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QUALITY CONTROL: THE IMPLICATIONS OF NEGATIVE GENETIC SELECTION AND PRE-BIRTH GENETIC ENHANCEMENT

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I.

Hypothetical number one:

Husband and Wife have been married for six years. During Wife's first pregnancy, amniocentesis testing shows that her fetus will develop severe Down syndrome.² Husband is employed as a grade-school teacher making roughly \$34,000 per year. Wife is a receptionist in a local office earning \$17,000 per year. Husband and Wife presently experience financial hardships and are worried about caring for a child with Down syndrome. Husband and Wife decide to abort the fetus due to their financial inability to care for such a child.

1. B.A., William Smith College, 2000; J.D., Albany Law School, 2005. Recipient of the honorary Kate Stoneman Award presented annually to the student who displays exceptional dedication to promoting women's rights through her legal work. The author would like to thank Professor Katheryn Katz of Albany Law School for her guidance on this article and for her inspiration to become involved in the reproductive rights movement. Additionally, the author would like to thank her husband, Christopher Hemstead, for his unending support and encouragement.

2. "Down syndrome is usually caused by an error in cell division called non-disjunction." National Down Syndrome Society, *What Causes Down Syndrome*, www.ndss.org/content.cfm?fuseaction=infoRes.Generalarticle&article=20 (last visited Apr. 3, 2005). "[A]ll people with Down syndrome have an extra, critical portion of the number [twenty-one] chromosome present in all, or some, of their cells." *Id.* "This additional genetic material alters the course of development and causes characteristics associated with Down syndrome. *Id.* "[T]he median age at death for white people with Down syndrome is [fifty] years, while it is [twenty-five] years for black people and [eleven] years for people of other races." National Down Syndrome Society, *What Causes Down Syndrome Position Statement on Racial Disparity*, <http://www.ndss.org/content.cfm?fuseaction=infoRes.Generalarticle&article=42> (last visited Apr. 3, 2005).

Hypothetical number two:

Husband and Wife have been married for six years. During Wife's first pregnancy, amniocentesis testing shows that her fetus has cystic fibrosis.³ Husband is employed as a neurosurgeon earning \$300,000 per year. Wife works as a defense attorney earning \$250,000 per year. Although financially able to care for a child afflicted with cystic fibrosis, Husband and Wife decide to manipulate their fetus's genetic make-up so that it will no longer have the gene for cystic fibrosis. Having the financial means for additional genetic enhancement, Husband and Wife also have the genetic make-up altered to enhance their fetus's athletic ability and intelligence.

Hypothetical number three:

Husband and wife have been married for six years. During Wife's first pregnancy, amniocentesis testing shows that her fetus has the gene that makes humans more susceptible to bipolar disorder.⁴ Wife's father and great uncle were both afflicted with bipolar disorder and both committed suicide in their late forties. Although the sciences of psychiatry, psychology and pharmacology have made major advances in treating bipolar since Wife's father and uncle's lifetime, Husband and Wife decide to abort their fetus.

3. Cystic fibrosis is a genetic disease. See CATHERINE BAKER, *YOUR GENES, YOUR CHOICES: EXPLORING THE ISSUES RAISED BY GENETIC RESEARCH* 31 (1997). ("People with [cystic fibrosis] have mutations in one or more genes. These mutated genes give faulty instructions for the production of proteins that help move salt in the body. One result is that the lungs become clogged with mucus, making it hard to breathe. Another result is that the body has a hard time digesting food. The disease can be painful and lead to an early death." The chapter goes on to explain that cystic fibrosis is a recessive disorder "that affects [one] in every 2,500 white babies.") *Id.* at 36.

4. "Bipolar disorder, also known as manic-depressive illness, is a brain disorder that causes unusual shifts in a person's mood, energy, and ability to function. Different from the normal ups and downs that everyone goes through, the symptoms of bipolar disorder are severe. They can result in damaged relationships, poor job or school performance, and even suicide. But there is good news: bipolar disorder can be treated, and people with this illness can lead full and productive lives." National Institute of Mental Health, *Bipolar Disorder*, <http://www.nimh.nih.gov/publicat/bipolar.cfm#intro> (last visited Feb. 21, 2005); *DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS: DSM-IV-TR* 392 (Am. Psychiatric Ass'n., 4th ed., 2000) (defining bipolar as "a clinical course that is characterized by the occurrence of one or more Major Depressive Episodes . . . accompanied by the occurrence at least one Hypomanic Episode.") The disease has a late-onset, usually occurring in late adolescence or early adult-hood. *Id.*

