to regulate after the first human clone is created is akin to closing the barn door after letting the horse out. If Congress cannot ban cloning, then the task of regulation falls to the states. The problem, however, is that not all states will ban cloning. Some may ban only certain forms of cloning.\textsuperscript{306} This means that as scientific discovery progresses, enterprising individuals will establish cloning facilities in those states with the most favorable legislation, and forum shopping may result. Allowing each state to define what forms of cloning it will permit means an increased risk that scientists and private companies will seek out states with less restrictive laws in order to continue unregulated scientific experimentation on cloning. The overriding purpose of federal cloning legislation is to stop research into cloning until there is a better understanding of the dangers associated with the technology.\textsuperscript{307}


\textsuperscript{304} Id. at 581 (Kennedy, J., concurring) (citations omitted).

\textsuperscript{305} See supra Part II.A.

\textsuperscript{306} See supra notes 205-07 and accompanying text.

proposed federal legislation is meant to stop a problem before it starts, not
curtail an existing problem such as students bringing handguns to school.
Therefore, state experimentation in the area of cloning is not an acceptable
strategy.

IV. CLONING AND REPRODUCTIVE LIBERTY

In a long line of cases dating back to the 1923 case of Meyer v. Nebraska,308
the Supreme Court has used a fundamental rights analysis to
constitutionally protect certain personal decisions related to procreation,
pregnancy, child-rearing, and marital relationships. The Court's fundamen-
tal rights jurisprudence holds that although such rights are not expressly
recognized in the Constitution's text, they are subsumed within the notion
of liberty in the Due Process Clause.

Although "[t]he Constitution does not explicitly mention any right of
privacy," the Court has recognized that one aspect of the "liberty"
protected by the Due Process Clause of the Fourteenth Amendment is "a
right of personal privacy, or a guarantee of certain areas or zones of
limits of this aspect of privacy have not been marked by the Court, it is
clear that among the decisions that an individual may make without
unjustified government interference are personal decisions "relating to
marriage, Loving v. Virginia, 388 U.S. 1, 12 (1967); procreation, Skinner
v. Oklahoma ex rel. Williamson, 316 U.S. 535, 541-542 (1942); contra-
(White, J., concurring in result); family relationships, Prince v. Massa-
chusetts, 321 U.S. 158, 166 (1944); and child rearing and education,
Pierce v. Society ofSisters, 268 U.S. 510, 535 (1925); Meyer v. Nebraska,

The decision whether or not to beget or bear a child is at the very
heart of this cluster of constitutionally protected choices . . . . This is
understandable, for in a field that by definition concerns the most intimate
of human activities and relationships, decisions whether to accomplish or
to prevent conception are among the most private and sensitive.309

omitted); see also Planned Parenthood v. Casey, 505 U.S. 833, 846-51 (1992)
(reaffirming Roe's protection of a woman's decision to terminate her pregnancy).
Once the Court labels a right as fundamental, the strict scrutiny test is invoked to evaluate the challenged government action.\footnote{310} The difficulty in administering the fundamental rights analysis lies in determining exactly what constitutes a fundamental right. The Court has recognized as fundamental those rights "that are 'implicit in the concept of ordered liberty,' such that 'neither liberty nor justice would exist if [they] were sacrificed.'"\footnote{311} The Court also has used a historical test, ranking as fundamental those rights that are "'deeply rooted in this Nation's history and tradition.'"\footnote{312} 

The Court appears to apply both tests in making the fundamental rights analysis.\footnote{313} The historical test provides some constraints on judicial decision making; however, it leaves little room for constitutional growth and potentially cements the Constitution in time. The ordered liberty test makes the Constitution a "living document," but it opens up the Court to charges that it merely is substituting its notions of a "good society" for those of the legislature.\footnote{314}

\footnote{310} In \textit{Casey}, however, Justices O'Connor, Kennedy, and Souter devised the undue burden standard to measure the constitutionality of several abortion restrictions in the Pennsylvania Abortion Control Act of 1982. \textit{See} \textit{Casey}, 505 U.S. 833, 874. Only those three Justices signed onto this portion of the Court's opinion, so the strict scrutiny test still applies to cases involving fundamental rights. "[T]he "undue burden" standard . . . is created largely out of whole cloth by [Justices O'Connor, Kennedy, and Souter]. It is a standard which even today does not command the support of a majority of this Court." \textit{Id.} at 964 (Rehnquist, C.J., concurring in part and dissenting in part).


\footnote{312} \textit{Id.} at 192 (quoting \textit{Moore v. East Cleveland}, 431 U.S. 494, 503 (1977) (opinion of Powell, J.)).


"[J]udges are seldom content merely to annul the particular solution before them; they do not, indeed they may not, say that taking all things into consideration, the legislators' solution is too strong for the judicial stomach. On the contrary they wrap up their veto in a protective veil of adjectives such as 'arbitrary,' 'artificial,' 'normal,' 'reasonable,' 'inherent,' 'fundamental,' or 'essential,' whose office usually, though quite innocently, is to disguise what they are doing and impute to it a derivation far more impressive than their personal preferences, which are all that in fact lie behind the decision." \textit{Id.} (citations omitted) (quoting \textit{LEARNED HAND, THE BILL OF RIGHTS} 70 (1958)).
What is clear is that neither test offers a useful standard for measuring those rights deemed by the Court to be fundamental. "The basis upon which the Court declares an aspect of liberty to be a fundamental constitutional right remains vague today." This makes predictions about the Court's analysis of anti-cloning legislation difficult. Nonetheless, based on recent decisions by the Court involving questions of individual liberty, it appears unlikely that the Court will recognize the right to clone as fundamental.

First, the Court likely will frame the issue narrowly, as it did in Bowers v. Hardwick and Washington v. Glucksberg. Framing the question as the right to use cloning, as opposed to the right to control procreative choices, guarantees that cloning will fail the historical test for fundamental rights. Second, although the Supreme Court reaffirmed the central holding of Roe v. Wade in Planned Parenthood v. Casey, it did so in a fractious and fractured decision. Justices O'Connor, Kennedy, and Souter, in their joint opinion, intimated that they would have ruled differently in Roe. Cloning raises many ethical issues related to the abortion debate. Given the Court's discomfort with Roe, it is highly unlikely that it will overturn anti-cloning legislation that was adopted, in part, to protect against embryonic research.

