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I. Introduction

In this bustling golden age of technology, consumers continue to reap the benefits of a sophisticated marketplace accelerating down the highway of progress hardly heeding a warning to the sign screaming "Proceed with Caution!" As new scientific technology emerges in our daily panorama, consumers face novel issues that have the ability to polarize the public and cleave societal rifts where none existed before. The coexistence of consumer concerns and Promethean science may have moved one step closer toward a clash that may only be likened in severity to the abortion quandary. A cauldron bubbling with moral, religious, ethical and legal uncertainties was hoist upon the embers of controversy opening a whole new arena for intellectual debate and consumer awareness.

On February 23, 1997, Scottish scientist, Ian Wilmut astounded the world with the press release announcing that he was the first person to have successfully "cloned" a sheep from a single cell of an adult sheep.[1] The achievement came after 277 unsuccessful efforts but was ultimately embodied in a seven-month old sheep named Dolly.[2] Dolly contained the genetic material of only one parent and was the "delayed" genetic twin or "clone" of the adult sheep.[3] The success of creating Dolly was truly a novel one. Three unique developments made this procedure a groundbreaking event:

(1) the ability to replace sexual procreation with asexual replication of an existing set of genes, (2) the ability to predetermine the genes of a child, and (3) the ability to create many genetically identical offspring.[4] Many speculated about the positive implications of such technology, while others saw the event as a chilling transformation of science fiction into scientific fact. The worldwide reaction was wrought with overwhelming consternation as the public consciousness worriedly ruminated: "If a sheep could be cloned, could a human be cloned as well?"

The political reaction was swift and deliberate.[5] In the United States, President Clinton immediately banned federal financing of human cloning research and asked private-sector researchers to halt such work until the ethical and legal implications could be reviewed by the recently appointed National Bioethics Advisory Commission ("NBAC").[6] Abroad, many international organizations such as UNESCO and the Council of Europe reiterated a similar sentiment, and explicitly banned the cloning of human beings.[7] Rationale for the condemnation of cloning ranged from terrifying science fiction imagery to a fundamental concern for human dignity and human rights.[8]

Although the knee-jerk prohibition of human cloning was the only federal regulation to specifically deal with the subject, legal scholars in the United States questioned whether previously existing state statutes could serve to ban the procedure.[9] While the federal government may impose restrictions on certain kinds of research and practices, the states have traditionally regulated issues regarding health care.[10] Currently, many states have statutes that although enacted for other purposes, could govern human cloning.[11] The efficacy of these state statutes is largely dependent on whether the statutes' terms which relate to human development can be defined to encompass human cloning.[12] Beyond this problem, the prospect of human cloning has spawned larger issues concerning whether the federal or state

governments possess the authority to regulate cloning. Thus, in his effort to "build a better glass of milk,"[13] Dr. Wilmut's creation has unearthed a variety of legal issues compounded with a multitude of pressing ethical, religious and policy concerns.

While the practice of cloning includes embryo splitting, this paper focuses its discussion on the newest form of cloning procedures. This article begins, in Part II, with a brief explanation of the science behind human cloning known as *somatic nuclear transfer*. Part III provides a discussion of some religious perspectives on cloning, as many religious beliefs serve as the foundation for broader ethical concerns. Part IV examines the benefits and harms of human cloning to individual consumers and society at large. Part V discusses the constitutional considerations including reproductive freedom and the right to scientific inquiry, and also examines a human right to a unique existence and ignorance of one's own future. Finally, Part VI discusses state and federal legislation and their relation to the possibility of cloning human beings.

II. The Science of Cloning

While this article will focus on the various implications of cloning humans, first it is important to explain the scientific definition of cloning and the process that makes the endeavor possible. The etymology of the word "clone" is from the Greek word "clon" which means, "twig."[14] A twig shares identical genetic information with the parent plant.[15] In scientific application, a "clone" is defined as "a precise genetic copy of a molecule, cell, plant, animal, or human being."[16]

In conventional *sexual* reproduction, the child receives genetic information from each parent.[17] Both the sperm and egg cell each contain a haploid nucleus, meaning that both the sperm and the egg contain solely the genetic information from a single parent.[18] When the

sperm fuses with the egg, it creates a diploid zygote, which contains the genetic information from both parents.[19] The zygote then begins to divide, and the embryo ultimately grows into a child.[20] This process is known as *sexual* reproduction and is a common feature among all mammals.[21]

Recently, however, scientists successfully created mammalian clones using an *asexual* process known as "nuclear transplantation cloning" or "cloning via nuclear transfer."[22] In the procedure, an egg cell (ovum) is harvested and the nucleus removed.[23] Then, the nucleus of an adult body cell or "somatic cell" is removed and injected into the enucleated ovum.[24] Since it is actually the nucleus from the adult somatic cell, the nucleus of the created cell is now diploid, meaning that it has a complete genome, whereas as an ovum normally contains only half of the genome.[25] Thus, the new diploid status of the cell is not the result of the combination of *two* sets of genes through sexual reproduction, but is the consequence of transplanting the full genetic material of a *single* parent.[26] After the new cell is created, it is implanted into the uterus of a woman where it begins to develop into a child as a normal embryo would.[27] The purpose of the process is to create and grow an organism that possesses the exact genetic information as the donating parent.[28]

To the layperson, the phenomenon of cloning may seem highly advanced, but scientists have described the technology involved as "fairly simple."[29] However, scientists are most fascinated with a specific characteristic of the cellular process called "totipotency."[30] This refers to the *total potential* of the somatic cell to make an entire new organism.[31] In order for the procedure (described *supra*) to be successful, the transferred nucleus had to be reprogrammed.[32] Before Wilmut's success with nuclear transfer, the scientific community considered the idea of making a new organism from an already differentiated cell nucleus to be a

nearly impossible task.

During stages of blastulation, whereby an embryo develops into an organism, cells differentiate into specialized cells and become different tissues (i.e. skin cells, muscle cells, blood cells, etc.).[33] Cell differentiation is initiated by chemical factors and certain environmental cues, such as the location of the cell with respect to the embryo and the other cells therein.[34] For example, the cells located in the middle layer, toward the bottom of the embryo, develop into the neural canal and spinal chord, whereas more externally located cells will become skin or hair cells.[35] When a cell differentiates, certain genes are "activated", while the others are "turned off" or never activated.[36] An adult somatic cell is considered to be in a *differentiated* state because only the genetic instructions from the nucleus that are necessary for the particular role of the cell are activated.[37] For example, a differentiated cell like a neuron, must maintain an active portion of neural-specific genes and silence those genes specific to the development and functioning of other types of cells such as muscle or liver cells.[38]

Contrary to a once common belief, the early cloning experiments have revealed that this differentiated state is not absolutely stable.[39] Instead, the nucleus may have a *latent totipotency*, and have the ability to be reprogrammed to re-initiate earlier programs of differentiation, a primary function of an original embryonic cell.[40] The preliminary discoveries about cellular totipotency (the potential of any adult cell in the body to yield an entire organism) are a major step toward understanding the possibilities and capabilities of the human genome. While the technology of cloning may not be overly complex, the profound discoveries made in the course of developing the procedure have had great scientific significance. Incidental or intended knowledge gained from these efforts may provide a compelling argument to preserve the scientific community's ability to continue researching this controversial procedure.