Hypothetical number four:

Husband and Wife have been married for six years. During Wife's first pregnancy, amniocentesis testing shows that her fetus has the gene that makes humans more susceptible to homosexuality. Although Husband and Wife have no personal prejudice toward gays or lesbians, they do recognize society's strong prejudices and are concerned about the hardships their child might endure. Without the technology available to genetically manipulate their fetus so that it will no longer be susceptible to homosexuality, Husband and Wife decide to abort their fetus.

II. INTRODUCTION

These four hypotheticals are set forth to illustrate the large spectrum of procreative decisions faced by mothers and fathers-to-be in today's scientifically advanced world. Although hypotheticals two and four illustrate situations not yet medically possible, the Human Genome Project⁵ (HGP) intends to develop the technology to detect such indicator genes and to make various enhancements.⁶ As genetic technology progresses how will it transform the reproductive experience? Does eliminating certain genetic traits make society better? What effects will these procedures have on children, women, the disabled community, minorities, lower classes and society as a whole? What are the long-term implications of such technology?

This article will explore both negative genetic selection and genetic enhancement within the context of our current legal jurisprudence governing the rights of procreative liberty. One's right

5. The HGP was started in 1990 by the U.S. Department of Energy and the National Institute of Health. Human Genome Project Information, *available at* http://www.ornl.gov/sci/techresources/Human_Genome/project/about.shtml (last visited Feb. 17, 2005) [hereinafter HGP]; Human Genome Management Information System, *About the Human Genome Project*, http://www.ornl.gov/sci/techresources/Human_Genome/project/about.shtml (last visited Apr. 3, 2005).

6. Human Genome Management Information System, *Medicine and the New Genetics*, www.ornl.gov/sci/techresources/Human_Genome/medicine.shtml (last visited Feb. 17, 2005) ("The ultimate goal is to use this information to develop new ways to treat, cure, or even prevent the thousands of diseases that afflict mankind."); Denise K. Casey, *Genes, Dreams, and Reality: The Promises and Risks of the New Genetics*, 83 JUDICATURE, vol. 83(3), Nov.-Dec. 1999 at 105-06 (The project was initially begun to realize a "long-standing mandate from Congress to assess the health effects of radiation" to protect workers in the nuclear industry); John A. Robertson, *Genetic Selection of Offspring Characteristics*, 76 B.U. L. REV. 421 (1996) (stating "[t]he genome project promises more effective ways to prevent illness and treat disease, thus increasing freedom of choice and reducing suffering.").

to avoid reproduction as well as one's right to engage in procreation will be analyzed to assess whether these new technologies will fit into our legal framework. Part III of this article gives a brief introduction of these new technologies, describing each only in as much detail needed to understand them in the legal context. Part IV will review abortion case law as well as other cases dealing with reproductive rights and child-rearing more broadly. Part V explores models of regulation that may be used within the United States should these technologies become developed and widely marketed. This section will also analyze policy arguments for regulating or banning these technologies. Finally, Part VI examines the legality of potential restrictions on the use of these technologies.

III. NEW IDEAS OF PROCREATIVE LIBERTY: AN OVERVIEW

There is a natural tendency to desire a healthy and successful offspring. The vast majority of economically able parents-to-be will care for their fetus by regularly visiting an obstetrician, taking neo-natal vitamins, and monitoring pre-natal exposure to harmful substances.⁷ Parents continue this effort throughout their children's lives by sending them to good schools, enrolling them in sports, hiring tutors, registering them in music lessons, preparing them for higher education, and so on and so on. The use and development of technologies aimed at predicting and enhancing the health and success of unborn children creates a new realm of procreative challenges.

