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Don't Hate Me Because I'm Beautiful...and Intelligent...and Athletic: Constitutional Issues in Genetic Enhancement and the Appropriate Legal Analysis

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NOTES

DON'T HATE ME BECAUSE I'M BEAUTIFUL...AND INTELLIGENT...AND ATHLETIC: CONSTITUTIONAL ISSUES IN GENETIC ENHANCEMENT AND THE APPROPRIATE LEGAL ANALYSIS

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I. INTRODUCTION

REGULATION OF GENETIC ENHANCEMENT implicates several fundamental rights and interests of the parties involved: the parents, the state, and the pre-embryo. This Note asserts that while abortion law already provides a framework by which the courts can jockey the interests and rights of these parties, the model is not appropriate for application to future cases of genetic enhancement.

The Human Genome Project is a worldwide effort to decode the human genome.[1] Information recently released regarding Project completion has yielded unprecedented solutions and problems. The result is that we face the double-edged sword of genetic engineering that promises to cure disease, yet has the

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[1] *See* Robert Mullan Cook-Deegan, *Mapping the Human Genome*, 65 S. CAL. L. REV. 579, 579-80 (1991) (describing genome projects underway in the United States, United Kingdom, Soviet Union, Japan, France, and the European Communities).

potential for great abuse in the form of the enhancement of a future child's already normal characteristics. Such utilization is an abuse as it poses threats to society's notions of equality and fairness as well as the ability to make our own decisions about changes to our person.[2] This abuse is likely to be regulated, raising the concern that a law regulating genetic enhancement would violate several fundamental rights under the Constitution. This Note focuses on two of those rights. The first, familiar to the law, is parents' rights to make decisions on behalf of children. The second, the right to customize the product of procreation (a right to genetically engineer one's children), is one that currently has a place only in theory, and if found to exist by the Supreme Court, may become a reality when genetic engineering technology can be practically applied. As fundamental, these rights will be granted the highest constitutional protection. A law controverting such a right can be upheld as constitutional only if it satisfies strict scrutiny, that is, the law must be narrowly tailored to achieve a compelling state interest.[3] In the case of genetic enhancement, the state may be able to limit these rights by reason of children's welfare and general interests in cultural and genetic diversity.

Yet, state interests in children's welfare and cultural and genetic diversity can only limit the fundamental rights of parental decision-making and choosing to genetically engineer their children if compelling. The abortion model is inappropriate for this determination because it evaluates the right not to procreate[4] which is different from the right to customize one's offspring. Abortion law primarily balances state interests in the fetus and the health of the mother against a woman's right to procreate. It is entirely dependent on viability as the marker for when the state's interest in the fetus becomes compelling because here, the fetus has a chance for life outside the womb.[5] Inherent in the analysis is that there is a question of whether or not there will be a child. A case of genetic engineering never contemplates this question. Rather, the parents are choosing to

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[2] *See* Maxwell J. Mehlman, *How Will We Regulate Genetic Enhancement?*, 34 WAKE FOREST L. REV. 671, 673-74 (1999).

[3] *See* Roe v. Wade, 410 U.S. 113, 155 (1973) (finding state law prohibiting abortions unconstitutional under the Due Process Clause of the Fourteenth Amendment); *see also* Carey v. Population Servs. Int'l, 431 U.S. 678, 686 (1977) (declaring a regulation restricting the distribution of contraceptives unconstitutional).

[4] *See generally* Roe v. Wade, 410 U.S. 113 (1973).

[5] *See id.*

engineer their child because it is their plan to carry the child to term. Further, if viability is the harbinger of compelling interests, the right of the parents to genetically engineer their child goes unchecked. Genetic engineering takes place at the preembryo stage, long before viability. In effect, the interests of the state are not served if they can only be found compelling at viability. Consequently, the point is moot. Since viability is not at issue for a genetically engineered fetus and the harm (in the form of genetic manipulation) occurs long before that point, viability is not an appropriate marker to gauge the point at which state interests become compelling in the genetic engineering context. It follows then, that the abortion model, with its reliance on viability, cannot be applied to a suit challenging a regulation of genetic enhancement.

II. SCIENTIFIC BACKGROUND

A. The Natural Way: Sexual Reproduction and Genetic Recombination

With the exception of sex cells, each person possesses a total of 23 pairs of chromosomes, which are present in the nuclei of all human cells.[6] These chromosomes are composed of deoxyribonucleic acid (DNA), which in turn is made up of four bases called nucleotides.[7] Our genes are short sections of DNA, each gene having a "specific influence on the workings of a cell."[8] Features such as hair color or metabolism of substances are the result of the same gene acting in many different cells.[9] Every human cell contains over 100,000 different genes that act in concert with others, or independently, to create proteins to be used by our body to develop and function throughout life.[10]

In anticipation of the process of cell division called mitosis, the chromosomes replicate so that when the division occurs, the newly formed cells have the original 23 pairs.[11] The DNA in the new cells is identical to that of the original cell. The process is somewhat different with gametes, or sex cells, when they un-

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[6] *See* AMERICAN MED. ASS'N, ENCYCLOPEDIA OF MEDICINE, 478-79 (Charles B. Clayman ed., 1989).

[7] *See id.* at 478, 480.

[8] *Id.* at 478.

[9] *See id.*

[10] *See id.* at 478-80.

[11] *See id.* at 673.

dergo their division, called meiosis.[12] Eggs and sperm only contain one set of 23 chromosomes so that the full 46 is created upon the union of egg and sperm. Thus, when gametes divide, each new cell does not contain an exact replica of the DNA in the original egg or sperm. Instead, a random shuffling of genetic information occurs between the 23 chromosomes so that each subsequent gamete is genetically different from the last.[13] Then, at fertilization, a unique egg combines with a unique sperm to create an individual possessing a genome that has never before existed. It is from this process of recombination upon which the great diversity of our species depends.