III. Religious Perspectives on Human Cloning

While not all of the arguments surrounding cloning humans are religious in nature, many have come to view cloning as the contemporary manifestation of the age-old science versus religion confrontation. However, within this debate, the dichotomy is not always clearly defined because, despite common expectations, some religious thinkers do not oppose human cloning in every circumstance.[41] In fact, theological positions on the issue are as pluralistic as religion is within American society.

A *Time* magazine poll reported that seventy-four percent of those asked believe that it is against God's will to clone human beings.[42] The most fervent religious objection to human cloning is that it is in essence, "playing God," and a violation of the sanctity of life.[43] Almost all religions hold the creation of life to be the most sacred phenomenon in the universe.[44] Religious opponents to human cloning argue that humans inherently lack the authority to intervene or control a task that is solely reserved for an omnipotent, sovereign being.[45] They reason that humans are fallible, imperfect beings, who evaluate actions based on their own narrow perspective of the world.[46] Consequently, they believe, human cloning is beyond the scope of our role in the universe and is necessarily wrong.[47]

Religious opponents also assert that human cloning is a violation of human dignity.[48] Cloning violates human dignity because it deprives the clone from individuality and a unique identity.[49] Although some cite the occurrence of identical twins as the counter-argument, opponents maintain that cloning is highly distinguishable because cloning is deliberate, while other forces dictate the occurrence of twins.[50] In the case of identical twins, neither twin is the creator of the other, whereas cloning, by its volitional nature, subjects humans to the whims and manipulations of others.[51] In the case of a clone, critics exclaim that they are "deliberately infused

with a predetermined genetic identity . . . [and] saddled with a genotype that has already lived."[52]

Religious opponents to cloning also feel that cloning compromises human dignity because it objectifies human beings.[53] They believe that the use of cloned individuals reduces these people to the status of a tool, or a means toward a greater end.[54] By potentially eliminating the marital act and attempting "to control the very identity of the child," the cloned child will be treated as an object of manipulation.[55] For example, a person cloned from a departed loved one has less chance of being loved solely for his own intrinsic worth.[56] In similar vain, some Jewish opponents of human cloning fear that clones may be objectified by becoming a commodity.[57] They feel that the character of human life will be reduced to a commodity status on the human marketplace, to be judged only by a particular person's worth to others.[58]

While many religious thinkers embrace the perspective opposing human cloning, others suspend judgement and balance it with humanity's quest for knowledge.[59] Under Christian, Jewish and Islamic traditions, the quest for understanding our world does not necessarily conflict with theological beliefs.[60] Rather, some regard scientific inquiry as a symbol or sign of God's creation.[61] Although many draw the line at human cloning, some Protestant thinkers emphasize the idea of "continuing creation," coupled with the theme that people are co-creators who are called to participate with God in shaping a better future.[62] Some Jewish thinkers affirm that the divine mandate of mastery empowers human beings with the responsibility to shape the world through discovery and innovation.[63] Some Islamic thinkers also encourage the continuation of cloning research. One Islamic scholar stresses that, "as participants in the act of creating with God, [humans can] intervene in the works of nature, including the early stages of embryonic development."[64]

Religious values often play an unseen role in legislation and public policy decisions. The hidden and overt influences of religion on both the consumer and society make it worthwhile to recognize the importance of such views in shaping our perspective toward this controversial topic. Like many issues involving bioethics, there is no single religious view on human cloning, despite such vast commonalties between the western religions. Many traditional religious thinkers are fundamentally opposed to the very idea of cloning, drawing on ancient traditions and moral reflection. The opponents argue that the technology has no legitimate uses and that it is always a violation of fundamental religious ideals, such as human dignity. However, progressive religious thinkers believe that the technology may have some legitimate uses and could be justified in certain circumstances. These potential proponents believe that more reflection is required before casting negative dispersions. Although some may support human cloning, proponents will likely still argue for strict regulation of human cloning research because of evils associated with the abuses, and the safety concerns involved in such a precarious novel endeavor.

IV. Pros and Cons of Human Cloning

Within the not so distant future, consumers may be faced with choices regarding the practice of human cloning. Consumers can affect the availability of the practice through two primary methods. First, consumers can influence the existence of the practice through demands on the marketplace. If there is an overwhelming popular desire to make cloning accessible, the possibility of lucrative rewards could result in private industry meeting those market demands. While the current moratorium on cloning prohibits federally funded institutions from developing the practice, private sector biomedical research and laboratory industries are beyond the scope

of such protection. Therefore, the prospect of financial gains could compel private industry to meet the needs of demanding consumers.

In addition to supplying a powerful economic voice, consumers can influence the acceptance of cloning practices by registering their views through the political system. Consumers may chose to elect those representatives who are sympathetic to their wishes, in hopes of furthering legislation that condones and promotes the use of human cloning. Because of the potential for widespread cloning, consumers must be aware of the arguments for and against this practice. These arguments have two core components. Proponents and opponents emphasize that a balancing of (1) the harms and benefits to individual consumers and (2) the harms and benefits to society should determine the acceptance of the practice. The following discussion is organized to reflect this structured dichotomy.

A. Individual Consumer Benefits and Harms of Human Cloning

1. Individual Consumer Benefits

Although human cloning does not seem to be the only solution to unmet human needs, it may, however, confer benefits to certain individuals who could merit its use. One such use could be as a new means to overcome parental infertility.[65] Cloning would allow people who are incapable of producing a child, to have a child that is biologically related to at least one of them.[66] Although opponents may argue that adoption is available, adoption does not provide a child that is biologically related.[67] Cloning would provide a unique remedy for infertile couples unable to conceive under current methods.

Related to the first potential use, a second benefit is the possibility of cloning to avoid the transmission of a genetic condition.[68] If either the man or woman possesses

a genetic disease, cloning will allow the couple to have a biologically related child without the risk of such disease.[69] Opponents argue that these risks can be avoided by using donor sperm or eggs.[70] Using these methods, however, involves the introduction of a third party's genes into the reproductive process. Human cloning would provide a genetically uncorrupted offspring that would otherwise be unavailable.