The Human Genome Project set the stage for many of these new technologies.⁸ The focus of the HGP was to create a map of human genes.⁹ The mapping of DNA genes, according to the HGP, "can lead to revolutionary new ways to diagnose, treat and someday prevent the thousands of disorders that affect us."¹⁰ Another major goal of the project was to share HGP's findings with the private sector in an effort to speed up the application of

7. See JOHN A. ROBERTSON, CHILDREN OF CHOICE: FREEDOM AND THE NEW REPRODUCTIVE TECHNOLOGIES 173 (1994).

8. HGP, *supra* note 5.

9. *Id.*; see Casey, *supra* note 6, at 107 ("A gene is a piece of DNA that contains instructions for building a particular protein. Proteins are essential for all aspects of life. All organisms are made up largely of proteins, which provide the structural components of all cells and tissues as well as specialized enzymes for all essential chemical reactions. Through these proteins, our genes dictate not only how we look but also how well we process foods, detoxify poisons, and respond to infections.").

10. *Id.*

the research.¹¹ Although it will be years before this process yields the futuristic results of genetically engineered "super" babies, the HGP recognizes that "biotechnology companies are racing ahead with commercialization by designing diagnostic tests to detect errant genes in people suspected of having particular diseases or of being at risk for developing them."¹²

Several gene tests already exist¹³ that can test for a multitude of diseases.¹⁴ Important to this discussion are the "preimplantation genetic diagnosis" and "prenatal diagnostic testing" or "prenatal screening." These tests are used to diagnose the condition of an embryo.¹⁵ These diagnoses often become the deciding factors for many parents-to-be whether to continue or end the pregnancy.¹⁶ Preimplantation genetic diagnosis is the process by which couples or women using in-vitro fertilization can have DNA samples taken from their embryos to locate "genetic flaws" before implantation.¹⁷ Prenatal testing has typically been used to determine the sex of a fetus, but the tests are increasingly being used to look for deformities and diseases.¹⁸ Advances in genetic testing will only widen the scope of which characteristics can be determined prenatally.¹⁹ This enhanced testing will inevitably

11. *Id.*

12. *Id.* (noting that "[a]n increasing number of gene tests are becoming available commercially, although the scientific community continues to debate the best way to deliver them to the public and medical communities that are often unaware of their scientific and social implications.").

13. Carrier screening, preimplantation genetic diagnosis, prenatal diagnostic testing, newborn testing, presymptomatic testing, confirmation diagnosis and forensic/identity testing already exist. HGP, *supra* note 5; *see also* Casey, *supra* note 6, at 105 ("To do a gene test, scientists scan the sample, looking for a specific mutation in a particular DNA region that has been linked to a disorder.").

14. Existing tests screen for emphysema, liver disease, Lou Gehrig's Disease, senile dementia, Gaucher disease, inherited breast and ovarian cancer, hereditary colon cancer, Charcot-Marie-Tooth, congenital adrenal hyperplasia, cystic fibrosis, muscular dystrophy, dystonia, anemia, hemophilia, Huntington's disease, myotonic dystrophy, adult polycystic kidney disease, sickle cell disease, spinal muscular atrophy and Tay-Sachs disease. HGP, *supra* note 5.

15. BAKER, *supra* note 3, at 32.

16. *See* ROBERTSON, *supra* note 7, at 149-51.

17. HGP, *supra* note 5.

18. *See* BAKER, *supra* note 3, at 32-33 (listing several types of prenatal tests: (1) alpha-fetoprotein test (AFP). The AFP measures the amount of protein being produced by the fetus. Too much or too little protein production can signal disease; (2) Ultrasound. Sound waves are used to create an image of the fetus. Many deformities can be seen with ultrasound; (3) Amniocentesis and Chronic Villus Sampling (CVS). Both procedures remove cells from around the fetus in order to study chromosomes under a microscope. Missing or broken chromosomes can signal defects.

19. *See* ROBERTSON, *supra* note 7, at 150.

lead to more reproductive options for parents-to-be. As Professor Robertson suggests, most of these choices will lead to negative selection "through methods such as avoiding conception, not implanting an embryo, or aborting a fetus."²⁰ He also postulates that as the science of genetic therapy catches up with genetic testing, more positive choices, such as genetic enhancement, will be made.²¹

Another notable technology is what is called "gene therapy" or "genetic enhancement." Gene therapy targets either germ-line cells or somatic cells.²² Therapy that affects germ-line cells become permanent genetic changes to an individual's DNA thus having the potential to pass to future offspring.²³ "If performed at an early-enough stage of embryonic development," explains Dr. Mehlman, "the alteration would affect all subsequent fetal cells, including germ cells – that is, those that became eggs or sperm. This would result in germ-cell enhancement, in which genetic changes would be passed on when the enhanced individual reproduced."²⁴ Somatic cells contain the remaining genes within a human after the zygote phase of development.²⁵ Changes made to these cells are often made after birth and will not transfer to future offspring.²⁶ Because this article focuses on germ-line gene therapy, the genetic enhancement discussed here is the kind to be performed on an embryo prior to birth. A specific technology developed for gene therapy is called "gene-transfer"²⁷ which uses "healthy" genes to replace or influence "sick"