B. Genetic Engineering/Enhancement

Science promises to make the manipulation of someone's genome a real possibility. The ramifications are such that parents may soon be able to specify exactly which features they want their child to have, before the child reaches the 16-cell stage. This technique, called recombinant DNA technology, is the mechanism of this manipulation. The techniques that alter DNA to achieve some desired change in characteristics are collectively called genetic engineering.[14] The first step in this process is to identify the desired gene in a donor. The second step is to synthesize this gene artificially. Once done, this gene is removed from the cell and introduced into a recipient cell where enzymes have excised a corresponding gap into which the donor DNA can be spliced.[15]

This technique, of course, has reputable uses for the curing or treatment of disease. But can the same be said for its potential for enhancing what is already present in what most would consider normal form? Is the creation of children, for instance, who are tailor-made to be smarter than average, taller than average, perhaps better looking than average, a reputable use of such an important medical technique? Is this an abuse of legitimate and noble science to turn what is intended for the prevention of disease into something of a luxury? Do we, in the name of medicine, allow the abuses to stand so as to offer the most effective treatment to those who require it? For the purposes of

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[12] *See id.*
[13] *See id.* at 672.
[14] *See id.* at 484.
[15] *See id.*

this Note, such superfluous use of recombinant DNA technology is an abuse of its benefits. Further, I have drafted a model statute that attempts to limit the use of genetic engineering for the prevention and treatment of those diseases or conditions that have no known cure. But what will constitute the abuses?

Professor Maxwell Mehlman has raised two questions in defining "enhancement."[16] The first involves determining whether an enhancement is genetic.[17] The second considers when one can categorize genetic manipulation as "enhancement."[18] I will adopt Professor Mehlman's arguments that an enhancement is genetic when it comes about through gene splicing or recombinant DNA technology and a genetic manipulation is enhancement when the alteration is for purposes of "improving a characteristic that ... would be within what is generally regarded as a 'normal' range, or [as] installing a characteristic that would not normally be present."[19]

III. A MODEL STATUTE REGULATING GENETIC ENHANCEMENT

§ 1. Provisions:

No health care facility, fertility clinic, physician, research facility, or other health care provider shall enter, through the use of recombinant DNA technology, the genetic structure or sequence of a human pre-embryo except for purposes of eliminating or significantly reducing, within medical reason, the likelihood of disease for the resultant individual.

§ 2. Punishment For Violation:

Violators of this statute are subject to civil penalties not to exceed $200,000 for first offenses or $500,000 for each subsequent offense.

In addition to civil penalties, the court may order any other remedies the court deems appropriate, including criminal liability, as the Attorney General deems appropriate.

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[16] *See* Mehlman, *supra* note 2, at 674.

[17] *See id.*

[18] *See id.*

[19] *Id.* at 675 (citations omitted).

§ 3. Definitions:
The term "Recombinant DNA technique" means:[20]

> The incorporation of natural or synthetic DNA into the genome of a human pre-embryo in a way that permanently changes that pre-embryo's naturally occurring genetic code.

IV. CONFLICT BETWEEN RIGHTS AND INTERESTS IN GENETIC ENGINEERING

The genetic enhancement of a pre-embryo is about to become a reality. Scientists, politicians, theologians, and lawyers have begun to debate whether this type of technology should be allowed on human pre-embryos. This debate will undoubtedly spill into the legislative arena where Congress may be moved to regulate this practice of genetic enhancement technology. In the creation of a federal statute, consideration and deference must be given to constitutionally protected rights. Should this statute be challenged for an alleged violation of one's fundamental rights under the Constitution, courts will review the law under its most stringent standard: strict scrutiny. Constitutional rights are so highly regarded under the law that only the most compelling intentions will suffice to justify an encroachment upon them. The hallmarks of strict scrutiny and the factors that a court will require in order for the statute to be upheld as constitutional are that the contravening regulation be narrowly tailored to achieving a compelling state interest.[21] A law regulating the genetic engineering of human pre-embryos will, in all likelihood, be challenged on constitutional grounds. The challenge will be to identify the fundamental rights of parents that are implicated by the law.

Since genetic enhancement revolves around private and personal choices in conducting one's life according to one's wishes, the logical legal starting point for constitutional analysis is the guarantee of personal privacy long established by the

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[20] This language was adopted from a definition of recombinant DNA molecules. *See* Office of Biotechnology Activities, National Institute of Health, *NIH Guidelines for Research Involving Recombinant DNA Molecules*, § I-B (visited Apr. 18, 2001) <http:// www4.od.nih.gov/oba/rac/guidelines/guidejan01.htm>.

[21] *See* cases cited *supra* note 3.

Supreme Court.[22] The origins of this constitutional guarantee have been found in the First,[23] Fourth,[24] and Fifth[25] Amendments, as well as in the penumbras of the Bill of Rights,[26] the Ninth Amendment,[27] and the liberty concept in the first portion of the Fourteenth Amendment.[28] Most importantly, the Court has deemed the rights secured by this guarantee to privacy as fundamental.[29]

Twentieth century cases have augmented the list of rights included in the right to privacy. In a 1942 case, *Skinner v. Oklahoma*,[30] the Supreme Court derived the right to procreate from the guarantee of privacy, and thereby holding it to be fundamental. Subsequent cases pertaining to laws limiting individuals' reproductive decisions allowed the Court to find a fundamental right to not procreate. The seminal case in that regard is *Roe v. Wade*,[31] which struck down as unconstitutional a Texas statute criminalizing abortion. The statute was challenged on the basis of its violation of the right to privacy[32] protected by the Due Process Clause of the Fourteenth Amendment.[33]

Genetic enhancement presents parents with the unprecedented ability to choose the traits of their children. As this

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[22] *See* Union Pacific Ry. Co. v. Botsford, 141 U.S. 250, 251 (1891) (affirming circuit court's decision that it had no legal right or power to grant the defendant's motion requiring plaintiff to submit to a "surgical examination" without her consent).

[23] *See* Stanley v. Georgia, 394 U.S. 557 (1969) (discussing the right to be free from government intrusions by striking down a Georgia law making private possession of obscene materials a crime).

[24] *See* Terry v. Ohio, 392 U.S. 1 (1968) (stating that inquiry under the Fourth Amendment focuses on "the reasonableness in all the circumstances of the particular governmental invasion of a citizen's security").

[25] *See* Roe v. Wade, 410 U.S. 113, 152 (1973) (citing Terry v. Ohio, 392 U.S. 1, 8-9 (1968) (stating that, even though the Constitution does not explicitly mention a right to privacy, the Court has recognized that right though the Bill of Rights).