A third benefit of cloning, and probably the most controversial, would be the ability of a person to receive vital organs or tissue for transplantation.[71] Cloning would not only solve the problem of locating a donor, but would also eliminate the risk of rejection by the recipient's immune system.[72] Opponents maintain that this purpose has far too many drawbacks to be a realistic benefit. First, most needed organs are required more urgently than the gestation process can be completed.[73] Also, the clone would be solely a means to help the parent, rather than a child valued for its own sake.[74] Proponents rebut this argument claiming that the child will still be valued as a loved and important person, even though the initial motivation of having the child was to help another.[75] Furthermore, proponents argue that we should not be able to question the motives of parents when having children, as parents currently do not always have children with the ideal intent behind their actions.[76]

A fourth benefit to the individual consumer is that human cloning could provide a way to reproduce a person who has special meaning, such as a child who died.[77] Opponents maintain that while this benefit may be available, the motivation behind it is confused. While it may help parents overcome their loss, cloning a lost loved one would not replace that person, but merely replace their genetics.[78] The clone may instead be a constant reminder of the child they lost.[79] This purpose could be a benefit worth having, but parents must realize that replacing an individual with a clone is not truly replacing the child, but replacing the semblance of genes.

2. Individual Consumer Harms

The individual benefits to human cloning may be worthwhile, but must be properly balanced against the many potential harms to the individual consumer. The most serious individual harm of human cloning is that it could produce significant psychological stress in the delayed twin.[80] The child may experience stress from a lack of unique identity or from knowing the path of the life taken by the earlier twin.[81] One counter argument is that even if it is conceded that the child will inevitably suffer from significant psychological harms, is it better for the clone not to exist at all? The issue becomes whether life is worth living when there is a risk that the life may be more burdensome than a normal life.[82] This argument is compelling because parents currently make these decisions when faced with the knowledge that their child may be born with limiting, burdensome conditions or defects. In those situations, where there has been enough forewarning, parents may decide to relinquish the life of their child to avoid an inevitable life of suffering.

Other potential individual harms involve unacceptable or unidentifiable risks, which the cloning procedures could bring.[83] Even if the procedure becomes perfected for use on animals, the procedure may not translate to human subjects.[84] More research is necessary, but it will only be possible to know the cloning effects on humans after the first human subject is cloned. There may also be specific problems in the delayed clone long after the completion of the procedure.[85] For example, the donated genetic material may have accumulated mutations during its years in the donor adult.[86] These mutations could have an adverse effect on the clone's aging or a predisposition to certain diseases like cancer.[87] The completion of the human genome project, however, may serve to mitigate this type of risk because of the vast amount of knowledge gained from it. While individuals may greatly

benefit from cloning, there are assorted unpredictable harms to a created clone. Because of these remaining uncertainties, it is premature to determine definitively whether the risks to the clone would grossly outweigh the individual benefits.

B. The Societal Benefits and Harms of Human Cloning

1. Societal Benefits

One suggested societal benefit to human cloning is that it would allow the duplication of individuals with great talent or genius.[88] This benefit, much like the benefit that allows the replacement of a loved one, is often confused and misunderstood. Cloning extraordinary individuals would not ensure that their clone would be extraordinary as well.[89] Individuals' talents and aptitudes are expressed when conditions of their environment allow for such expression.[90] Their genetic make-ups are combined with their place in history, and other non-repeatable influences such as events, mentors, and coincidences.[91] Therefore, the belief that cloning remarkable individuals would create other remarkable ones is a belief predicated, again, on genetic determinism. Nurture as well as nature makes an individual extraordinary.

Cloning extraordinary people for the benefit of society would cause other problems to arise. For example, what standard would be used to determine greatness?[92] In some cases, greatness is undisputed, but there are controversial figures whose greatness may not be as clear. This invites yet another question about who would control access to the cloning of such individuals.[93] If left in the hands of the private sector, cloning would take on a profit-oriented motivation.[94] If the government controlled access, the clones could be used only to benefit the current segments of society that have political power at the time.[95] Thus, the idea of cloning extraordinary humans has many potential concerns with only a limited

potential of achieving the desired goal of creating more exceptional people.

The most realistic benefits of human cloning to society are the advances to be made in scientific knowledge,[96] specifically in medical, genetic, and psychological knowledge.[97] However, opponents argue that advances in other less controversial research areas could provide the same knowledge to be gained from cloning research.[98] A unique aspect of scientific research is that many of the discoveries are unanticipated, and although scientists have expectations about what they will discover, the most valuable fruits often arise serendipitously.

Cloning for scientific knowledge also involves issues of consent.[99] While consent can be obtained from the donor adult, the newly created clone cannot give such consent. Without the clone's consent, creating human clones solely for the purpose of research is both unethical and prohibited by laws regulating human subjects.[100] Clearly, consumers and society must balance the benefits of scientific research with the freedom to pursue scientific inquiry against the copious ethical problems that would assuredly arise from such an enterprise.

2. Societal Harms

A major objection to human cloning is the belief that it will diminish the worth of individuals and the respect for human life.[101] Opponents believe that humans would be seen as replaceable objects instead of important, irreplaceable individuals.[102] However, as mentioned above, this argument is mostly false.[103] A clone with identical genes could simply not replace an individual. The identity of an individual is comprised of an interaction between their genes and environment over time. The value of a person is found in their nature, not in the way they are created. Because most people realize this to be true, the likelihood is small that society would change its

perspective on the value of human life and disregard the worth of individuals.

Related to the possibility of objectifying humans is the specific fear that cloning would result in eugenics.[104] Eugenics refers to the idea of improving humankind by selective reproduction that aims at passing on only advantageous traits.[105] The idea of a eugenic plan requires two main assumptions. First, that people would conform to the eugenic plan and tailor their reproductive behavior accordingly. Second, that it is possible to decide which human traits should be favored. Beyond these dubious assumptions, eugenics overly relies on the role of genetics in determining traits and characteristics. Again, genetics is only half of the equation.

Another concern is that human cloning would interfere with evolution and our ability to adapt as a species.[106] Opponents argue that because cloning promotes genetic uniformity, it may increase the danger that a disease might arise in the future, and the resulting clones would have no resistance.[107] They also argue that since it is unknown whether clones would be sterile, the ability of humans to procreate could be compromised.[108]

The above arguments may contain a kernel of truth, but are probably too extreme to be realistic. Cloning would have to be employed on a wide enough scale to make a significant difference in the gene pool or effect the procreative capability of the species. This would almost require asexual reproduction to completely displace sexual reproduction. This is especially unlikely, as sexual reproduction has long been the preferred method for procreation. Thus, the argument is weak at best since the conditions surrounding human cloning would need to be enormously exaggerated to destroy genetic diversity.

Among the many fears elicited by the idea of human cloning is the fear of its use by the private sector for financial gain.[109] Both opponents and proponents agree that cloned embryos should not be bought or

sold.[110] This would be a violation of moral respect for human life and dignity. There is also a fear that governments and other groups may use cloning for exploitative purposes.[111] The science fiction idea that governments or groups would exploit clones to benefit society will hopefully remain science fiction. If human cloning is permitted, strict regulation of the practice must be a prerequisite to ensure the creation of a *Brave New World* does not become reality. The exploitation of clones would violate moral respect and human dignity on every level. Fears of such a reality would certainly prompt legislatures to develop laws needed to protect the vulnerable.