A. The Right to Clone or the Right to Control Procreation?

1. Framing the Issue:
The Debate over Substantive Due Process

If Congress enacts anti-cloning legislation, any challenge to that legislation will play out against the backdrop of the Supreme Court's continuing debate over the legitimacy of substantive due process. In the

315 NOWAK & ROTUNDA, supra note 235, § 11.7, at 404.
316 Bowers v. Hardwick, 478 U.S. 186, 190 (1986) (framing the issue not in terms of the fundamental right of privacy, but rather as "whether the Federal Constitution confers a fundamental right upon homosexuals to engage in sodomy").
317 Washington v. Glucksberg, 117 S. Ct. 2258, 2269 (1997) (framing the issue not in terms of the fundamental right of privacy, but rather as "whether the 'liberty' specially protected by the Due Process Clause includes a right to commit suicide").
320 See infra notes 409-10 and accompanying text.
321 Substantive due process generally requires that legislation be "fair and reasonable in content as well as application." BLACK'S LAW DICTIONARY 1429 (6th
early part of this century, substantive due process acquired a black eye. The Court used the doctrine to protect the free market from unnecessary government intrusions.\textsuperscript{332} The Court's "review of legislation during this period resulted in an unprincipled control of social and economic legislation."\textsuperscript{332} As the Court continued to apply substantive due process to strike down much of the New Deal economic legislation, President Roosevelt responded with his infamous Court-packing plan.\textsuperscript{324} Congress ultimately rejected Roosevelt's plan, but not before it had the desired effect of dissuading the Court from using substantive due process to review and reject New Deal economic legislation.\textsuperscript{325} In 1937, in \textit{West Coast Hotel Co. v. Parrish},\textsuperscript{326} the Court retreated from its commitment to substantive due process review of economic legislation, signaling the end of an era.\textsuperscript{327}

However, substantive due process reemerged in the early 1960s as the Supreme Court began to review state legislation infringing on what the Court called fundamental rights and liberties. In \textit{Griswold v. Connecticut},\textsuperscript{328} the Court held that a Connecticut statute that penalized both the use of contraceptives and the dissemination of information or advice about contraceptive use was unconstitutional.\textsuperscript{329} Justice Douglas, speaking for the majority, stated that he was not using substantive due process to review the constitutionality of the Connecticut law.\textsuperscript{330} Nonetheless, his analysis arguably amounted to a substantive review of the fairness of the Connecticut law, albeit disguised as a case involving the penumbras of the First Amendment.\textsuperscript{331} Douglas favorably cited \textit{Meyer v. Nebraska}\textsuperscript{332} and \textit{Pierce ed. 1990).}

\textsuperscript{322} \textit{See NOWAK & ROTUNDA, supra} note 235, \textsection 11.4, at 384.
\textsuperscript{323} \textit{Id.} \textsection 11.4, at 384-85 (footnote omitted).
\textsuperscript{324} \textit{See supra} notes 252-54 and accompanying text.
\textsuperscript{325} \textit{See NOWAK & ROTUNDA, supra} note 235, \textsection 11.3, at 380-81.
\textsuperscript{326} \textit{West Coast Hotel Co. v. Parrish}, 300 U.S. 379 (1937).
\textsuperscript{327} \textit{See NOWAK & ROTUNDA, supra} note 235, \textsection 11.4, at 386.
\textsuperscript{328} \textit{Griswold v. Connecticut}, 381 U.S. 479 (1965).
\textsuperscript{329} \textit{See id.} at 485-86.
\textsuperscript{330} \textit{See id.} at 482 ("We do not sit as a super-legislature to determine the wisdom, need, and propriety of laws that touch economic problems, business affairs, or social conditions.").
\textsuperscript{331} \textit{See id.} at 482-83.
\textsuperscript{332} \textit{Meyer v. Nebraska}, 262 U.S. 390 (1923). \textit{Meyer} involved a challenge to a Nebraska statute that made it unlawful to "‘teach any subject to any person in any language other than the English language.’" \textit{Id.} at 397. The Supreme Court concluded that the statute violated the parents' liberty interest in controlling their children's education, as well as the teacher's liberty interest in pursuing his chosen vocation. \textit{See id.} at 400-01.
v. Society of Sisters as support for his proposition that the Constitution extended protection to rights found within its penumbras. Yet, both Meyer and Pierce were substantive due process cases, in which the Court granted fundamental rights status to the ability of parents to control their children’s education. As Justice Black noted in his dissent in Griswold, “the reasoning stated in Meyer and Pierce was the same natural law due process philosophy which many later opinions repudiated, and which I cannot accept.”

Notwithstanding Justice Black’s objections to the application of substantive due process to social legislation, in various cases since Griswold, the Supreme Court has evaluated the substantive fairness of state statutes that prohibited abortion, required court approval prior to marriage for persons delinquent in child support, criminalized consensual homosexual activity, and restricted the right to refuse life-sustaining treatment. Several Justices have expressed concern about applying substantive due process because of the possibility that the Court may mistakenly impose personal values rather than undertake a constitutional analysis.

When the Court ventures further and defines as “fundamental” liberties that are nowhere mentioned in the Constitution (or that are present only in the so-called “penumbras” of specifically enumerated rights), it must, of necessity, act with more caution, lest it open itself to the accusation that, in the name of identifying constitutional principles to which the people have consented in framing their Constitution, the Court has done nothing more than impose its own controversial choices of value upon the people.

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333 Pierce v. Society of Sisters, 268 U.S. 510 (1925). In Pierce, the Society of Sisters, which operated Roman Catholic schools, challenged an Oregon statute requiring students from ages 8 to 16 to attend public schools. The Supreme Court found the statute unconstitutional, concluding it “unreasonably interfered with the liberty of parents and guardians to direct the upbringing and education of children under their control.” Id. at 534-35.

334 See Griswold, 381 U.S. at 482-83.

335 Id. at 516 (Black, J., dissenting).


The continuing debate over the use of substantive due process and the parameters of that doctrine shape constitutional analysis involving fundamental rights. The manner in which a Justice frames the legal issue in a case provides some evidence of the Justice’s comfort level with the doctrine of substantive due process. How the issue is framed, in turn, affects the outcome of the case. Nowhere is this more evident than in the Court’s decision in *Bowers v. Hardwick.*

In *Bowers,* the Supreme Court addressed the constitutionality of a Georgia statute that made consensual sodomy a criminal offense. Hardwick, the criminal defendant, had been arrested for engaging in sodomy in his own home with another man. In a five-to-four decision, the Court found that the statute did not violate the Fourteenth Amendment’s Due Process Clause.