[26] *See* Griswold v. Connecticut, 381 U.S. 479 (1965) (holding that a Connecticut statute forbidding the use of contraceptives violated the right of marital privacy).

[27] *See id.* at 486-87 (Goldberg, J., concurring).

[28] *See* Meyer v. Nebraska, 262 U.S. 390 (1923) (striking down Nebraska law that prohibited the teachings of languages, other than English, in any private, denominational, parochial, or public school).

[29] *See Roe*, 410 U.S. at 152.

[30] 316 U.S. 535 (1942) (holding state law providing for sterilization of "habitual criminals" unconstitutional based on the Equal Protection Clause of the Fourteenth Amendment).

[31] 410 U.S. 113 (1973).

[32] *See id.* at 121.

[33] *See id.* at 152.

choice has never before been possible, the Court has had no opportunity to address whether parents have a fundamental right to exercise it. The existing fundamental rights surrounding reproductive options, namely, the right to procreate and the right not to procreate do not effectively capture the performance of this choice. Choosing to genetically engineer one's child involves the question of whether there is a right to genetically enhance, not whether one will *have* a child.

Both the *Skinner* and *Roe* opinions concluded that the rights of procreation are fundamental. These conclusions are supported within by a description of the ramifications to the individual or society if this were not so.[34] However, neither case provides much guidance as to the Court's rationale in ascertaining the fundamental nature of the rights to procreate and not procreate. The court often turns to the holding in *Griswold v. Connecticut* that established the "zones of privacy" that emanate from the Bill of Rights[35] as support for the finding of a fundamental right. The right to marry,[36] to custody of one's children,[37] to control the upbringing of one's children,[38] to procreate,[39] to not procreate,[40] to control reproduction[41]—each established fundamental right relies in part on the principal that there are certain areas of such personal nature into which unwarranted governmental intrusion is improper; that each has been so engrained in our nation's history that they will not easily be restricted.

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[34] *See Skinner*, 316 U.S. at 541-42; *see also Roe*, 410 U.S. at 152-53.

[35] *See Griswold*, 381 U.S. at 484.

[36] The leading case on the right to marry is *Loving v. Virginia*, 388 U.S. 1 (1967), in which the Court invalidated a Virginia statute outlawing interracial marriage based on the broad reasoning that freedom to marry is fundamental.

[37] *See* Santosky v. Kramer, 455 U.S. 745, 758-59 (1982).

[38] *See* Pierce v. Society of Sisters, 268 U.S. 510 (1925) (holding Oregon law requiring children to attend public schools unconstitutional); Wisconsin v. Yoder, 406 U.S. 205 (1972) (recognizing a constitutional right for the Amish to exempt their 14 and 15 year-old children from the state's compulsory school attendance law). *See generally* Meyer v. Nebraska, 262 U.S. 390, 399 (1923) (finding the right to "bring up children" within the boundaries of the liberty guaranteed by the Fourteenth Amendment).

[39] *See Skinner*, 316 U.S. at 541-43.

[40] *See Roe*, 410 U.S. at 153-55; Planned Parenthood v. Casey, 505 U.S. 833 (1992) (affirming *Roe v. Wade's* essential holding of women's right to an abortion).

[41] *See* Griswold v. Connecticut, 381 U.S. 479 (1965) (establishing the right to purchase and use contraceptives); *see also* Eisenstadt v. Baird, 405 U.S. 438 (1972) (holding the fundamental right to purchase and use contraceptives extends to unmarried persons).

Choosing the features of our children has not been engrained in our nation's history or traditions. Therefore, one might argue that there would be little foundation on which to base a fundamental right to genetically engineer children. However, the same could be said about life-saving treatments. The framers of the Constitution could not fathom our current ability to maintain someone indefinitely. Nevertheless, the Court went on to find a fundamental right to refuse such treatment in *Cruzan v. Director, Missouri Department of Health*,[42] founded on theories of "physical freedom" and "self-determination."[43] Justice O'Connor noted in her concurrence that "state incursions into the body [are] repugnant to the interests protected by the Due Process Clause."[44] Likewise, to find that a right to genetically customize offspring is fundamental, we must look beyond what the right asserts on its face to the underlying values upon which it is based.

Like various fundamental rights mentioned above, a zone of privacy encompasses choosing to customize one's children. It is closely linked to the right to procreate—a right whose constitutional value was recognized in 1942.[45] As is the exercise of one's right to procreate, the decision to customize a child is highly personal to the parents as it is dependent on, and influenced, by their individual moral and ethical tenets. By the same reasoning, the Court has held the raising of one's children to be constitutionally protected.[46] By analogy on the basis of the degree of privacy, the same constitutional protection would be warranted for genetically engineering one's children that is given other rights revolving around the family (such as the raising of children or the right to procreate/not procreate). It is critical to bear in mind, however, that constitutional protection is not absolute.

Traditionally, courts distance themselves from matters relating to the family dynamic. Constitutional protection extends

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[42] 497 U.S. 261 (1990).

[43] *Id.* at 287-88 (O'Connor, J., concurring) (discussing the scope of a protected liberty interest).

[44] *Id.* at 287.

[45] *See Skinner*, 316 U.S. at 541-43.

[46] *See* Pierce v. Society of Sisters, 268 U.S. 510, 534-35 (1925) (finding Oregon law that required children to attend public schools "unreasonably interfere[d] with the liberty of parents and guardians to direct the upbringing and education of children under their control").

to the right to marry,[47] the right to raise and educate one's children, and the right to custody of one's children.[48] Parental authority to make decisions on behalf of their children has also enjoyed long-standing privilege in the eyes of the law.[49] Generally, it is presumed that children are unable to rationally evaluate the ramifications of their decisions and to reason what is best for themselves.[50] However, as broad as parental authority is, it can be limited by the state's parens patriae power, where the state acts to protect the interests of the child, which are discussed below.[51] The Supreme Court has made clear, in its discussions of parens patriae, that parents may be free to become martyrs; but it does not follow that parents are free to make martyrs of their children before they have reached the age of majority when they can make that choice for themselves.[52]

Such limitation on parental decision-making rights is frequently at issue on the medical front, where the state can compel medical treatment to save the life of a child when the parents refuse. Typically, conflicts between the state and parents arise when the parents refuse medical treatment on behalf of the child in the name of religion. One such situation arose in a New York court where the court overrode the wishes of a boy who was not yet 18-years-old, as well as those of his parents, and ordered blood transfusions be given during the course of the boy's chemotherapy.[53] In weeks, the boy would have been 18-years-old, and the court reasoned, he would then be able to decide his future.[54] Reiterated in this case is the legal truism that

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[47] *See* Loving v. Virginia, 388 U.S. 1 (1967).