One final argument raised by opponents is that human cloning would divert resources from other more important scientific and medical needs.[112] While cloning may have such an effect, it is too soon to estimate the exact expense of cloning research and procedures. It is true that society has more pressing needs than human cloning, but that may not be reason enough to forego it altogether.

V. Rights Involved in Human Cloning

The right to clone a human may be derived from principles of natural law and moral belief systems. However, if human cloning does become a viable procedure it will inevitably need the protection of the Constitution. To effectively confront legislators and protestors armed with state and federal laws prohibiting the procedure, proponents will likely attempt to include the right to clone humans as a right so fundamental that it cannot be relinquished.

A. Is There a Constitutional Right to Pursue Human Cloning?

1. Reproductive Rights of Parents

The right to reproductive freedom encompasses the right to reproduce, or in the negative, not to reproduce. As reproductive freedom includes the right not to reproduce using technology (ie. abortion[113] or contraception[114]), it must also include the right to reproduce using assisted reproductive technologies.[115] Although the currently available procedures include *in vitro* fertilization, egg donation, surrogacy, and fertility drugs, the use of cloning should arguably remain unregulated by the government as these other techniques have.[116] The argument against such reproductive freedom for cloning is that it is different from all other assisted reproduction techniques because it is asexual,[117] and it is more akin to the "manufacturing" of humans than any other method.[118]

Proponents of human cloning justify their stance with references to ideas of liberty and freedom. If the practice does not infringe on the rights of others or cause significant harm to others, proponents contend that cloning should be allowed to exist as an unfettered practice.[119] Specifically, proponents cite to the constitutionally protected right of reproductive freedom as it was embraced by the Supreme Court in *Planned Parenthood v. Casey*.[120] The Court reaffirmed its decision in 1992 in *Eisenstadt v. Baird*, where it stated "[i]f the right to 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."[121]

Proponents also believe that the right to reproductive freedom should include some choice about the kind of children that will be born.[122] Parents currently make such choices as embryos are frequently tested for genetic

diseases or abnormalities, and parents are tested before contraception to determine the risk of passing on a genetic disease.[123] Both of these practices are in place to avoid having a child with an inheritable disease. In these instances, reproductive freedom includes the parent's choice whether to have a child with a severe condition that may overly burden the parents. Thus, parents do have a right to determine what kind of children they will produce.

Parents also make choices about what kind of children they will have by making instrumental decisions regarding the child's upbringing.[124] While these choices may not directly involve reproductive rights, a parent's choices in childrearing largely affect the kind of children they become.[125] With origins in the context of education, the Supreme Court has long recognized the right for parents to direct the upbringing of their children. In *Meyer v. Nebraska*, the Supreme Court declared unconstitutional a Nebraska statute that prohibited the use of any language other than English in elementary teaching.[126] The Court stated, "the right of parents to engage [a teacher] to instruct their children, we think, [is] within the liberty of the [Fourteenth] Amendment."[127]

The Supreme Court extended the idea of parental rights in *Pierce v. Society of Sisters*.[128] In *Pierce*, the Court recognized the right of parents to send their school-age children to parochial or other private schools, thus declaring an Oregon statute that required compulsory public schooling to be unconstitutional.[129] The Court asserted that the statute "interfered with the liberty of parents and guardians to direct the upbringing and education of children under their control."[130] Thus, reproductive freedom involves the freedom to select the means of reproduction as well as what kind of children to have through disease screening and childrearing. If these parental rights are already in place, does that make limitations placed on cloning a cutback on rights that parents already enjoy?

2. The Right to Freedom of Scientific Inquiry

The issue of human cloning also brings into question the freedom of scientific inquiry and research. If we accept that such a right exists, then any prohibition of human cloning procedures or research endeavors is a violation of that right. Because of this country's great respect for freedom of expression,[131] any ban on scientific research must be carefully considered so as not to contradict the basic tenets of our freedom. Research on human cloning may reveal more than just how to clone, but may provide valuable scientific knowledge that is entirely unanticipated.[132]

Certain commentators have speculated that there might be a right of scientific inquiry protected by the First Amendment right to free speech.[133] While the Supreme Court has not addressed the issue directly, it would seem that if "the First Amendment protects the marketplace of ideas, it is likely that it would protect the generation of information that would be included in that marketplace."[134] A lower federal court has recognized, in *dicta*, that there exists a "right ...to do research and advance the state of man's knowledge."[135] However, other federal courts have been reluctant to recognize the right of scientific inquiry under the protection of the First Amendment.[136]

Opponents to human cloning do not necessarily fear the knowledge to be gained by research of the procedure, but rather the consequences of being able to execute it.[137] They argue that it is possible to ban the procedure while allowing the research to continue.[138] While this is true, much more would be learned by understanding the full development of the clone throughout a life cycle.[139] For example, scientists are still unsure if the clone will age normally or experience a hastened aging process due to the nature of the adult DNA used in the cloning process.[140] However, creating a clone to study throughout their life would be objectification and an invasion of that

person's privacy. Because of such consequences to the clone, the argument for scientific inquiry does not support the moral right to cloning as readily as the argument for reproductive freedom.

3. Other Constitutional Arguments Against Cloning

While a First Amendment right of scientific inquiry or a constitutional liberty/privacy argument might be seen as protecting cloning, some other constitutional provisions may limit the use of human cloning.[141] There are two alternate constitutional objections to human cloning.[142] First, cloning an individual may create a "genetic bondage" and violate the Thirteen Amendment's prohibition of slavery.[143] A clone can be seen as being limited in his or her freedom based on expectations about their genetic makeup.[144] If creating a person with a known genetic predisposition is viewed as undermining the free will of the individual, it may constitute an infringement of civil liberty. However, this argument seems to be stretching the intent of the framers to the point of distortion. Cloning does not inherently conflict with an individual's free will because individuality and freedom are only partially tied to genetics.

The second constitutional objection to human cloning is found in the Nobility Clause of the Constitution.[145] When the United States was formed, there was a rejection of British values that certain privileges should not attach based on one's bloodlines.[146] The values underlying the Nobility Clause could make certain cloning practices unconstitutional.[147] For example, if certain individuals (such as top scientists, athletes, artists, etc.) were granted sole permission to clone themselves, it could be construed as creating a class of nobility.[148] At the very least, allowing only certain people to clone themselves due to their genetic distinction violates the idea of "equality of citizens in respect to their . . . private rights."[149]

These constitutional arguments against human cloning may only be applicable in certain circumstances, but the underlying message of these arguments is more profound. If human cloning is allowed to exist in this country, it must be guarded with strict legal and constitutional scrutiny. Such measures are important because of the enormous possibilities for abuse, exploitation, and social/individual harms.

B. Does Cloning Violate Moral Human Rights?

While the rights celebrated by Americans are mostly embodied within the Bill of Rights, many philosophical thinkers believe that human rights merely begin with the Constitution and extend into natural law not laid down on parchment.