The majority opinion, authored by Justice White, framed the issue as “whether the Federal Constitution confers a fundamental right upon homosexuals to engage in sodomy.” The majority then set forth the standards traditionally used by the Court to determine what constitutes a fundamental right. First, fundamental rights include those “liberties that are ‘implicit in the concept of ordered liberty,’ such that ‘neither liberty nor justice would exist if [they] were sacrificed.’” Second, those liberties that are “‘deeply rooted in this Nation’s history and tradition’” are also protected as fundamental rights.

In enunciating the Supreme Court’s standards for determining the existence of a fundamental right, the majority appeared to question the legitimacy of the Court’s traditional approach.

Striving to assure itself and the public that announcing rights not readily identifiable in the Constitution’s text involves much more than the imposition of the Justices’ own choice of values on the States and the Federal Government, the Court has sought to identify the nature of the rights qualifying for heightened judicial protection.

This language certainly does not suggest a wholehearted endorsement of the Court’s substantive due process analysis. Nevertheless, the majority did

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*Thornburgh.*

342 See id. at 188 n.1 (citing GA. CODE ANN. § 16-6-2 (1984)).
343 See id. at 196.
344 Id. at 190.
345 Id. at 191-92.
346 Id. at 192 (citations omitted).
347 Id. at 191.
not expressly renounce the Court's standards for substantive due process review, because it easily concluded that the "right [of] homosexuals to engage in sodomy"\textsuperscript{348} satisfied neither of the Court's tests for fundamental rights. "It is obvious to us that neither of these formulations would extend a fundamental right to homosexuals to engage in acts of consensual sodomy. Proscriptions against that conduct have ancient roots."\textsuperscript{349}

The majority in \textit{Bowers}, however, treated the two categories of fundamental rights as if they were one. Historical evidence showing the prevalence of anti-sodomy laws worked not only to demonstrate that the right to engage in consensual sodomy was not deeply rooted in national history, but also to show that the right was not subsumed within the concept of ordered liberty.\textsuperscript{350} If the Court's formulation of fundamental rights includes those rights that are "implicit in the concept of ordered liberty,"\textsuperscript{351} then ordered liberty must mean something different than those rights that are deeply rooted in national history. Otherwise, it is unnecessary to use the ordered liberty test in determining fundamental rights.

By collapsing the ordered liberty test into the historical test and by formulating the issue narrowly, the majority in \textit{Bowers} guaranteed that it would not recognize as fundamental the right to engage in homosexual sodomy. After all, according to the historical analysis in \textit{Bowers}, the right to engage in homosexual activity has never been recognized in the United States. But many states have penalized other activities, such as miscegenation, that the Supreme Court has found to be constitutionally invalid.\textsuperscript{352} The question is why the Court reached a different result in \textit{Bowers v. Hardwick}.

The answer lies, in part, with the discomfort that some Justices experience in substantively reviewing legislation. If a right is fundamental, then the Court must apply strict scrutiny.\textsuperscript{353} That, in turn, means that the Court most likely will strike the legislation down as unconstitutional. The Court, however, avoids this dilemma by not recognizing a right as

\textsuperscript{348} Id. at 190.
\textsuperscript{349} Id. at 192 (citation omitted).
\textsuperscript{350} See id. at 192-94.
\textsuperscript{351} Id. at 191.
\textsuperscript{352} See Loving v. Virginia, 388 U.S. 1 (1967). In his dissent in \textit{Bowers v. Hardwick}, Justice Stevens noted that "miscegenation was once treated as a crime similar to sodomy." \textit{Bowers}, 478 U.S. at 216 n.9 (Stevens, J., dissenting) (citations omitted).
fundamental. It is clear that the majority’s uneasiness with substantive due process drove the result in *Bowers*.

Nor are we inclined to take a more expansive view of our authority to discover new fundamental rights imbedded in the Due Process Clause. The Court is most vulnerable and comes nearest to illegitimacy when it deals with judge-made constitutional law having little or no cognizable roots in the language or design of the Constitution. That this is so was painfully demonstrated by the face-off between the Executive and the Court in the 1930's, which resulted in the repudiation of much of the substantive gloss that the Court had placed on the Due Process Clauses of the Fifth and Fourteenth Amendments. There should be, therefore, great resistance to expand the substantive reach of those Clauses, particularly if it requires redefining the category of rights deemed to be fundamental.354

This exegesis on the dangers of substantive due process followed on the heels of the majority’s rejection of the right to engage in homosexual sodomy as a fundamental right protected by the Fourteenth Amendment’s Due Process Clause.355

Had the majority in *Bowers* defined the issue as whether a state may interfere with an individual’s choice of how to conduct himself in his intimate relationships, the Court may have reached a different result. The dissenting opinion made this clear.

This case is no more about “a fundamental right to engage in homosexual sodomy,” as the Court purports to declare, ante, at 191, than *Stanley v. Georgia*, 394 U.S. 557 (1969), was about a fundamental right to watch obscene movies, or *Katz v. United States*, 389 U.S. 347 (1967), was about a fundamental right to place interstate bets from a telephone booth. Rather, this case is about “the most comprehensive of rights and the right most valued by civilized men,” namely, the “right to be let alone.”356

As the dissenters aptly noted, the Georgia statute at issue in *Bowers v. Hardwick* penalized sodomy, not just homosexual sodomy.357 Yet, the

354 *Bowers*, 478 U.S. at 194-95.
355 See id. at 192-94.
356 Id. at 199 (Blackmun, J., dissenting) (citation omitted).
357 See id. at 200 (Blackmun, J., dissenting).
majority framed the issue in terms of homosexual activity, not consensual sodomy. The dissenters argued that the real issue in the case involved the values underlying the right of privacy. If the state could invade the bedroom of a homosexual man, then what prevented the state from doing so to penalize heterosexual sodomy? The dissenters claimed that the right to personal privacy extended to certain individual decisions, as well as to particular private places. In Hardwick’s case, the state not only intruded into decisions about his private sexual activity, it did so within the confines of his home. Thus, for the dissent, the real danger in the Bowers holding lay in “depriving individuals of the right to choose for themselves how to conduct their intimate relationships [which] poses a far greater threat to the values most deeply rooted in our Nation’s history than tolerance of nonconformity could ever do.”