[48] *See* Santosky v. Kramer, 455 U.S. 745 (1982).

[49] *See Pierce*, 268 U.S. at 510. *See generally* Meyer v. Nebraska, 262 U.S. 390, 399 (1923) (finding the right to "bring up children" within the boundaries of the liberty guaranteed by the Fourteenth Amendment).

[50] *See* Jonathan O. Hafen, *Children's Rights and Legal Representation—The Proper Roles of Children, Parents, and Attorneys*, 7 NOTRE DAME J.L. ETHICS & PUB. POL'Y 423, 438-39 (1993) (summarizing other works that show children may lack the ability to analyze crucial concepts in decision-making); *see also* Julie Holland, *Should Parents Be Permitted to Authorize Genetic Testing for Their Children?*, 31 FAM. L.Q. 321, 329 (1997) (arguing that parents should not be able to authorize consent on behalf of their minor children for untreatable or late onset genetic tests).

[51] *See generally* Prince v. Massachusetts, 321 U.S. 158 (1944) (holding the state, as parens patriae, may restrict parent's control and this power is not nullified merely because the parent defends on the basis of his or her exercise of constitutional rights).

[52] *See id.*

[53] *See In re* Long Island Jewish Med. Ctr., 557 N.Y.S.2d 239 (Sup. Ct. 1990).

[54] *See id.* at 243 n.15.

while fundamental rights are granted the highest possible respect under the law, none is beyond limitation. When the ability to genetically engineer children is realized, the state may be able to limit parents' right to make decisions for their child when the child's welfare is at stake.

While the state would have a compelling interest where the child's welfare is concerned, it is not clear whether the contravening parental right extends to the genetic enhancement of children. The manner in which medicine is currently practiced is consistent with the unease regarding parents' unbridled discretion in genetically enhancing their child. Citizens of the age of majority are not privileged to receive any and every treatment they perceive to be necessary to treat their ailments. Physicians are not required to prescribe drugs the *patient* deems appropriate. Rather, the physician first examines the patient to determine what drugs or therapies are medically necessary for the health of the patient, adhering to the accepted standard of care.[55] It would seem that parents would not be able to demand and have a right to any and every treatment for their child. Yet, there is a void of case law specifically addressing parental rights in terms of unnecessary treatments, therapies, or surgeries. It is therefore unclear whether parents' right to make medical decisions for their children extends as far as making decisions to alter their children's genomes for non-therapeutic reasons.

Further, physicians are reluctant to provide treatment or tests for patients when there is no medical justification for doing so.[56] Such is the case when parents demand their children be tested for genetic conditions, such as Huntington's disease, that have no known cure or effective treatment.[57] Doctors would

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[55] *See, e.g.*, Centennial Peaks Behavioral Health Sys., 9 P.3d 1168, 1173 (Colo. Ct. App. 2000) (holding "[t]o prevail on a claim of professional negligence against a physician or other trained medical professional, a plaintiff must establish that the professional failed to conform to the standard of care ordinarily possessed and exercised by members of the same school of medicine practiced by that defendant"); Tracz *ex rel.* Tracz v. Charter Bryan v. Burt, 486 S.E.2d 536, 539 (Va. 1997) ("a physician must demonstrate that degree of skill and diligence in the diagnosis and treatment of the patient which is employed by a reasonably prudent practitioner in the physician's field of practice or specialty"); Shellenbarger v. Brigman, 3 P.3d 211, 215 (Wash. Ct. App. 2000) (applying Washington statute requiring a medical negligence action to establish physician did not adhere to the accepted standard of care).

[56] *See* Holland, *supra* note 50, at 321.

[57] *See* Dorothy C. Wertz et al., *Genetic Testing for Children and Adolescents: Who Decides?*, 272 JAMA 875 (1994).

prefer to postpone the test until the child is no longer a minor and can make the decision for herself, especially when the result of such test would have life-long ramifications for the child. One concern is that some parents desire these genetic diagnoses for their children for purely self-serving purposes. Perhaps the parent carries the gene for Huntington's disease and simply wants her child tested to assuage her concerns that she has passed on the deadly gene. With deference given to both the medical profession and legal precedents, the law may be willing to override parental decisions made on behalf of their children when the requested procedure or treatment is not medically necessary and when the benefit to be gained by the child will not significantly depreciate if the procedure is postponed until the child reaches the age of majority, and then can decide for herself. This should be the case with the genetic enhancement of children for reasons other than the treatment of incurable or untreatable disease. If courts agree, states' exercise of parens patriae will effectively limit the parental authority to make decisions on behalf of their children.

In situations where the parent's decision will irreparably perpetuate throughout the child's life, children's rights activists advocate limiting parental authority and erring on the side of caution.[58] Likewise, this Note advocates the use of caution when approaching the genetic enhancement of pre-embryos for reasons other than the treatment of incurable or untreatable disease. The ideal approach would be to delay the application of this new technology to humans until it has developed to the point where it is possible to genetically enhance someone during life. This would foster the common law values of informed consent and decisional autonomy, as well as the constitutional right to privacy.

Under the model statute upon which this Note is based, parents' decisional authority would not be as severely restricted if the genetic alterations were for the purpose of eliminating incurable disease the child will develop, as it would if the alterations were made for other purposes. Parents are granted great deference when making medical decisions on behalf of their children. Eventually, genetic engineering will be regarded

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[58] *See generally* Hillary Rodham, *Children Under the Law*, 43 HARV. EDUC. REV. 487, 513-14 (1973) (arguing that removing children from their damaging families may be beneficial despite inadequate state services).

as a "treatment" for medicinally incurable diseases. As such, the rights that parents already possess, with regard to authorizing medically necessary treatment for their children, will persist as technology advances.