1. The Right to a Unique Existence

Those opposed to human cloning often articulate that cloning involves human rights.[150] The most prominent human right is the right to a unique existence.[151] The question becomes whether humans have a right to a unique, original genome. How can such a right exist in the face of the existence of identical twins? Is that already a violation of the right? The opponents argue that only deliberate actions can violate the rights of others, and identical twins are the result of natural causes.[152] Therefore, there still may be an untouched right to a unique identity.

On the other hand, proponents maintain that having an identical genome is not a violation of a right to a unique identity.[153] Interpreted strictly, the doctrine of *genetic determinism* holds that one's genetic makeup determines everything about an individual.[154] However, based on what psychology and scientific studies have revealed about personality development, it is clear that is a fallacious concept.[155] A person's identity is the sum

of genetic factors and non-genetic factors such as their environment and entire personal history of experiences. Twins have provided an excellent demonstration of this in cases where homozygous (identical) twins are reared either together or apart.[156] Simply because the twins share a common genome, does not prevent them from each becoming entirely different people with unique identities.[157] Therefore, the existence of identical twins somewhat rebuts the argument that cloning inherently violates a right to have a unique identity. People are more than the genetic instructions that dictate physical assembly. We are a combination of hard genetics and fluctuating, intangible factors that result in an inevitably guaranteed originality.

2. The Right to Ignorance of One's Future

The right to ignorance of one's future refers to the idea that "delayed" clones will know, or believe they know, too much about themselves because of the existence of the earlier genetic twin.[158] The argument is that we all begin life with ignorance of the effect our genomes will have on our lives.[159] This ignorance is essential so individuals may freely choose their futures and develop a genuine self over the course of a life.[160] Opponents feel that a clone will be deprived of this right because the earlier twin started from the same genetic point.[161] It may seem to the clones that their lives have already been lived and that their fate is predetermined, leaving the clone with a loss of spontaneity in creating their future.[162] "If one's genetic makeup is subject to prior determination, one's ability to conceive of oneself as a free and rational being...may gradually weaken and might finally disappear altogether."[163]

This argument is based largely on crude genetic determinism. One's genomes do not have an all-encompassing effect on the person one becomes. However, opponents are quick to cite that it is not the truth of the

phenomenon, but the *belief* on the part of the delayed clone that will result in the deprivation of the right to ignorance.[164] In other words, the veracity of the genetic determinism portion of the argument is not as important as the fact that the delayed clone may *believe* that their future is not open. This belief could in turn, have serious psychological consequences.[165]

Although potential psychological harms may result from the existence of the earlier clone, it is not necessary to believe that human cloning will certainly deprive a delayed clone of a right to ignorance. At best, one can only truly speculate as to how a clone would feel about its self-identity. Both the right to a unique existence and the right to ignorance do not seem to be absolutely violated by human cloning. These rights, if they actually exist, are capable of being enjoyed despite the existence of an exact delayed genetic twin. It is important to accord arguments, which rely on concepts like genetic determinism, the proper weight they deserve. One's genome is only a fraction of one's identity, and but a factor among many in determining one's future.

VI. Current Legal and Policy Considerations

The announcement of Dolly's birth led to the immediate introduction of federal and state legislation aimed at prohibiting research on human cloning.[166] While some of the bills attempt to prohibit all or most research on human cloning, others attempt to prohibit research on cloning human DNA sequences or cell lines.[167] Both Congress and the President have expressed fears about cloning humans, and federal action is being considered to prohibit the practice.[168] In 1994, President Clinton announced that the National Institutes of Health could not finance any research that entailed creating embryos for research that would end in the destruction of the embryo.[169] Then, shortly after the published report of Dolly in 1997, Clinton instituted a ban on federal funding

for human cloning.[170] While the legal status of human cloning is uncertain, there is currently no law in the United States that directly prohibits creating a child through nuclear transfer. However, Congress could enact legislation that criminalizes human cloning, and serve as a powerful deterrent for those not covered by the current moratorium.[171]

A. Federal Regulation

In 1997, the House of Representatives introduced the "Human Cloning Prohibition Act," which "makes it unlawful for any person to use human somatic cell for the process of producing a human clone."[172] In 1998, the bill was passed to the Senate where the Act was amended to include a national dialogue on human ethics.[173] Then, in 1999, the House passed a different version of the bill called the Human Cloning Research Prohibition Act, "that included a ban on all federal funding for somatic cell nuclear transfer."[174] More significantly though, the bill added a Protected Scientific Research section, which states:

> Nothing in this Act shall restrict other areas of scientific research not specifically prohibited by this Act- including important and promising work that involves – (1) the use of somatic cell nuclear transfer or other cloning technologies to clone molecules, DNA, cells other than human embryo cells, tissues; or (2) the use of somatic nuclear transfer techniques to create animals other than humans.[175]

Through the Act, the House condoned all research relating to somatic cell transfer but prohibited its application to human cloning.[176] The Senate has yet to act on the bill, but if passed, any procedures or research related to cloning humans will have federal legal consequences.[177]

Additionally, there are many other bills initiated by the House and the Senate which aim at prohibiting cloning in various ways.[178]

If current pending legislation fails to be enacted into law, there may be existing federal regulations that could prohibit human cloning. A requirement already exists that clinics using assisted reproduction techniques, like *in vitro* fertilization, be monitored.[179] The Fertility Clinic Success Rate and Certification Act of 1992 covers all labs and treatments that manipulate human eggs and embryos.[180] The Act requires that rates of pregnancy success be reported to the Department of Health and Human Services ("DHHS").[181] The Secretary of DHHS is also required to develop a plan for inspection and certification of labs that use human embryos, to be eventually implemented by the states.[182] The Act seems to apply to efforts that use nuclear transfer techniques to create a child.[183] As the Act is implemented, any clinic or lab involved in attempts to impregnate using the nuclear transfer technique would be targeted by the federal government to be further monitored or dealt with in some other fashion.

Federal regulations, which govern the use of human subjects in research also restrict the funding and conduct of any research aimed at human cloning.[184] Federally funded researchers have executed a "multiple assurance agreement" with the government and are subject to regulations ensuring human subjects are not exposed to any unreasonable risks in experiments.[185] These regulations are enforced by Institutional Review Boards ("IRBs") which are committees appointed by institutions such as universities that conduct research. The IRBs review the experiments before they take place to assure the prevention of physical harms to humans.[186] However, the regulation regarding human subjects can only restrict those organization that conduct federally funded research. Likewise, the NIH funding ban and the moratorium on using federal funds for cloning human

can only regulate cloning to the extent that efforts to clone humans are undertaken by those using federal funds.[187]

B. State Regulations

While the existing federal restrictions on cloning are limited in their reach, a number of state laws governing the management of embryos could potentially restrict privately funded research.[188] Several states have laws regulating research and experimentation on embryos, fetuses, or unborn children.[189] The language of these statutes may be broad enough to include cloning projects.[190] However, there are several arguments that suggest that these state laws do not apply to human cloning.[191]

For example, Pennsylvania prohibits nontherapeutic experimentation and nontherapeutic medical procedures on an "unborn child,"[192] which is defined by the statute as an organism of the *homo sapien* species from fertilization to live birth.[193] First, since the procedure is being done on an *egg*, and not an embryo, fetus, or unborn child, the language of the statute is too narrow to include nuclear transfer experiments.[194] Opponents could argue that the spirit of the law is to protect the beginning of human life. On the other hand, proponents could argue that the statutes do not cover cloning because it was not contemplated by the drafters. Depending on a court's interpretation, the statutes may not apply.