The debate over substantive due process continues unabated. On the current Court, Justice Scalia is perhaps the most vocal critic of the dangers of substantive due process review. As a result, he holds a restrictive view of those rights deemed to be fundamental. In his concurring opinion in Cruzan v. Director, Missouri Department of Health, he wrote separately to explain his view that the right to commit suicide is not fundamental. As a result, it was “unnecessary to reopen the historically recurrent debate over whether ‘due process’ includes substantive restrictions.” In Scalia’s dissenting opinion in Casey, he attacked the use of substantive due process to reaffirm Roe. Labeling the plurality’s rationales as a meaningless “parade of adjectives,” Justice Scalia concluded that the decision in Casey resulted not from “reasoned judgment,” the hallmark of substan-

358 See id. at 192.
359 See id. at 204 (Blackmun, J., dissenting).
360 Id. at 214 (Blackmun, J., dissenting).
361 Cruzan v. Director, Mo. Dep’t of Health, 497 U.S. 261 (1990). Cruzan is known as the “right to die” case. The issue in Cruzan was whether the parents of Nancy Cruzan, who was in a permanent vegetative state, could authorize the withdrawal of life-sustaining food and water. See id. at 269. The Court assumed that the Constitution protected the right of competent persons to refuse life-sustaining food and water; however, it concluded that Missouri could require clear and convincing evidence of Nancy Cruzan’s wish to discontinue food and water before allowing this action, a burden which had not been met. See id. at 282-85.
362 Id. at 293 (Scalia, J., concurring) (citations omitted).
364 Id. at 982-84 (Scalia, J., concurring in part and dissenting in part). The term “reasoned judgment” refers to Justice Harlan’s famous dissent in Poe v. Ullman,
tive due process review, but from "personal predilection" alone. Justice Scalia’s dissent in *Casey* captures the persistent concern about substantive due process: the Court, in evaluating the substantive fairness of legislation, will impose its own values, rather than adhering to constitutional principles.

Justice Scalia is not alone in his views. Chief Justice Rehnquist, Justice Thomas, and Justice White joined in Justice Scalia’s dissent in *Casey*. In *Thornburgh v. American College of Obstetricians & Gynecologists*, a case involving challenges to a Pennsylvania statute imposing certain restrictions on abortion, then Justice Rehnquist joined in Justice White’s dissenting opinion. Justice White expressed concern, once again, about the Court wandering too far afield in its substantive due process case law. Chief Justice Rehnquist also formed part of the five-person majority in *Bowers* that narrowly defined the interest at stake as the right to engage in homosexual sodomy.

In its recent decision in *Washington v. Glucksberg*, the Court revisited the issue of substantive due process. Chief Justice Rehnquist authored the Court’s opinion, in which Justices O’Connor, Scalia, Kennedy, and Thomas joined. *Glucksberg* involved a due process challenge to a Washington statute that made it illegal to assist a person in committing suicide. The Court began its analysis of the statute by recognizing that the term “liberty” in the Due Process Clause has a substantive component. Nonetheless, the Court cautioned that “extending constitutional protection to an asserted right or liberty interest, ... place[s] the

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365 *Casey*, 505 U.S. at 984 (Scalia, J., concurring in part and dissenting in part).
366 Chief Justice Rehnquist wrote a separate dissent in *Casey*, in which Justices White, Scalia and Thomas also joined. See *id.* at 944 (Rehnquist, C.J., concurring in part and dissenting in part).
367 See *id.* at 979 (Scalia, J., concurring in part and dissenting in part).
369 See *id.* at 785 (White, J., dissenting).
370 See *id.* at 790 (White, J., dissenting) ("When the Court ventures further and defines as ‘fundamental’ liberties that are nowhere mentioned in the Constitution ... it must, of necessity, act with more caution.")
371 See *supra* notes 344-52 and accompanying text.
373 See *id.* at 2261 (citing WASH. REV. CODE § 9A.36.060(1) (1994)).
374 See *id.* at 2267.
matter outside the arena of public debate and legislative action."375 In order to protect against such an eventuality, the Court added a requirement to the traditional test for fundamental rights. In addition to asking whether a liberty interest is deeply rooted in national traditions or implicit in ordered liberty, the Court also must "carefully describe . . . the asserted fundamental liberty interest."376

However, a careful description may amount to an attempt to evade substantive review of legislative choices. This is what the majority did in Bowers by narrowly defining the interest at stake. Similarly, in Glucksberg, the Court defined the interest not as "the right to die with dignity," as suggested by Justice Breyer in his concurrence,377 but rather as the "right to commit suicide which itself includes a right to assistance in doing so."378 Framing the issue in this manner, once again, guaranteed that the Court would find no fundamental right. Historically, assisted suicide has been a crime, and in most jurisdictions, it continues to carry criminal penalties.379 However, as Justice Breyer noted, "our legal tradition [might] provide greater support" for the "right to die with dignity" than the "right to commit suicide with another's assistance."380

The debate over substantive due process has not ended. As challenges to federal and state cloning legislation begin, the Court will once again have to venture into the thorny thicket of its substantive due process case law. Clearly, the way in which the Court frames the issue will shape the result.

2. The Abortion Debate

Any analysis of cloning legislation requires an examination of the Court's abortion decisions. Both embryo splitting and nuclear transplantation cloning, whether involving human embryonic or adult cells, involve research on and manipulation of human embryos. In fact, a critical

375 Id. at 2267-68.
376 Id. at 2268.
377 Id. at 2311 (Breyer, J., concurring). Justice Breyer concurred in the judgment in Glucksberg because the challenged statute did not force dying patients to sustain "severe physical pain (connected with death), [which] would have to comprise an essential part of any successful claim" based upon a fundamental right argument. Id. (Breyer, J., concurring).
378 Id. at 2269 (footnote omitted).
379 See id. at 2262-67.
380 Id. at 2311 (Breyer, J., concurring).
difference between the CPA and the Feinstein/Kennedy Act, on the one hand, and the Bond/Lott Act, on the other, is the prohibition on research involving embryos. As a result, the Court’s pronouncements on abortion will figure prominently in the evaluation of any anti-cloning legislation.

\[ a. \] The Road to Casey

In 1973, in a seven-to-two opinion, the Supreme Court in Roe v. Wade struck down as unconstitutional a Texas statute that made it a crime to obtain an abortion. The Court did so on the basis of a right to privacy grounded in the liberty protected by the Due Process Clause of the Fourteenth Amendment. Noting that “privacy” is nowhere mentioned in the Constitution, the majority explained that the Constitution nonetheless “guarante[e][s] . . . certain areas or zones of privacy,” but only with regard to those “personal rights that can be deemed ‘fundamental’ or ‘implicit in the concept of ordered liberty.’” Drawing on a line of cases recognizing the fundamental right of parents to control the rearing and education of their children, the right to procreation, and the right of married or single persons to use contraceptives, the Court found that “the right of personal privacy includes the abortion decision.” By granting the decision to have an abortion the status of a fundamental right, the Court required states to demonstrate that their statutory restrictions on abortion