V. COMPELLING STATE INTERESTS

Fundamental rights are not limitless. Compelling state interests served by the least restrictive means can always confine them.[59] In the case of genetic enhancement, several countervailing state interests present themselves as potential limitations on the right to genetically enhance.

A. The Psychological Welfare of Children

Perhaps the strongest state interest raised by genetic engineering is that the practice will result in psychological harm to the resultant child. States have routinely been found to have a compelling interest in the psychological welfare of their child citizens in the context of pornography and First Amendment challenges.[60] Psychological welfare is implicated by the child's knowledge that he or she was designed as a product and manufactured, rather than created through a natural process.[61] There is the harmful awareness that the child's parent abused his or her power to control the child's destiny.[62]

Fears of the eventual commodification of human beings resulting in the bifurcation of children into desirables and undesirables also exist.[63] That the law disallows the sale of human organs for transplant reflects distaste for the commodification of

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[59] *See* cases cited *supra* note 3.

[60] *See* Sable Communications of Cal. v. FCC, 492 U.S. 115, 126 (1989) (finding a ban on indecent telephone messages violated the First Amendment because it did not employ the least restrictive means to protect the interests of children); New York v. Ferber, 458 U.S. 747, 756-57 (1982) (upholding state statute making it criminal for anyone to facilitate the making of pornographic material using children under 16-years-old); Ginsberg v. New York, 390 U.S. 629, 639 (1968) (acknowledging the state's right to regulate for the well-being of children).

[61] *See* Lori B. Andrews, *Is There a Right to Clone? Constitutional Challenges to Bans on Human Cloning*, 11 HARV. J.L. & TECH. 643, 653 (1998) (explaining how cloning will disrupt family relationships).

[62] *See id.*

[63] *See id.* at 657 (cautioning that cloning values people as commercial objects).

people.[64] Implicit in our jurisprudence disallowing the classification of people as products is the notion that children not be perceived (and not perceive themselves) as commodities. Similarly, the law is likely to frown upon the formation of children who are custom made much as a product one would buy according to one's preferences.

Other commentators have suggested that genetic engineering will lead to "conditional parenting" where the traditional concept of the parent-child relationship would dramatically change to that of a child living out the possible self-serving preferences of the parents.[65] While parents may currently attempt to mold their children according to parental preferences, children have the ability to refuse those preferences. Eventually, a child can reject his parents' penchants and no longer be held by them. In this context, and as most parents would want, this child goes on to develop his own individual predilections, which will be independent of those of his parents.

A genetically engineered child is likely to be psychologically harmed by the difficulty (or impossibility) in separating *her* preferences, as an adult, from those her parents imposed by manipulating her genome. The precise psychological harm inflicted is merely conjecture at this point because there are no definitive data referencing the degree of influence genetics has on our development. However, as the Human Genome Project progresses, the answers will become more tangible. We already attribute some emotional responses to the presence or absence of certain neurotransmitters in the brain. For example, the lack of a neurotransmitter can result in depression, which is currently considered to have a genetic component.[66] Perhaps it is the

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[64] The National Organ Transplant Act (NOTA), 42 U.S.C. § 274e (1994), bans the transfer of human organs for valuable consideration for use in human transplantation. Since states have traditionally regulated organ donation, the National Conference of Commissioners on Uniform State Laws adopted the Uniform Anatomical Gift Act (UAGA) in 1968 to attend to differences among the states in their respective organ donation and transplantation laws. UNIF. ANATOMICAL GIFT ACT (amended 1987), 8A U.L.A. 63 (1993). Like NOTA, the UAGA prohibits the sale or purchase of human organs or tissue for transplantation purposes. *Id.* § 10, 8A U.L.A. 58. Every state had adopted the UAGA outright, or something similar, by 1972. *See* Fred H. Cate, *Human Organ Transplantation: The Role of Law*, 20 J. CORP. L. 69, 71 (1994).

[65] *See* Jennifer Fitzgerald, *Geneticizing Disability: The Human Genome Project and the Commodification of Self*, 14 ISSUES L. & MED. 147, 158 (1998).

[66] *See* Judy Silberg et al., *The Influence of Genetic Factors and Life Stress on Depression Among Adolescent Girls*, 56 ARCHIVES GEN. PSYCHIATRY 225, 230

amount of this chemical that is genetically influenced. Mice have been genetically engineered to have better memory,[67] and our predisposition to certain weights has also been tied to genetics.[68] It is likely we will find, through continued genetic research, that genetics plays a much greater part in who we are and how we develop than previously thought or imagined. Accordingly, a genetically engineered child will be constrained by the genome her parents chose. The child will become aware that the "features" her parents ordered endure for a lifetime, potentially influencing the development of her individuality. If science reveals the extent of genetic control, the child will become aware of particular aspects of her identity over which she has no control since they are primarily governed by genetics. The ability to separate from her parents' preferences could not be accomplished and would thereby harm her psychological well being.

B. Interest in Cultural Diversity

The early twentieth century was the forum for the American eugenics movement that sought to improve the human race through technology.[69] During this time, such cases as *Buck v. Bell*[70] were decided in which the Court sanctioned involuntary sterilization of the "feeble minded." In his now infamously offensive opinion, Justice Oliver Wendell Holmes reflected the sentiments of the movement: "It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind.... Three generations of imbeciles are enough."[71] The Supreme Court

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(1999) (concluding "long term stability of depression in pubertal girls is best explained by latent genetic factors").

[67] *See* Faye Flam, *Just How Smart Are These Mice?*, SEATTLE TIMES, Sept. 14, 1999, at A10 (reporting on research with mice genetically engineered to have enhanced brains).

[68] *See* Jeffrey M. Friedman, *The Obesity Gene* (visited Apr. 9, 2001) <http://academy.d20.co.edu/kadets/lundberg/obesity.htm> (noting the discovery of the gene that produces the protein leptin in human fat cells).

[69] *See* John R. Harding, Jr., Comment, *Beyond Abortion: Human Genetics and the New Eugenics*, 18 PEPP. L. REV. 471, 477 (1991) (examining the implications of using human genetic engineering for eugenic purposes).

[70] 274 U.S. 200, 200 (1927) (upholding Virginia statute that authorized sexual sterilization of inmates in state institutions found to have a "hereditary form of insanity or imbecility").