20. John A. Robertson, *Genetic Selection of Offspring Characteristics*, 76 B.U. L. REV. 421, 422 (1996). Table T.13.

21. *Id.*

22. See Charles F. De Jager, Note, *The Development of Regulatory Standards for Gene Therapy in the European Union*, 18 FORDHAM INT'L. L.J. 1303, 1307-08 (1995).

23. *Id.* at 1308-09 (stating that "[b]ecause of this potential for the transmission of genetic alterations in perpetuity, germline gene therapy is much more controversial than somatic gene therapy. By targeting germinal cells or embryos, germline gene therapy attempts to eradicate the anomaly permanently from the patrimony of future generations, as well as the individual in the case of embryos.").

24. Maxwell J. Mehlman, *The Human Genome Project and the Courts: Gene Therapy and Beyond*, 83 JUDICATURE, vol. 83(3), Nov.-Dec. 1999 at 124, 129.

25. *Id.* at 124-25.

26. *Id.*

27. Nathan A. Adams, IV, *Creating Clones, Kids and Chimera: Liberal Democratic Compromise at the Crossroads*, 20 ISSUES L. & MED. 3, 17 (2004) (explaining that "[g]ene transfer research comprises a variety of approaches including: (1) introducing a gene that supplements the function of a mutated gene, adds a missing function, or regulates the expression of another gene; (2) directly repairing a mutated gene; or (3) suppressing a gene.").

genes.²⁸ To date, this procedure is only used to test for flaws relating to diseases, but as one HGP scientist concludes, “[b]esides preventing and treating inherited and infectious diseases, gene-transfer technologies probably will make possible the enhancement or replacement of genes that influence other traits such as height, weight, strength, stamina and even intelligence.”²⁹ Although an unperfected science to date, prospective uses of these therapies to influence non-disease causing traits raise substantial ethical questions.³⁰

IV. CURRENT STATUS OF PROCREATIVE LIBERTY: WHICH CHOICES THE CURRENT JURISPRUDENCE WILL PROTECT?

Few issues in American history have been so hotly contested. Thirty-two years after the landmark decision in *Roe v. Wade*,³¹ the legal status of procreative liberty continues to shape national debate. The debate is still alive and well due, in part, to the lack of clarity in reproductive rights jurisprudence. The Supreme Court has never deemed abortion to be a fundamental right.³² Therefore, strict scrutiny³³ has never been applied to abortion. Nonetheless, the Court has upheld a woman’s right to choose in most circumstances.³⁴

28. *Casey*, *supra* note 6, at 109; *De Jager*, *supra* note 22, at 1310 (stating that gene-transfer may someday be used to treat cystic fibrosis, hemophilia, cancer and HIV).

29. *Casey*, *supra* note 6; *Adams*, *supra* note 27, at 17 (explaining that only one child afflicted with Severe Combined Immunodeficiency (SCID) has been treated with gene-transfer successfully to live a healthier life).

30. *See* ROBERTSON, *supra* note 20, at 436 (stating that “[t]echnically, the knowledge and techniques necessary to enhance offspring characteristics in this manner remain in the distant future. Such characteristics are multifactorial, and would require more than the single gene insertion that is all that is likely to be technically feasible for many years to come.”).

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

32. *See, e.g., id.*; *Stenberg v. Carhart*, 530 U.S. 914 (2000); *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833 (1992); ROBERTSON, *supra* note 7, at 28 (1994) (Robertson, in describing the legal status of avoiding reproduction, states, “there is no positive constitutional right to contraception and abortion.”).

33. Under a “strict scrutiny” analysis, the means to achieve the purpose, objective, or interest is reviewed to determine if it is “narrowly tailored” to the accomplishment of the governmental purpose, objective, or interest. *Wygant v. Jackson Board of Education*, 476 U.S. 267, 274 (1986).