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381 See supra Part II.B.2.
383 See id. at 153.
384 Id. at 152.
385 Id. (citation omitted).
386 See Pierce v. Society of Sisters, 268 U.S. 510 (1925); Meyer v. Nebraska, 262 U.S. 390 (1923); supra notes 332-33.
387 See Skinner v. Oklahoma, 316 U.S. 535 (1942). Skinner involved a challenge to an Oklahoma statute that mandated sterilization for those persons who had been convicted of two or more “felonies involving moral turpitude.” Id. at 536. The Court held the statute to be unconstitutional, finding that “[m]arriage and procreation are fundamental to the very existence and survival of the race.” Id. at 541.
389 See Eisenstadt v. Baird, 405 U.S. 438, 453 (1972) (“If the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”) (citations omitted).
390 Roe, 410 U.S. at 154.
satisfy the strict scrutiny test. Because the Court concluded, however, that the unborn did not fall within the term "‘person’ as used in the Fourteenth Amendment," the state’s interest in the potential life of the fetus did not outweigh the woman’s liberty interest in deciding whether to have an abortion. Nonetheless, the Court rejected the argument that a woman has an absolute right to an abortion. Instead, it adopted the controversial trimester approach, finding that the state’s dual interests in maternal health and the potential life of the fetus become compelling at the end of the first trimester for maternal health and at the point of viability for fetal life.

Roe certainly did not resolve the debate over abortion. On the contrary, the debate intensified. In the years following Roe, the Supreme Court has addressed a number of state statutes that place restrictions on the decision to have an abortion. In Planned Parenthood v. Danforth, the Court addressed questions that were left unanswered by its decision in Roe about the proper scope of state legislation restricting the right to abortion. In Danforth, the Court found unconstitutional several provisions of a Missouri statute that required, among other things, married women and minors to obtain written spousal consent and written parental consent, respectively, for abortions conducted in the first trimester. A year later, in Maher v. Roe, in a six-to-three decision, the Supreme Court upheld a Connecticut Welfare Department regulation that restricted the use of Medicaid funds to only those abortions deemed to be medically necessary, concluding that a state need not “show a compelling interest for its policy choice to favor normal childbirth.”

In 1988, in Webster v. Reproductive Health Services, the Supreme Court passed on the constitutionality of a Missouri statute placing restrictions on the right to procure an abortion. In the thirteen years since its decision in Danforth, however, the Court’s composition had changed. Justices O’Connor, Scalia, and Kennedy had replaced Justice Stewart, Chief Justice Burger, and Justice Powell, respectively. The replacement of

391 See id. at 155.
392 Id. at 158.
393 See id. at 162-63.
394 See id.
396 See id. at 67-75.
398 Id. at 477.
Justices Stewart and Powell, who had joined the majority's opinion in *Danforth*, affected the outcome in *Webster*. In an opinion authored by Chief Justice Rehnquist, the Court in *Webster* upheld a statutory prohibition on the use of public facilities to conduct abortions. More important to any analysis of anti-cloning legislation was the Court's treatment of the preamble to Missouri's statute, which stated that "[t]he life of each human being begins at conception." The Court did not rule on whether the preamble violated the Constitution because it determined that the preamble's language did not interfere with the decision to obtain an abortion. "Certainly the preamble does not by its terms regulate abortion . . . . The Court has emphasized that *Roe v. Wade* ‘implies no limitation on the authority of a State to make a value judgment favoring childbirth over abortion.’ The preamble can be read simply to express that sort of value judgment."

The Court is correct that the preamble to Missouri's statute did not actually affect a woman's right to have an abortion. As a legal matter, *Roe* provides that the fetus is not a "person" for purposes of the Fourteenth Amendment. Of course, that does not mean that the fetus is not a "person" for purposes of state law. However, "offer[ing] protections to unborn children in tort and probate law" is not the same as stating that life begins at conception. For example, the traditional rule in tort law only allowed recovery for wrongful death of a viable fetus. This rule is consistent with *Roe*'s trimester analysis and the recognition that the state's interest in fetal life becomes compelling at viability. *Webster*'s language, however, opened the door to states according protections in tort law to nonviable fetuses. The problem is that while distinctions between the rights of the unborn under federal versus state law may be legally consistent, they are philosophically inconsistent. To the average person, such distinctions mean that the fetus is not a person when a woman wishes to have an abortion, but *may* be a person if a woman loses the fetus due to some third party's negligent act.

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400 See id. at 521-22.
401 Id. at 504 (citation omitted).
402 See id. at 506.
403 Id. (quoting Maher v. Roe, 432 U.S. 464, 474 (1977)).
405 Webster, 492 U.S. at 506.
At a minimum, the majority's ruling in *Webster* regarding the language of the Missouri preamble reveals an uneasiness with the decision in *Roe*. Even though a plurality of the Court reaffirmed *Roe* in *Casey*, the decision reflects the continued uneasiness that certain members of the Court feel about the *Roe* decision. In turn, that discomfort will shape the direction of any ruling on the constitutionality of anti-cloning legislation.

*b. Planned Parenthood v. Casey*

In 1992, in a five-to-four decision, the Supreme Court reaffirmed *Roe*'s "recognition of the right of the woman to choose to have an abortion before viability and to obtain it without undue interference from the State." The majority justified its decision on two grounds: the dictates of substantive due process and respect for the doctrine of *stare decisis*. The Court's opinion, authored by Justices O'Connor, Kennedy, and Souter, noted that the Constitution protects the decision to have an abortion as a fundamental right affecting personal privacy.

Our law affords constitutional protection to personal decisions relating to marriage, procreation, contraception, family relationships, child rearing, and education. Our cases recognize "the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child." . . . These matters, involving the most intimate and personal choices a person may make in a lifetime, choices central to personal dignity and autonomy, are central to the liberty protected by the Fourteenth Amendment. At the heart of liberty is the right to define one's own concept of existence, of meaning, of the universe, and of the mystery of human life. Beliefs about these matters could not define the attributes of personhood were they formed under compulsion of the State.

This resounding endorsement of the principles of substantive due process, however, did not translate into a similarly resounding endorsement of the decision in *Roe*. While a majority of the Court reaffirmed *Roe*'s essential holding, the authors of the majority opinion—Justices O'Connor,

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408 *Casey*, 505 U.S. at 851 (citations omitted).
Kennedy, and Souter—appeared to do so more out of respect for *stare decisis* than out of the conviction that substantive due process commanded the result in *Roe*.