[71] *Id.* at 207.

later indirectly condemned the practice through its 1942 decision in *Skinner v. Oklahoma* declaring unconstitutional the Oklahoma Habitual Sterilization Act, which allowed courts to order the sterilization of those convicted for crimes involving "moral turpitude."[72]

Eugenics comes in two forms: positive and negative. Both pose a threat to the genetic diversity of the population that is the product of unmanipulated sexual reproduction. Negative eugenics, the type that is currently most feasible and which was practiced in the last century, aims to diminish or eradicate undesirable genes in the gene pool.[73] Certain forms of negative eugenics have perpetuated in society with varying degrees of controversy.[74] Amniocentesis makes prenatal diagnosis of disease or abnormalities possible, giving the mother an opportunity to timely terminate the pregnancy if she desires. Additionally, states regulate the degree of permissible relatedness between persons who wish to marry.[75] Conversely, positive eugenics promotes purposeful selection, through technology, of those traits that society deems attractive or superior.[76] It is this latter type of eugenics that parents wanting to genetically engineer their child would be practicing. Negative eugenics focuses on curbing the reproduction of those thought to be capable of passing presumably undesirable heritable traits to offspring. Unlike positive eugenics, in practice, procreation only between the "well bred" still relies in part on the recombination of genes that takes place during reproduction, thereby maintaining some degree of randomness in the gene pool. As a form of positive eugenics, genetic engineering results in significant manipulation of a human genome *after* recombination. Therefore, the diversity of the gene pool is more vulnerable to depletion, leading more quickly to a genetically homogenous society. As our gene pool becomes increasingly homogenous, we risk losing the diversity that allows our race to adapt so well to an ever-changing environment.

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[72] Skinner v. Oklahoma, 316 U.S. 535, 536 (1942).

[73] *See* Leon R. Kass, *Human Cloning Should Be Banned, in* CLONING 26, 43 (Paul A. Winters ed., 1998) (arguing there is no principle to distinguish between the legitimate and illegitimate uses of cloning).

[74] *See* Harding, *supra* note 69, at 478 (showing that some forms of negative eugenics, such as bans on incest, are widely accepted while positive eugenics still carries negative post-war sentiment).

[75] *See id.*

[76] *See* Kass, *supra* note 73, at 44.

In recent years, courts have been willing to recognize a state interest in maintaining the genetic diversity of plants and animals.[77] Extrapolation of this interest to apply to humans is tempered, however, as the preservation of the genetic diversity of plants and animals is largely motivated by the economic gains humans realize from their harvest or capture.[78] As discussed above, such commodification of humans would fly in the face of our current value system, and therefore would not, as it does with other organisms, be an appropriate ulterior justification for preserving human genetic diversity. Yet, this difference is not fatal to extending the interest in plant and animal diversity to humans. In reference to the Endangered Species Act, Congress has expressed that "it is in the best interests of mankind to minimize the losses of genetic variations.... They are keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask."[79] Surely, if such strong sentiment surrounds the preservation of plant and animal diversity, the same would attach to human genetic diversity. However, in the absence of established acceptance of such a notion, the combination of our interest in the diversity in the genetics of other organisms, and for diversity in our culture, may result in creating human genetic diversity as a compelling interest.

There is an implied message of a value in promoting integration and diversity throughout society when the Court condemns a discriminatory act. Illustrations of this message can be seen in the racial desegregation cases brought before the Supreme Court in the 1950s before the passage of the Civil Rights Act.[80] While decided on grounds of Equal Protection, there remained recognition that racial integration would benefit black and white students alike. Similarly, a fundamental right to engage in association has been expressly held to exist by the Su-

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[77] *See* National Ass'n of Home Builders v. Babbit, 130 F.3d 1041, 1054 (D.C. Cir. 1997) (holding that biodiversity has a substantial effect on interstate commerce).

[78] *See id.* at 1052-53 (explaining that biodiversity produces products with value for the market).

[79] Committee Reports on the Endangered Species Act, H.R. Rep. No. 93-412, at 4-5 (1973).

[80] *See, e.g.,* Brown v. Board of Educ., 347 U.S. 483 (1954) (holding "separate but equal" unconstitutional under the Fourteenth Amendment).

preme Court.[81] Protected under the First Amendment and linked to the liberty interest of the Due Process Clause that "embraces freedom of speech," the freedom to associate highlights the worth in free exchange of ideas and beliefs with others.[82]

The culture of a nation is formed from the complex interrelation of individuals of various backgrounds, races, ethnicities, and religions. As noted by Congress above, genetics may hold the answers to questions we have not yet begun to formulate. In effect, merely knowing the sequence of the human genome is the tip of an iceberg that extends to unknown depths. To an unidentified degree, the depletion of genetic diversity *may* negatively affect our culture—something that has traditionally been perceived as being beyond the scope of genetic influence. While not explicitly addressed in our nation's jurisprudence, a value of cultural diversity can be inferred from our intolerance of discrimination under the law and the constitutional protection of a freedom to associate in the name of intellectual and spiritual exchange. Where the practice of genetic engineering threatens this belief, there exists the risk that pieces of our cultural diversity will be lost. Accordingly, a state asserted interest in maintaining cultural diversity would be considered compelling, and thus allowed to limit parents' right to genetically enhance their children.

There exists a clash between state interests in children's welfare, cultural and genetic diversity on the one hand, and the fundamental rights of parents to choose to genetically enhance and make decisions for their children on the other. The most logical body of law to which to turn for a solution is abortion law as it is the only area that has dealt with the complex interrelation of state interests, fundamental rights, and the unborn. Yet, while genetic engineering and abortion are common as to the parties involved, fundamental differences between the two issues render abortion law an inappropriate model.

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[81] *See* NAACP v. Alabama ex rel. Patterson, 357 U.S. 449 (1958) (holding that the NAACP's members were free from forced disclosure of their affiliation with that particular association).

[82] *Id.* at 460.