Also, similar to the Pennsylvania statute, some statutes define the embryo or fetus as the product of "fertilization."[195] Therefore, if the transfer of a nucleus into an egg is not considered to be "fertilization," the technique is beyond the scope of the statute.[196] Another argument is that some of the state statutes prohibiting embryo research could be struck down on grounds that they are unconstitutionally vague.[197] For example, state

laws that generally ban embryo research and experimentation have been struck down for this reason.[198] In these cases, statutes were struck for including terms like "experimentation" without an adequate definition.[199] The courts have held that since the statute failed to adequately define the term, it necessarily violated a researcher's or clinician's due process rights under the Fifth amendment because they were without notice that their conduct was illegal.[200]

The current state statutes may provide some regulation of human cloning, but there are many arguments that make the statutes seem impermissible. If the federal and state governments wish to definitively and specifically regulate human cloning they must draft legislation that accomplishes that goal. The question then, as is always the ultimate test, is whether such legislation prohibiting human cloning can pass constitutional muster.

VI. Conclusion

Before the cloning of Dolly, human cloning received little serious ethical and legal consideration, because it was often dismissed as a scientific impossibility. However, within the last three years the prospect of cloning a human being has become a realistic possibility. Among the wide range of issues within bioethics, human cloning occupies a category of its own as it stirs deep uneasiness and fear in many people.

The wide variety of religious beliefs toward cloning epitomizes the pluralism marked by American culture. Consequently, religious perspectives differ between and within religions. While traditional religious thinkers abhor the very idea of cloning a human, others are more willing to understand its potential benefits. The ethical and practical pros and cons of human cloning seem to be balanced, as there is not a truly decisive argument for or against permitting it. Proponents believe that cloning

may offer benefits to society and individual benefits to parents and the ill. Opponents feel that cloning will always be unethical because it undermines the sanctity of life, and poses an insurmountable number of psychological and physical harms to individuals and society. Public opinion will remain divided but it is important to note that any current endeavor would be unethical because the procedures have not been determined to be safe at this time.

While there is a moratorium prohibiting the use of federal funds for human cloning research, current federal legislation banning human cloning research is pending. If the legislation does not become enacted into law, regulations and constitutional objections may still prohibit the use of cloning techniques. Additionally, some states have taken it upon themselves to prohibit the technique through cloning-specific or pre-existing statutes that regulate reproductive research.

There are many legitimate moral concerns about the use and effect of human cloning. These concerns must not turn into panicked closed-mindedness, which could result in an oversight and sacrifice of important scientific knowledge and benefits to society. If cloning is ultimately permitted, it must be done under a watchful eye, as the potential for abuses could run higher in this latest development than in any other within the scientific arena.

Endnotes

1. Tim Beardsley, *Cloning Hits the Big Time*, SCIENTIFIC AMERICAN, Sept. 2, 1997, *available at* http://www.sciam.com/explorations/090297clone/beardsley.html.

2. *Id.*

3. Gina Kolata, *Human Cloning: Yesterday's Never Is Today's Why Not?*, N.Y. TIMES, Dec. 2, 1997, *available at* http://www.gene.ch/gentech/1997/Nov-Dec/msg00057.html.

4. Harold T. Shapiro, *Cloning Human Beings - Report and Recommendations of the National Bioethics Advisory Commission*, at 2, June, 1997, *available at* http://bioethics.gov/pubs.html.

5. Dan W. Brock, *Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con*, at E-3, (Commissioned Paper, 1997), *available at* http://bioethics.gov/pubs.html.

6. Transcript of Clinton's remarks on cloning, U.S. NEWSWIRE, March 4, 1997.

7. Shapiro, *supra* note 4, at 3.

8. *Id.* at 2.

9. Lori B. Andrews, *Cloning Human Beings: The Current and Future Legal Status of Cloning*, at F-4, (Commissioned Paper, 1997), *available at* http://bioethics.gov/pubs.html.

10. *For example*, state medical boards license and regulate physicians and hospitals. *See* Andrews, *supra* note 9, at F-27.

11. *Id.* Additionally, this discussion is elaborated *infra* Part VI (A) & (B).

12. Andrews, *supra* note 9, at F-23.

13. *Id.* at F-10 (citing Ian Wilmut, *Viable Offspring Derived From Fetal and Adult Mammalian Cells*, 385 NATURE 810, 813).

14. DreamTech International, *Cloning Myths: Debunking Science Fiction*, at 1, (Mar. 1999), *at* http://www.d-b.net/dti/intro1.html.

15. *Id.*

16. Shapiro, *supra* note 4, at 13.

17. DreamTech International, *supra* note 14, at 4.

18. J. ROSSANT and R.A. PEDERSON, EXPERIMENTAL APPROACHES TO MAMMILIAN EMBRYONIC DEVELOPMENT, 35-43 (Cambridge University Press 1986).

19. *Id.* at 37.

20. *Id.*

21. Sexual reproduction is distinct from asexual reproduction in that the genes from two separate organisms are combined into the genetic material of the offspring. Although sexual intercourse does not take place during *in vitro* fertilization and surrogacy, these methods are forms of sexual reproduction. *Id.*

22. National Center for Genome Resources, *Human Cloning: Should it be Done? What Would it Mean?*, *at* http://www.ncgr.org/gpi/odyssey/dolly-cloning/cloning_humans.html (last updated Aug. 7, 1997).

23. Beardsley, *supra* note 1, at 2.

24. In the cloning of Dolly, a mammary gland cell was used as the nucleus donor. *Id.*

25. Scott Gilbert, *Cloning Mammals: What Does it Mean?*, ZYGOTE, *at* http://zygote.swarthmore.edu/gene4.html (last updated Mar. 10, 1997).

26. *Id.*

27. Robert Prather, *Cloning Embryos by Nuclear Transfer*, JOURNAL OF REPRODUCITON AND FERTILITY, Supplement 41, 125-134 (1990).

28. *Id.* at 130.

29. Dr. Harold Varmus, the director of the National Institutes of Health, testified to this opinion before a House subcommittee. *See National Brief – Washington D.C.: NIH Director Plays Down Cloning Effect*, LOS ANGELES TIMES, Feb. 27, 1997, at A9.

30. Leon Browder and Laurie Iten, *The Brave New World of Mammalian Cloning*, THE VIRTUAL EMBRYO, http://www.ucalgary.ca/UofC/eduweb/virtualembryo/cloning.html (last updated Oct. 7, 1998).