On the other side of the equation is the interest of the State in the protection of potential life. The *Roe* Court recognized the State’s “important and legitimate interest in protecting the potentiality of human life.” The weight to be given this state interest, not the strength of the woman’s interest, was the difficult question faced in *Roe*. We do not need to say whether each of us, had we been Members of the Court when the valuation of the state interest came before it as an original matter, would have concluded, as the *Roe* Court did, that its weight is insufficient to justify a ban on abortions prior to viability even when it is subject to certain exceptions. The matter is not before us in the first instance, and coming as it does after nearly 20 years of litigation in *Roe’s* wake we are satisfied that the immediate question is not the soundness of *Roe’s* resolution of the issue, but the precedential force that must be accorded to its holding.409

What is significant, for purposes of evaluating the constitutionality of anti-cloning legislation, is the uncertainty that Justices O’Connor, Kennedy, and Souter expressed about the soundness of the *Roe* Court’s balancing of the state’s interest against the liberty interest of the woman. They intimated that had they been members of the *Roe* Court, they may have struck this balance in a different manner. Even though they chose not to revisit that balancing of interests in *Roe*, Justices O’Connor, Kennedy, and Souter did criticize the failure of the Court to adequately evaluate the state’s interests in potential human life, as required by *Roe*.

The woman’s liberty is not so unlimited, however, that from the outset the State cannot show its concern for the life of the unborn, and at a later point in fetal development the State’s interest in life has sufficient force so that the right of the woman to terminate the pregnancy can be restricted.410

This concern for the state’s interests in the potentiality of human life led Justices O’Connor, Kennedy, and Souter in *Casey* to reject *Roe’s* controversial trimester approach, viewing it “as a rigid prohibition on all

409 *Id.* at 871 (emphasis added) (citation omitted).
410 *Id.* at 869.
previability regulation aimed at the protection of fetal life.” In addition, the authors of the joint opinion adopted an “undue burden” standard for evaluating abortion regulations. That standard falls somewhere between the rational basis and strict scrutiny tests and invalidates abortion restrictions that erect a substantial obstacle to a woman’s exercise of the right to abortion with respect to a nonviable fetus.

The dissenters in *Casey* argued that “Roe was wrongly decided” and “should be overruled.” In his dissent, Justice Scalia noted that the decision to allow abortion is best left to the legislative branch. The significance of the dissenting opinions for any constitutional evaluation of anti-cloning legislation lies in the dissenters’ distinctions between abortion and other fundamental rights. Chief Justice Rehnquist views the decision to abort as “‘different in kind’” from other privacy rights, such as those involving procreation and contraception, because it “necessarily involves the destruction of a fetus.” Justice Scalia stated the distinction even more forcefully: “[T]he best the Court can do to explain how it is that the word ‘liberty’ must be thought to include the right to destroy human fetuses is to rattle off a collection of adjectives that simply decorate a value judgment and conceal a political choice.” The significance of the dissenting opinions in *Casey* lies not so much in the critique of substantive due process, but rather in the dissenters’ views on abortion. The *Casey* dissenters argue that even accepting the legitimacy of substantive due process review, the decision to abort a human fetus should not be protected as a fundamental right.

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411 Id. at 873.
412 See id. at 877. The dissent resoundingly criticized the authors of the joint opinion for adopting the “undue burden” standard. However, some commentators view *Casey’s* undue burden standard as “the logical outcome of the Court’s gradual, but meaningful, shift concerning a woman’s right to an abortion between the early 1970s and the early 1990s.” NOWAK & ROTUNDA, supra note 235, § 14.29, at 822.
413 *Casey*, 505 U.S. at 944 (Rehnquist, C.J., concurring in part and dissenting in part).
414 See id. at 979 (Scalia, J., concurring in part and dissenting in part).
415 Id. at 952 (Rehnquist, C.J., concurring in part and dissenting in part) (citation omitted).
416 Id. (Rehnquist, C.J., concurring in part and dissenting in part) (citations omitted).
417 Id. at 983 (Scalia, J., concurring in part and dissenting in part).
3. Cloning and Fundamental Rights Analysis

The CPA, the Bond/Lott Act, and the Feinstein/Kennedy Act do not completely bar the use of cloning for “reproductive” purposes because all three allow embryo splitting. Yet, even if they did bar such activity, it is unlikely that the current Court would find such federal legislation unconstitutional. First, at least three members of the Court have written or joined in decisions that suggest the Court should exercise caution in recognizing new fundamental rights. Second, a majority of the Justices either have said that Roe was wrongly decided or have implied that they would have ruled differently had they been members of the Roe Court. In order to strike down federal cloning legislation as unconstitutional, the Court would have to recognize the decision to clone as a fundamental right and conclude that the government’s countervailing interest in banning cloning technology is not compelling. Given the predilections of the Justices on the current Court, neither is likely to happen.

a. Cloning as a Fundamental Right

In Glucksberg, Chief Justice Rehnquist noted that the Court needs to proceed with caution when considering the creation of new fundamental rights. According to Rehnquist, the absence of clear “‘guideposts for responsible decisionmaking’” justified a more limited judicial approach to substantive due process review. Rehnquist explained that a “‘careful description’ of the asserted fundamental liberty interest” was necessary; otherwise, the Court might use the amorphous standards of substantive due process to replace legislative policy judgments with its own.

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418 The major distinction among the bills is the ban on cloning research. Both the CPA and the Feinstein/Kennedy Act only prohibit the actual creation of a human clone using nuclear transfer technology. See supra notes 226-34 and accompanying text. By comparison, the Bond/Lott Act bans both the creation of human clones, as well as cloning research, using nuclear transplantation. See supra Part II.B.2. This difference, however, is not significant for purposes of a Fifth Amendment Due Process analysis. The Bond/Lott Act may implicate the First Amendment by creating an overinclusive ban on scientific research. This Article does not address that issue.

419 See supra notes 361-71 and accompanying text.

420 See supra Part IV.A.2.b.


422 Id.
Chief Justice Rehnquist’s formulation of the fundamental rights analysis garnered the votes of four other Justices on the Court. As a result, a five-person majority\(^4\) of the current Court agrees with Rehnquist that a required element of substantive due process review is a careful articulation of the interest at stake.