VI. THE ABORTION MODEL AND VIABILITY

In the seminal abortion case, *Roe v. Wade*,[83] Texas contended that its interest in the protection of fetal life was compelling throughout the pregnancy and therefore legitimized the law's infringement on a woman's right to choose to carry a fetus to term. Conversely, the woman and physician who brought the case contended that a woman does have a right to abortion that cannot be limited by any state interest in the fetus. But the Supreme Court disagreed with Texas' sweeping characterization of the status of its interest in fetal life and with the mother's classification of her right to abortion.[84] Instead, the Court manufactured a temporal scheme using the trimesters of pregnancy as markers for when certain state interests would become compelling and could thereby limit a woman's fundamental right to abortion.[85]

The viability of the fetus, as defined through the trimesters of pregnancy, became the fulcrum in the balance between the right to abortion and the state interest in protecting fetal life and the health of the mother.[86] After viability, state interests in the life of the fetus and the health of the mother become sufficiently compelling to sustain regulation of the right to abortion. The interests are compelling because the fetus is presumably capable of meaningful life outside of the womb at viability.[87] The Court relied on extensive history of abortion law and philosophy in its determination of viability as the threshold,[88] and went on to hold that after viability, the state "may go so far as to proscribe

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[83] 410 U.S. 113, 156 (1973).

[84] *See id.*

[85] *See id.* at 164-65.

[86] *See id.* at 163.

[87] *See id.*

[88] *See id.* at 130-47. The Court began its inquiry with a look at ancient civilizations' views toward abortion and the Hippocratic oath. Next, the court looked to common law considerations, which determined that an abortion performed before "quickening" (the first detectable movements of the fetus in the womb) was not an indictable offense. This view arose from early philosophical, theological, and legal concepts which held that life did not begin until the fetus become "formed" or "infused with a 'soul' or 'animated.'" In 1803, English statutory law made abortion of a quickened fetus a capital offense. Pre-quickening abortions were considered lesser offenses. English law carved out the exception legalizing abortions performed to preserve the life and health of the mother. By the 1950s, American law had phased out the quickening provision and banned abortion at any stage of pregnancy, except to save the life or health of the mother. *Id.*

abortion ... except when it is necessary to preserve the life or health of the mother."[89]

In balancing the state's interests against a woman's right to abort her fetus, the Court refused to adopt Texas' view that a fetus was a person and therefore entitled to constitutional protection from deprivation of life without due process of law provided by the Due Process Clause. The Court instead concluded that where the Constitution refers to a "person," "the use of the word is such that it has application only postnatally. [Nothing in the writing itself] indicates, with any assurance, that it has any possible pre-natal application."[90] More specifically, the use of the word "person" in the Fourteenth Amendment does not include fetuses.[91]

Roe's trimester approach left the decision to abort to the pregnant woman's physician during the first trimester of pregnancy.[92] At the beginning of the second trimester, the state's interest in preserving the health of the mother becomes compelling, allowing it to regulate abortions, so long as such regulations are reasonably related to maternal health.[93] As the pregnancy enters the third trimester, under the presumption that viability begins here, the state can promote "its interest in the potentiality of human life" by regulating or proscribing abortion altogether, except to preserve the life or health of the mother.[94]

The trimester model remained in place until *Planned Parenthood v. Casey*, in which the Court evaluated the constitutionality of a Pennsylvania statute that sought to limit a woman's access to abortions. In a plurality opinion, it narrowly upheld *Roe's* essential holding that (1) a woman has a right to abort before viability and to obtain an abortion without undue interference from the state; (2) the state can restrict abortions after fetal viability; and (3) the state's interests in the health of the woman and life of the fetus are continuous.[95] However, the advances in medicine that occurred between 1972 and 1992 forced

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[89] *Id.* at 163-64.

[90] *Id.* at 157.

[91] *See id.* at 157-58 (concluding that "person" only refers to post-natal beings).

[92] *See id.* at 164 (holding that the decision to abort must be left in the hands of the mother's physician).

[93] *See id.*

[94] *Id.*

[95] Planned Parenthood v. Casey, 505 U.S. 833, 846 (1992).

the abandonment of the trimester framework. Namely, abortions could be performed more safely later in pregnancy in 1992 and better neonatal care was bringing the point of viability closer to conception. Justice O'Connor expressed doubts concerning the longevity of the trimester approach when she noted that it was "on a collision course with itself. As the medical risks of...abortion procedures decrease, the point at which the state may regulate for reasons of maternal health is moved further forward to actual childbirth. As medical science becomes better able to provide for the separate existence of the fetus, the point of viability is moved further back toward conception."[96] Yet, even abandoning *Roe's* trimester approach the Court was unambiguous in upholding viability as the marker of the earliest point at which the state's interest in fetal life is sufficiently compelling to limit a woman's right to choose an abortion.

In both *Roe* and *Casey*, the Court relied on viability rather than recognizing a fetus as a person with the associated constitutional rights. Had it done so, abortion would deprive a fetus of life without due process, in contravention of constitutional requirements, thereby potentially rendering the termination of a pregnancy a murder. The Court's justification for not recognizing fetal personhood is that the Constitution offers no overt indication that the word "person" applies prenatally.[97] This reasoning corresponds with the Originalist approach to constitutional interpretation, which advocates a strict reading of the Constitution in accordance with the ideas that are stated expressly or are unambiguously implicit in the document itself.[98] That is not to say the Court has so restricted itself in all situations. In other cases, the Court has turned to Nonoriginalist views, instructing courts to look beyond what is merely the written word, as was done in finding our fundamental right to

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[96] *See* City of Akron v. Akron Ctr. for Reprod. Health, Inc., 462 U.S. 416, 458 (1983). *See generally* John B. Attanasio, *The Constitutionality of Regulating Human Genetic Engineering: Where Procreative Liberty and Equal Opportunity Collide*, 53 U. CHI. L. REV. 1274 (1986) (exploring the constitutional ramifications of regulating positive genetic engineering, as well as examining a philosophical approach to the issues).

[97] *See Roe*, 410 U.S. at 157.

[98] *See* ERWIN CHEMERINSKY, CONSTITUTIONAL LAW: PRINCIPLES AND POLICIES § 1.4, at 17 (1997) (explaining the debate between Originalist and Nonoriginalist interpretations of the Constitution).

privacy.[99] The jurisprudential theory behind the Court's finding is beyond the scope of this Note. However, suffice it to say that the Court continues to uphold the view that abortion law will not recognize a fetus as a person and therefore does not accord it constitutional rights.[100] Viability has thus become the fulcrum in the balance between state interests and the right to abortion.