34. *See, e.g., Casey*, 505 U.S. 833 (holding that a state may not create a substantial obstacle to a woman’s choice to undergo an abortion pre-viability); *Roe*, 410 U.S. 113 (holding that the right of privacy includes a qualified right to an abortion); *Eisenstadt*, 405 U.S. 438 (holding that every man and woman, married and unmarried, has a right to privacy protections from intrusions into contraceptive devices);

Because genetic enhancement deals with procreation as opposed to the decision not to procreate, it raises issues beyond the scope of current abortion jurisprudence. However, as technological advances expand the world of reproductive options, case law will be forced to meet these new challenges. Therefore, it is important to review reproductive rights case law to understand the basic principles the Court is likely to apply when faced with these new challenges.

A. *The Established Right to Avoid Reproduction*

1. *Griswold*

*Griswold v. Connecticut*³⁵ was decided in 1965 and is the first significant reproductive rights case in the United States. In *Griswold*, two Planned Parenthood³⁶ doctors brought suit to challenge state statutes that fined “any person who uses any drug, medicinal article or instrument for the purpose of preventing conception” and anyone who counseled a person to do so.³⁷ The Court relied on case law that supported the right to educate one’s own children,³⁸ the right to study a specific language in private school,³⁹ and the right to privacy in associations,⁴⁰ to find a number of unenumerated protections within the Bill of Rights.⁴¹ These protections were said to fall under the “penumbra” of the right to privacy found in the Bill of Rights.⁴² Although the Court’s recognition of this privacy right was used to strike down

Griswold, 381 U.S. 479 (holding that a woman’s right to avoid pregnancy through the use of contraceptives was included within the penumbra of privacy rights protected by the Bill of Rights).

35. 381 U.S. 479 (1965).

36. Planned Parenthood is a long-standing reproductive rights non-profit organization that manages thousands of affiliate healthcare clinics across the country and internationally. Their mission statement is as follows: “Planned Parenthood believes in the fundamental right of each individual, throughout the world, to manage his or her fertility, regardless of the individual’s income, marital status, race, ethnicity, sexual orientation, age, national origin, or residence. We believe that respect and value for diversity in all aspects of our organization are essential to our well-being. We believe that reproductive self-determination must be voluntary and preserve the individual’s right to privacy. We further believe that such self-determination will contribute to an enhancement of the quality of life, strong family relationships, and population stability.” Planned Parenthood Federation <http://www.plannedparenthood.org> (last visited Feb. 21, 2005).

37. *Griswold*, 381 U.S. at 480.

38. *Pierce v. Soc’y of Sisters*, 268 U.S. 510 (1925).

39. *Meyer v. State of Nebraska*, 262 U.S. 390 (1923).

40. *NAACP v. State of Ala.*, 357 U.S. 449 (1958).

41. *Griswold*, 381 U.S. at 484.

42. *Id.*

the statutes in question, the Court did not articulate any protection for the relationship between a woman and her doctor.⁴³ The Court's ultimate rationale rested on the nation's deep-rooted tradition of marriage and the need to give that relationship privacy.⁴⁴ The Court referred to this as "a right of privacy older than the Bill of Rights."⁴⁵ *Griswold* left unclear what, if any, rights an unmarried woman had to make over her contraceptive decisions. *Eisenstadt v. Baird*⁴⁶ clarified this issue, articulating that every man and woman, married and unmarried, deserved the same privacy protection from intrusions into their contraceptive decisions.⁴⁷

2. *Roe*

Plaintiff in the penultimate abortion case, *Roe v. Wade*,⁴⁸ claimed that her right to have an abortion was a right found in the "concept of personal 'liberty' embodied in the Fourteenth Amendment's Due Process Clause."⁴⁹ Citing *Griswold*, she also asserted that her right originated in the privacy rights found within the Bill of Rights' penumbras.⁵⁰ After a lengthy review of abortion within the United States and beyond, the Court addressed the limited right to choose an abortion and where that right can be found:

This right of privacy, whether it be founded in the Fourteenth Amendment's concept of personal liberty and restrictions upon state action, as we feel it is, or, as the District Court determined, in the Ninth Amendment's reservation of rights to the people, is broad enough to encompass a woman's decision whether of not to terminate her pregnancy.⁵¹

Without defining the interest in abortion as a liberty interest or fundamental right, the Court managed to side-step the issue. This ambiguity has left room for considerable debate about states' rights to restrict access to abortion. The Court did go on to qualify this right, saying, "the right of personal privacy, how-

43. *Id.* at 487 (referring only to the marital "relationship" as one worthy of this privacy protection).