31. *Id.*

32. *Id.*

33. Shapiro, *supra* note 4, at 17.

34. *Id.*

35. *Id.*

36. *Id.* at 18.

37. *Id.* at 762.

38. *Id.* at 17.

39. *Id.* at 24.

40. *Id.*

41. *Id.* at 39.

42. National Center for Genome Resources, *supra* note 22, at 3 (citing poll in TIME, March 10, 1997).

43. P. RAMSEY, FABRICATED MAN: THE ETHICS OF GENETIC CONTROL, 89 (Yale University Press 1970).

44. All western religions have beliefs about the creation of life on earth which often play a substantial role in the basis of these religions. *See* Shapiro, *supra* note 4, at 43.

45. *Id.* at 45.

46. *Id.*

47. *Id.*

48. The general biblical belief is that humans have dignity because they are created in God's image. The question then arises, will this dignity be compromised as a result of "playing god" by cloning humans? *Id.* at 49.

49. *Id.* at 49 (citing Albert S. Moraczewski, Cloning and the Church, Testimony of the Pope John Center before the National Bioethics Advisory Commission (Mar. 13, 1997).

50. F. C. Pizzulli, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. CAL. L. REV. 476, 492 (1974).

51. *Id.* at 509.

52. *Id.*

53. Shapiro, *supra* note 4, at 50.

54. *Id.*

55. *Id.* at 49 (citing Albert S. Moraczewski, Cloning and the Church, Testimony of the Pope John Center before the National Bioethics Advisory Commission (Mar. 13, 1997).

56. Pizzulli, *supra* note 50, at 503 n.140.

57. Shapiro, *supra* note 4, at 50.

58. R. Dorff, Human Cloning: A Jewish Perspective, Testimony before the National Bioethics Advisory Commission (Mar. 14, 1997).

59. Shapiro, *supra* note 4, at 42.

60. *Id.*

61. *Id.*

62. *Id.* at 47 (citing Richard Cole-Turner, THE NEW GENESIS: THEOLOGY AND THE GENETIC REVOLUTION, 268 (John Knox Press 1993)).

63. *Id.* at 48.

64. *Id.* at 46 (citing A. Sachedina, Islamic Perspectives on Cloning, Testimony before the National Bioethics Advisory Commission (Mar. 14, 1997).

65. H. Wray, J.L. Sheler, T. Watson, *The World After Cloning*, U.S. NEWS AND WORLD REPORT, March 10, 1997, at 59.

66. *Id.*

67. Brock, *supra* note 5, at E-7.

68. T.H. Mauhj, *Brave New World*, LOSANGELES TIMES, February 27, 1997, at B2.

69. *Id.*

70. Brock, *supra* note 5, at E-7.

71. J. Kluger, *Will We Follow the Sheep?*, TIME, March 10, 1997, at 67.

72. *Id.*

73. Brock, *supra* note 5, at E-18.

74. *Id.*

75. *Id.*

76. *Id.*

77. W. Gaylin, *We Have the Awful Knowledge to Make Exact Copies of Human Beings*, N.Y. TIMES, March 5, 1972, at 48.

78. L. Thomas, *Notes of a Biology Watcher: On Cloning A Human Being*, 291 NEW ENG. J. MED., 1260, 1296-97 (1974).

79. *Id.*

80. Pizzulli, *supra* note 50, at 510.

81. *See* discussion *infra* Part IV B(2).

82. *See* Robert Wright, *Can Souls Be Xeroxed?*, TIME, March 10, 1997, at 73.

83. Brock, *supra* note 5, at E-16.

84. Andrews, *supra* note 9, at F-14.

85. *Id.*

86. Terence Monmaney, *Prospect of Human Cloning Gives Birth to Volatile Issues*, LOS ANGELES TIMES, March 2, 1997, at A2 (comments of Dr. Elias).

87. *Id.*

88. Andrews, *supra* note 9, at F-11.

89. Brock, *supra* note 5, at E-9, E-10.

90. *Id.*

91. *Id.*

92. *See* Jane Gross, *Thinking Twice About Cloning*, N.Y. TIMES, March 10, 1997, at 62.

93. *See id.*

94. Brock, *supra* note 5, at E-10.

95. *Id.*

96. Andrews, *supra* note 9, at F-10.

97. Brock, *supra* note 5, at E-10.

98. *Id.*

99. Ramsey, *supra* note 43.

100. *Id.*

101. *See* discussion *supra* Part III; *see also* Ruth Macklin, *Splitting Embryos in the Slippery Slope: Ethics and Public Policy*, KENNEDY INST. OF ETHICS J., at 209 (1994).

102. *See* discussion *supra* Part III.

103. *See* discussion *supra* Part IV(B)(1).

104. Shapiro, *supra* note 4, at 73.

105. *Id.*

106. Andrews, *supra* note 9, at F-16.

107. George B. Johnson, *What Rights Should a Cloned Human Have?*, ST. LOUIS POST DISPATCH, March 20, 1997, at B7.

108. *See id.*

109. Brock, *supra* note 5, at E-19.

110. *Id.*

111. *Id.*

112. M. LaBar, *The Pros and Cons of Human Cloning*, 57 THOUGHT, 290, 318 (1984).

113. An in depth analysis of the right to an abortion is beyond the

scope of this discussion, but is recognized as a current right following the Supreme Court's holding of Roe v. Wade, 410 U.S. 113 (1973).

114. While the Catholic Church denounces the use of contraceptives, the right to use such devices is in no way disturbed under United States law.

115. The reproductive right relative to human cloning is often referred to as a negative right, that is to use assisted means of reproductive technologies without interference from the government or others. Brock, *supra* note 5, at E-5.

116. Brock, *supra* note 5, at E-5.

117. The term asexual refers to the concept that there is no combination of two different sets of genes. *See* discussion, *supra* Part II.

118. Brock, *supra* note 5, at E-5.

119. *Id.* at E-4.

120. The right to make decisions about whether to bear children is constitutionally protected under the constitutional right to privacy and the constitutional right to liberty. *See generally*, Planned Parenthood v. Casey, 505 U.S. 833 (1992).

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

122. D. Thomasma and J. Monagle (eds.), *Reproductive Freedom: its nature, bases and limits, in* HEALTH CARE ETHICS: CRITICAL ISSUES FOR HEALTH CARE PROFESSIONALS (Aspen Publishers 1994).

123. *Id.*

124. George J. Annas, *Regulatory Models for Human Embryo Cloning: The Free Market, Professional Guidelines, and Government Restrictions*, KENNEDY INSTITUTE OF ETHICS JOURNAL, 4(3), 235, (1994).

125. *Id.*

126. Meyer v. Nebraska, 262 U.S. 390, 401-403 (1923).

127. *Id.* at 400.

128. Pierce v. Society of Sisters, 268 U.S. 510, 534-535 (1925).

129. *Id.* at 534-535.

130. *Id.*

131. As one of the most revered rights, the right to freedom of expression was thoughtfully set forth in the First amendment of the Constitution. U.S. CONST. amend. I.