Before viability, the scales tip in favor of the mother's right to choose abortion and state interests are not sufficient to infringe upon that right.[101] After viability, the weight of the balance shifts and the state's interests in the life of the fetus and health of the mother become compelling enough to override the right to abort.[102] If the mother chooses to exercise her right, the result will be the death of the fetus. On the other hand, when state interests control, the result is typically life. Therefore, the use of viability is arguably appropriate because the issue of abortion deals with a clear separation in result. The logical balancing point would be where the fetus' life could likely be sustained outside of the womb—hence, viability.

VII. GENETIC ENGINEERING

Both genetic engineering and abortion deal with reproductive rights, potentially restrictive state interests, and a fetus, all of which are unique to issues of reproduction. When deciding future cases pertaining to human genetic engineering, the courts will look to establish a legal paradigm that can be used to evaluate subsequent cases. This Note urges that the similarities between abortion law and genetic engineering are not sufficient to overcome the differences, leaving little reason to blindly import the established abortion model into the new legal arena of human genetic engineering. While both issues generally involve reproductive rights, the specific rights implicated in each are different—one involves the right to not procreate and the other, the right to genetically engineer a fetus. This being the case, viability is not relevant to the balance between a right to customize one's children and the associated state interests. Moreo-

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[99] *See id.*; *see also* Griswold v. Connecticut, 381 U.S. 479 (1965); *Roe*, 410 U.S. at 152-53 (reviewing the development of the right to privacy); *Casey*, 505 U.S. at 846-53 (each explaining the derivation of the right to privacy).

[100] *See Casey*, 505 U.S. at 833; *see also Roe*, 410 U.S. at 158-62 (discussing that a fetus does not have the rights of a person).

[101] *See Casey*, 505 U.S. at 846.

[102] *See id.*

ver, viability is not a suitable reference point to demarcate this balance since the harm to the fetus has been done long before that point.

A. Different Rights

The clash between a woman's right to abort and the state's interest in preserving life is unique to abortion law. *Roe* and its progeny narrowed their holdings on the unique question of whether a woman has a fundamental right to "bear or beget a child" and when that right can be truncated or eliminated.[103] Yet, regulation of human genetic engineering does not challenge a woman's ability to seek or to have an abortion, nor does it have to do with the decision of whether to have a child. It is limited to the decision of what type of child the parents would like to have.

B. Viability Is Not Relevant to the Balance of Interests and Rights in Genetic Engineering

The abortion model cannot be adapted, for use as a legal tool, to analyze genetic engineering because viability, on which abortion law depends, is not relevant to the unique balance of state interests and the right to customize one's children that genetic engineering presents. On one side of the scale, the state's interests in the welfare of children and cultural and genetic diversity are not dependent upon viability to raise them to a compelling level. As argued earlier, these interests are compelling at any stage in the pregnancy, and therefore, do not require some outside factor, such as viability, in order to be included in the equation. On the other side of the scale, parents who wish to genetically alter their child are not deciding the question of whether they *can* have a child. That decision has already been made and they are proceeding to the next step—deciding what type of child they would like. Viability plays no role in that decision. If genetic engineering is to take place, it will be done long before viability. And once it is done, viability will become just one of many points on the pregnancy calendar for the woman carrying the genetically altered fetus to term.

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[103] *See id.* at 851 (citing Eisenstadt v. Baird, 405 U.S. 438, 453 (1972)); *see also Roe*, 410 U.S. at 164-65 (describing the trimester framework regulating the abortion right).

If viability were used to decide the balance, the right to genetically enhance would go unchecked since the state's interests could not enter the equation until after the fact. Fundamental rights are given the utmost protection under the law but are not unlimited. The unfaltering rule is that these rights can only be impinged upon by means that are narrowly tailored to achieving a compelling state interest. One legislative function is to curb certain conduct by creating laws that aim to first prevent the behavior, and second, to punish those who violate the law. By analogy, a viability-dependent evaluation would leave states only able to punish those who have already performed genetic engineering, rather than allowing them to curb the practice before it happens by way of compelling interests. Unlike an abortion that can be performed both before and after the fetus is considered viable, genetic engineering could only be accomplished months before viability. If we adopt the abortion framework and its dependence upon viability, parents will have already genetically enhanced their children, long before the state's interests even have a chance of being served. The point at which state interests become compelling must go hand in hand with the point at which the harm occurs.

VIII. CONCLUSION

Abortion law was developed to manage the complex interrelation between the state, a fetus, and the mother. Yet the similarity between the parties involved in abortion and in genetic enhancement cases is insufficient justification to warrant the import of the abortion model to evaluate genetic engineering. Abortion law deals with a right not to procreate.[104] Conversely, genetic enhancement involves a right to customize one's children that is likely to be deemed fundamental as it involves a right to privacy, which has already been accorded constitutional protection. Unlike the right to abortion, evaluation of the right to choose how one procreates is not dependent upon viability as the point at which state interests become sufficiently compelling to limit the right. Genetic enhancement takes place long before viability. If used as a marker in the pregnancy, to identify where the state's interest in the fetus becomes compelling, the harm will have already occurred and the right to ge-

[104] *See Roe*, 410 U.S. at 152-53 (presenting argument that abortion right stems from law on the right to privacy and procreation).

netically enhance one's offspring will be effectively unrestricted. As such, the use of viability in a genetic engineering evaluation is inappropriate.

Further, abortion and genetic engineering involve dissimilar state interests that are served differently by the use of viability. A woman's choice to abort her pregnancy results in the death of the fetus. Arguably, it is logical that once that fetus has a realistic chance for survival outside of the womb, the state's interest in that potential life is raised to a compelling level where the choice to abort can be overridden. Such is not the case with genetic engineering, where a decision to genetically enhance a pre-embryo does not involve the choice of whether or not to have a child. The state's interest is not in preserving the life of the fetus; rather, the concern is with the psychological well being of the future child. Viability is not a factor that affects an interest in psychological wellness.

Finally, genetic engineering poses a threat to state interests such as cultural and genetic diversity. The abortion model was not created to handle interests that extend beyond the immediate concerns for a woman's health and life of a fetus. The abortion model is workable only in its own context and it does not appropriately address the balance of interests and rights involved when parents choose to genetically enhance their children.