44. *Id.* at 485-86.

45. *Id.* at 486.

46. 405 U.S. 438 (1972).

47. *Id.*

48. 410 U.S. 113 (1973).

49. *Id.* at 129.

50. *Id.* (stating that the right existed "in personal marital, familial, and sexual privacy.")

51. *Id.* at 153.

ever based, is broad enough to cover the abortion decision; that the right, nonetheless, is not absolute and is subject to some limitations; and that at some point the state interests as to protection of health, medical standards, and prenatal life, become dominant."⁵² In establishing the "viability" trigger⁵³ for state regulation of this right, the Court implied that the right to abortion was indeed a fundamental right when it said "[w]here certain 'fundamental rights' are involved, the Court has held that regulation limiting these rights may be justified by a 'compelling state interest'."⁵⁴ These magic words conjure up the "strict scrutiny" standard of review. Even though the Court in *Roe* went on to illustrate how and when a state might have such a "compelling interest,"⁵⁵ *Roe* never has been read to have established a fundamental right to choose abortion or to set a strict scrutiny standard of review.⁵⁶

3. *Casey*

It is little wonder that the opinion to finally set forth a recognizable standard for abortion cases began with the words, "[l]iberty finds no refuge in a jurisprudence of doubt."⁵⁷ With the lofty goal of putting all doubt to rest, the majority in *Planned Parenthood v. Casey*,⁵⁸ established what is called the "undue burden" standard of review.⁵⁹ Factually, this case involved a Pennsylvania statute requiring different levels of consent necessary before a woman could obtain an abortion.⁶⁰ Upon reviewing each category of consent required under the Pennsylvania law, the Court applied the undue burden test. Essentially, any state

52. *Id.* at 155.

53. *Id.* at 163 (Upon review of then present medical knowledge, the Court determined that viability is the point at which the state has a compelling interest because "the fetus then reasonably has the capability of meaningful life outside the mother's womb.").

54. *Id.*

55. *Id.* at 153-56.

56. *Id.*

57. *Casey*, 505 U.S. at 844.

58. *Id.*

59. *Id.* at 876.

60. *Id.* at 895 (Plaintiffs, mainly abortion clinics, sought declaratory and injunctive relief against the state before enacting the Pennsylvania Abortion Control Act of 1982. The act required a woman seeking an abortion to give her informed consent upon reviewing state mandated reading materials and wait 24 hours to give such consent. The act also required a minor wanting an abortion to obtain parental consent from one parent or a judicial bypass. Additionally, married women seeking abortions would need their husband's consent.)

regulation, which presents a “substantial obstacle to a woman’s choice to undergo an abortion” pre-viability is an undue burden and therefore invalid.⁶¹ The standard seems to be something less than strict scrutiny, but more than rational basis.⁶² In *Casey*, the only section of the Pennsylvania law that was determined to be an undue burden was the spousal consent requirement.⁶³

B. *Rights to Procreate and Rear*

1. *Meyer*

*Meyer v. State of Nebraska*⁶⁴ is one of the first Supreme Court cases to include language asserting a right of parents to rear children as they see fit. *Meyer* involved a challenge to a Nebraska statute that prohibited teaching German to young students in an effort to promote patriotism and loyalty amongst the children of immigrants.⁶⁵ The Court found this statute to violate the Due Process Clause of the Fourteenth Amendment.⁶⁶ In dicta, the Court stated that depriving a parent the right to make this decision is akin to depriving the parent of their liberty interests.⁶⁷

2. *Skinner*

In 1942, the Supreme Court heard the case of *Skinner v. State of Oklahoma*.⁶⁸ This case involved the mandated sterilization of “habitual criminals,” people “convicted two or more times for crimes ‘amounting to felonies involving moral turpitude.’”⁶⁹ A man who was convicted three times for theft and ordered to undergo a vasectomy by the Supreme Court of Oklahoma challenged this statute.⁷⁰ The court held the statute to be unconstitutional and violative of the Equal Protection Clause of the Fourteenth Amendment stating that “[w]e are dealing here with . . . one of the basic civil rights of man. Marriage and procreation are fundamental to the very existence and survival of

61. *Id.* at 895.