Of course, a careful articulation of the interest is not necessarily bad; however, in practice, a “narrow” framing of the asserted interest allows the Court to avoid substantive due process review. If a right is not deemed to be fundamental, the Court must only find that the state interest is legitimate, not compelling.\(^4\) Thus, a careful description of asserted rights results in a narrow list of fundamental interests. For example, in Bowers, the five-person majority, which included then Justice Rehnquist and Justice O’Connor, framed the interest as the right of homosexuals to engage in consensual sodomy.\(^4\) In Cruzan, the Court assumed, for purposes of its decision, that a mentally competent person had a fundamental right to refuse food and water.\(^4\) However, the Court’s assumption that such a fundamental right existed was grounded, not in more general notions of personal autonomy, but rather in the more narrow and traditional concerns about excessive government interference with bodily integrity.\(^4\)

Finally, in Glucksberg, the Court described the interest as the right to assisted suicide, rather than the right to die with dignity, as suggested by Justice Breyer, who concurred in the Court’s judgment.\(^4\) In both Bowers and Glucksberg, the narrower formulation meant that the Court did not recognize the asserted interest as fundamental.

This is more than mere semantics. Because the fundamental rights analysis examines whether an asserted right is deeply grounded in national tradition, a narrow formulation of that right makes it more difficult to satisfy the traditional fundamental rights test. In fact, some of the rights

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\(^4\) Justices O’Connor, Scalia, Kennedy, and Thomas joined in Chief Justice Rehnquist’s opinion. See id. at 2260-61.

\(^4\) See NOWAK & ROTUNDA, supra note 235, § 14.3, at 600-02, 606.

\(^4\) See supra notes 344-52 and accompanying text.

\(^4\) See supra note 361.

\(^4\) The Court made this distinction about the decision in Cruzan in its Glucksberg decision. See Glucksberg, 117 S. Ct. at 2269-70. Chief Justice Rehnquist authored both decisions, joined by Justices O’Connor, Scalia, and Kennedy. See id. at 2260-61; Cruzan v. Director, Mo. Dep’t of Health, 497 U.S. 261, 264 (1990). Justice Thomas, who was not a member of the Court at the time of the Cruzan decision, joined the Court’s opinion in Glucksberg. Justice White was the fifth member of the Cruzan majority. See id. at 264.

\(^4\) See supra notes 377-80 and accompanying text.
now recognized as fundamental, if narrowly drawn, certainly would not have survived the historical test. Contraception was not a common practice in the early days of this country’s founding, and sex outside of marriage certainly is not a right deeply grounded in national tradition. Nonetheless, the Supreme Court has held that government intrusion into the decision to use contraceptives violates the fundamental rights of both married\(^4\) and single persons. The distinction lies in the manner in which the Court framed the issue in the contraceptive cases. Rather than ask whether a single woman has the right to use contraceptives, the Court held that the right of privacy includes the right “to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”\(^4\)

So how might the Court describe the asserted interest in a challenge to cloning legislation? There are two obvious possibilities. Embryo splitting and nuclear transplantation involving embryonic cells could be compared to in vitro fertilization, which is a treatment for infertility. Thus, the Court could frame the asserted interest as the decision whether to bear or beget children or the right to procreation. Alternatively, the Court could narrowly describe the interest as the right to engage in cloning. The latter formulation (or some variant thereof) is more likely, given the Court’s recent pronouncements on substantive due process. Such a narrow articulation of the interest means that the Court will determine that the right to clone is not fundamental. First, there is no deeply rooted national tradition recognizing cloning because it is a radical new technology. Second, denying fundamental rights to cloning will not sacrifice liberty or justice and, thus, will not violate the concept of ordered liberty.

Even in the unlikely event that the Supreme Court were to recognize a fundamental right to have access to some or all cloning technology, the Court, at a minimum, would sustain the CPA and the Feinstein/Kennedy Act as constitutional. Once the Court recognizes a right as fundamental, legislation “limiting [that] right may be justified only by a ‘compelling state interest,’” that is “‘narrowly drawn to express only the legitimate state interests at stake.’”\(^4\)\(^2\) The CPA and the Feinstein/Kennedy Act would easily satisfy the strict scrutiny test. First, the NBAC has recognized that there are serious questions about the safety of cloning.

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\(^5\) Id. at 453 (citations omitted).
At present, the use of [somatic cell nuclear transfer cloning] to create a child would be a premature experiment that exposes the developing child to unacceptable risks. This in itself is sufficient to justify a prohibition on cloning human beings at this time, even if such efforts were to be characterized as the exercise of a fundamental right to attempt to procreate.\footnote{CLONING HUMAN BEINGS, supra note 3, at 108.}

Second, the prohibitions in the CPA and the Feinstein/Kennedy Act, though not necessarily those in the Bond/Lott Act,\footnote{If the Court applied a fundamental rights analysis to cloning, the Bond/Lott Act might be found unconstitutional because it reaches too far. The Act bans both the creation of human clones, as well as human cloning research. There are clear safety risks in creating a human clone at this time. It is less clear that there are safety risks involved in human cloning research. Research implicates moral and ethical questions about the status of the embryo. Therefore, a claim asserting the right to engage in cloning research based on the First Amendment may succeed if the Court recognizes a protected interest in the right to engage in scientific inquiry.} are narrowly drawn to address the government interest in safety. Both Acts only prohibit the actual implantation of a clone in order to create a newborn human. Neither penalizes cloning research, and both expire after a certain time period. Thus, neither act imposes a permanent ban on the technology.\footnote{See supra notes 194-96 and accompanying text.}

\textit{b. The Impact of the Abortion Decisions}

The abortion controversy will no doubt play a major role in the Court’s analysis of federal cloning legislation. All forms of cloning involve experimentation on embryos. Embryo splitting entails the separation of early embryonic cells in order to create multiple copies of the original embryo.\footnote{See supra Part I.A.1.c.} Nuclear transfer, whether of the nucleus of adult or embryonic cells, will result in the creation of a human embryo, many of which will not survive or even be implanted. If Dr. Wilmut’s experiment is any indication, hundreds of thousands of embryos will be created and destroyed in the process of perfecting human cloning techniques. It took Dr. Wilmut 277 tries before he successfully created the clone known as “Dolly.”\footnote{See supra notes 53-55 and accompanying text.} And, in the year since Dolly’s announcement, no other scientist has been able to repeat Dr. Wilmut’s success.\footnote{See Nicholas Wade, \textit{With No Other ‘Dollys, ’ Cloning Report Draws Critics}, N.Y. TIMES, Jan. 30, 1998, at A8.}
Destruction of human embryos implicates issues similar to those in the abortion decisions. Three of the Court’s current members—Chief Justice Rehnquist and Justices Scalia and Thomas—“believe that Roe was wrongly decided” and “should be overruled.” They conclude that the right to an abortion differs from personal decisions involving “marriage, procreation, and contraception [because] abortion ‘involves the purposeful termination of a potential life.’” For these three Justices, abortion is not a fundamental right.