132. *E.g.*, discussion of "totipotency" *supra* Part II.

133. Lori B. Andrews, *Cloning Human Beings: The Current and Future Legal Status of Cloning*, at F-6, (1997) (Commissioned paper).

134. *Id.*

135. *Id.* (citing Henley v. Wise, 303 F. Supp. 62 (N.D. Ind. 1969)).

136. *Id.* (citing Margaret S. v. Edwards, 488 F. Supp. 181, 220-221 (E.D. La. 1990); *see also* Margaret S. v. Treen, 597 F. Supp. 636 (E.D. La. 1984), *aff'd, sub. nom.*, Margaret S. v. Edwards, 794 F.2d 994 (5th Cir. 1986); Wynn v. Scott, 449 F.Supp. 1302 (1978), *aff'd, sub. nom.*, Wynn v. Carey, 599 F.2d 193 (7th Cir. 1979).

137. Brock, *supra* note 5, at E-6.

138. *Id.*

139. Cloning research might lead to greater understanding of the cellular life cycle, possibly allowing for manipulation of the cell's life cycle which could have significance in aging research, etc. G. Kolata, *Scientists Urge Senators Not to Rush to Ban Human Cloning*, N.Y TIMES, March 13, 1997, at B11 (testimony of Dr. Ian Wilmut before the Senate, March 12, 1997).

140. Scientists do not know which "genetic clock" the clone will inherit. On a cellular level the clone would be as old as its birth date, but it could age at the rate of the adult cell from which the nucleus was taken. P. Recer, *Sheep Cloner Says Cloning People Would be Inhumane*, Reported by Associated Press, March 12, 1997 (regarding the banning of cloning research).

141. Andrews, *supra* note 9, at F-39, F-40.

142. *Id.*

143. This term was coined by Puzzilli, *supra* note 50, at 515.

144. Andrews, *supra* note 9, at F-39.

145. "No title of nobility shall be granted by the United States." U.S. CONST. art. I, § 9, cl. 8.

146. Andrews, *supra* note 9, at F-40.

147. *Id.*

148. Pizzulli, *supra* note 50, at 580 n.503.

149. *Id.*

150. Some opponents claim that cloning would violate fundamental human rights, but proponents say that the prohibition of cloning would violate those same rights. Brock, *supra* note 5, at E-4.

151. Religious opponents often cite this as a primary objection to cloning. *See supra* Part II.

152. Pizzulli, *supra* note 50.

153. Brock, *supra* note 5, at E-12.

154. *Id.*

155. *Id.*

156. *Id.*

157. *Id.*

158. H. JONAS, PHILOSOPHICAL ESSAYS: FROM ANCIENT CREED TO TECHNOLOGICAL MAN, 105 (Prentice-Hall 1974).

159. *Id.*

160. Brock, *supra* note 5, at E-12.

161. *Id.*

162. *Id.*

163. Lawrence Tribe, *Technology Assessment and the Fourth Discontinuity: The Limits of Instrumental Rationality*, 46 S. CAL. L. REV. 617, 648 (1973).

164. Brock, *supra* note 5, at E-13.

165. *Id.*

166. Shapiro, *supra* note 4, at 87.

167. *Id.* at 88.

168. *See* discussion *infra* PartV(A).

169. Andrews, *supra* note 9, at F-27.

170. U.S. NEWSWIRE, *supra* note 6.

171. "Thus declared Sen. Christopher "Kit" Bond (R-Mo.) one of the sponsors of S. 1601, the official Republican bill to outlaw human cloning. The bill would impose a 10-year prison sentence on anyone who uses 'human somatic cell nuclear transfer technology' to produce an embryo, even if only to study cloning in the laboratory. If enacted into law, the bill would effectively ban all research into the potential benefits of human cloning. Scientists who use the technology for any reason — and infertile women who use it to have children — would go to jail." Mark Eibert, *Clone Wars*, REASON, ¶ 2 (June 1998), *available at* http://www.reason.com/9806/col.eibert.html.

172. H.R. 923, 105th Cong. § 2 (1997).

173. S. 1601 105th Cong. § 4 (1998).

174. H.R. 2326 106th Cong. (1999).

175. *Id.* § 4.

176. *Id.*

177. *Id.*

178. The list of cloning legislation is lengthening and includes the following:
Paul Human Cloning Prevention Act of 1999 (Introduced in the House) [HR 571]
First/Bond Human Cloning Prohibition Act (Placed in the Senate)[S.1601]
First/Bond Human Cloning Prohibition Act of 1998 (Introduced in the Senate)[S.1599]

Human Cloning Prohibition Act (Introduced in the Senate)[S.1574]
Feinstein/Kennedy Prohibition on Cloning of Human Beings Act of 1998 (Introduced in the Senate)[S.1602]
To prohibit the use of Federal funds for human cloning research. (Introduced in the Senate)[S.368]
Prohibition on Cloning of Human Beings Act of 1998 (Placed in the Senate)[S.1611]
Human Cloning Prohibition Act (Introduced in the House)[H.R.923]
Human Cloning Research Prohibition Act (Introduced in the House)[H.R.922]
Human Cloning Research Prohibition Act (Introduced in the House)[H.R.3133]

179. Andrews, *supra* note 9, at F-22.

180. 42 U.S.C.A. § 263a-1 (Supp. 1996).

181. *Id.*

182. *Id.* § 263a-2.

183. The Act regulates "all treatments or procedures which include the handling of human oocytes or embryos . . ." *Id.* § 263a-7(1).

184. Shapiro, *supra* note 4, at 88; *see also* 45 C.F.R. § 46 (1996).

185. Shapiro, *supra* note 4, at 88.

186. *Id.*

187. The Federal government at this time can only request that all firms, clinicians, investigators, and professional societies in the private and non-federally funded sectors comply voluntarily with the intent of the federal moratorium. *Id.* at iii.

188. Andrews, *supra* note 9, at F-18.

189. *Id.*

190. *Id.*

191. At least eight states prohibit research on a "preembryo, embryo, fetus, or unborn child," and arguably the experimentation done on an "egg" would be beyond the scope of such statutes. *Id.*

192. 18 Pa. Cons. Stat. § 3216 (1996).

193. *Id.* § 3203.

194. *Id.*

195. Minnesota and Pennsylvania define the term conceptus or unborn child as the product of "fertilization." *See also*, Minn. Stat. Ann. § 145.421 (1989) and *Id.*

196. 18 Pa. Cons. Stat. § 3216.

197. Andrews, *supra* note 9, at F-21 (citing Lifchez v. Hartigan, 735 F.Supp 1361, 1364 (N.D. Ill. 1990), *aff'd without opinion*).

198. *Lifchez*, 735 F.Supp at 1364. In *Lifchez*, the statute in question failed to adequately define the terms "experimentation" and "altherapeutic" because multiple meanings of the words exist.

199. *Id.*

200. *Id.*