Justices O’Connor, Kennedy, and Souter, in their joint opinion in *Casey*, reaffirmed Roe’s basic holding regarding a woman’s right to have an abortion prior to fetal viability. Thus, they recognized the right to abortion as a fundamental right. At the same time, however, they intimated that had they been on the Roe Court, they may have given more weight to “the interest of the State in the protection of potential life.” Justices O’Connor, Kennedy, and Souter noted that the “difficult question faced in Roe” was the balancing of the state’s and the woman’s interest. The state’s interest is “its concern for the life of the unborn.” The woman’s interest is twofold: (1) protection of “the liberty relating to intimate relationships, the family, and decisions about whether or not to beget or bear a child” and (2) “protection of personal autonomy and bodily integrity.”

Cloning, unlike abortion, does not implicate this second interest in bodily integrity. Cloning occurs outside the body. A woman need never agree to reimplantation of a cloned embryo. Thus, cloning legislation, unlike a restrictive abortion statute, does not compel a woman to carry a fetus to term. This is an important distinction because it eliminates one justification for recognizing a fundamental right to abortion. In *Casey*, Justices O’Connor, Kennedy, and Souter implied that the state’s interest in potential life would have sufficed to “justify a ban on abortions prior to viability” had they decided the Roe case. Why, then, would they find unconstitutional legislation that advances the government’s interest in

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440 Id. at 952 (quoting Harris v. McRae, 448 U.S. 297, 325 (1980)).
441 See id. at 846.
442 Id. at 871.
443 Id.
444 Id. at 869.
445 Id. at 857 (citations omitted).
446 Id.
447 Id. at 871.
potential human life in a case in which there is no affirmative government interference with bodily integrity?

Thus, it appears that six of the current Justices will not extend the Court's fundamental liberty protection to the decision to use cloning as a form of "reproduction." The reasons articulated by individual Justices for doing so will vary.

Chief Justice Rehnquist and Justices Scalia and Thomas may ground their decision either on their opposition to expanding substantive due process review, their disagreement with the Roe decision, or some combination of these two lines of reasoning. Chief Justice Rehnquist has long opposed an expansion of substantive due process review. He joined Justice White's majority decision in Bowers, which narrowly defined the asserted liberty interest as the right to engage in homosexual sodomy. In Thornburgh, he joined Justice White's dissent, which argued that although the right to an abortion "is a species of 'liberty' . . . this liberty is [not] so 'fundamental' that restrictions upon it call into play anything more than the most minimal judicial scrutiny." In his concurring opinion in Cruzan, Justice Scalia forcefully argued that "federal courts [had] no business" making constitutional decisions about matters that properly belong before state legislatures. He likened the controversy over the "right to die" to that over the right to abortion and expressed concern lest the Court travel down the same disastrous path opened up by its decision in Roe. Finally, in Casey, Chief Justice Rehnquist and Justices Scalia and Thomas called for Roe to be overruled. The three Justices criticized Roe as an undue expansion of fundamental rights analysis, which strongly suggests that they would not extend to cloning the protection of fundamental rights status.

Justices O'Connor, Kennedy, and Souter also are unlikely to extend fundamental rights protection to cloning, but they will decline to do so for different reasons. In their joint opinion in Casey, the three Justices defined liberty in the sweeping terms of the "right to define one's own concept of

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448 See supra notes 344-52 and accompanying text.
451 See Casey, 505 U.S. at 944 (Rehnquist, C.J., concurring in part and dissenting in part).
452 See id. at 951-53 (Rehnquist, C.J., concurring in part and dissenting in part); id. at 982-84 (Scalia, J., concurring in part and dissenting in part).
existence, of meaning, of the universe, and of the mystery of human life." This language suggests that the authors of the joint opinion might recognize access to cloning as subsumed within the concept of liberty. After all, cloning raises questions about individuality, the role of the person, and the mystery of life. Despite the grand language in Casey, however, Justices O'Connor and Kennedy joined in Chief Justice Rehnquist's Glucksberg opinion, which expressed concern over unduly expanding substantive due process review. Justice Souter concurred in the judgment in Glucksberg, but wrote separately in order to articulate a vision of substantive due process different from that expressed by the majority.

This uncertainty regarding what Justices O'Connor, Kennedy, and Souter consider as the proper scope of substantive review, however, does not preclude intelligent predictions about how they might rule in a due process challenge to cloning legislation. All three Justices indicate some uneasiness about Roe's balancing of the state's interest in protecting the unborn. This interest also exists with cloning, albeit at an earlier stage of development. With respect to cloning, the woman does not have a countervailing interest in bodily integrity. In addition, the government has an interest in ensuring the safety of the procedure for children born through cloning. Thus, it is likely that the authors of the joint opinion will find that the state's interest in protecting the potential life of the unborn, as well as ensuring the safety of cloned children, outweighs any interest that an individual may have to reproduce using cloning technology.

V. CONCLUSION

Federal efforts to ban cloning will survive scrutiny under both the Commerce Clause and the Fifth Amendment's Due Process Clause. First, Lopez does not appear to be a radical departure from prior Commerce Clause case law. Justice Kennedy's concurrence suggests caution in discarding decades of Supreme Court precedent to return to an antiquated notion of economic relations. Second, even as it stands, Lopez is distinguishable from current federal efforts to ban cloning. The proscribed

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453 Id. at 851.
454 See supra notes 372-76 and accompanying text.
456 U.S. CONST. art. I, § 8, cl. 3.
457 Id. amend. V.
458 See supra notes 274-77 and accompanying text.
activity in *Lopez*, though criminal in nature, involved intrastate, noncommercial behavior. Cloning, on the other hand, involves interstate commerce, possibly interstate travel, and commercial activity. Therefore, even though *Lopez* may give pause to constitutional scholars in terms of the future of Commerce Clause litigation, it seems to provide no major impediment to current efforts by Congress to ban cloning.

The Fifth Amendment's Due Process Clause also poses no impediment to federal anti-cloning legislation. First, it is unlikely that the Court will hold that cloning constitutes a fundamental right. Even if the Court does so hold, the government interests involved in banning cloning are compelling. Cloning is not safe. In addition, the government has an important interest in potential human life, and, unlike abortion, there is no countervailing interference with a woman's liberty interest in controlling her body. Therefore, the current anti-cloning bills, if enacted into law, will survive scrutiny under the Commerce Clause and the Fifth Amendment's Due Process Clause.

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459 See *supra* notes 268-70 and accompanying text.