62. *Id.* at 876-88.

63. *Id.* at 895.

64. 262 U.S. 390 (1923).

65. *Id.* at 398.

66. *Id.* at 399.

67. *Id.*

68. 316 U.S. 535 (1942).

69. *Id.* at 536-37.

70. *Id.*

the race."⁷¹ The Court went on to say that forced sterilization laws deprive citizens of "a basic liberty," referring to the right to procreate.⁷²

3. *Stanley*

*Stanley v. State of Illinois*⁷³ involved a challenge to the state's presumption of parental unfitness of unwed fathers in a custody situation.⁷⁴ Here, the Court diligently reviewed their previous holdings supporting the idea that the Due Process Clause of the Fourteenth Amendment as well as the Equal Protection Clause protects "the integrity of the family".⁷⁵ The Court held this presumption of unfitness to be violative of the Equal Protection Clause.⁷⁶

C. *Where This Precedent May Lead*

It is clear from both lines of cases, those which establish the right to avoid procreation and those which establish the right to procreate, that the Court emphasizes the importance of the family unit and that the Constitution generally respects a citizen's right to make their own decisions regarding procreation and the rearing of children.⁷⁷ From the first line of contraception and abortion cases, it is easy to see a distinction between the right to avoid conception through contraceptive means as opposed to abortive means. The former is rarely allowed to be limited by state law, whereas the latter more often than not, will be accompanied by some restrictions.⁷⁸ Because negative genetic selection is most often achieved through abortive means, it will most likely face state laws either prohibiting the procedure or, at least, attempting to limit its use. The second line of cases establishes a less than clear set of guidelines to be used when analyzing possible prohibitions or limitations placed on genetic enhancement.⁷⁹

71. *Id.* at 541.

72. *Id.*

73. 405 U.S. 645 (1972).

74. *Id.* at 650.

75. *Id.* at 651 ("The Court has frequently emphasized the importance of family. The rights to conceive and to raise one's children have been deemed 'essential,' [citation omitted] 'basic civil rights of man,' [citation omitted] and '[r]ights far more precious . . . than property rights' [citation omitted].").

76. *Id.* at 658.

77. *See infra* sections IV A & B.

78. *Compare Griswold, Roe, and Casey with Meyer, Skinner, and Stanley infra* sections IV A & B.

79. *See Meyer, Skinner, and Stanley infra* section IV B.

It is unclear if a parent's right to rear their child includes non-therapeutic genetic enhancements. After all, some will argue that increasing their child's IQ, athletic ability or beauty was done out of a basic desire to care and nurture their child. It is difficult to predict how the Court will address this issue.

V. DO NEW PROCREATIVE TECHNOLOGIES CALL FOR NEW REGULATION?

Science fiction films, such as *Blade Runner*,⁸⁰ that teem with real-world news stories about gender-selection gone awry in China and India,⁸¹ leave the American public justifiably concerned about these emerging technologies.⁸² Many Americans call for regulation of genetic testing used for reproductive purposes.⁸³ Worst-case scenarios are common in popular media:

Aided by advances in a variety of diagnostic screening technologies and the rapidly expanding knowledge of human genes, fertility experts are able to screen test-tube embryos for a wide variety of genetic diseases and create healthy babies. Of course, that's a good thing. But the same progress could lead to screening embryos for characteristics that extend far beyond health. Sooner or later, the stork will be able to carry babies that were screened as embryos and selected for birth because they possess genetic profiles linked with traits such as intelligence, personality, a specific aptitude and physical beauty.⁸⁴

This columnist clearly opposes using this new science for non-therapeutic purposes, a position that inevitably leads to proposed legislation. What regulatory mechanisms should be implemented to ensure the safety of those who utilize these technologies and society as a whole?

80. 1982 film based on the book *Do Androids Dream of Electric Sheep?* by Philip K. Dick. The film is about an android race engineered by a United States corporation to perform slave labor. See *BLADE RUNNER*, <http://www.brmovie.com> (last visited Feb. 21, 2005).

81. See, e.g., Mary Carmichael, *No Girls, Please*, *NEWSWEEK*, Jan. 26, 2004, at 50 (Due to the cultural bias toward male babies, astronomical numbers of female fetuses and baby girls have either been aborted or murdered upon birth. These practices have led to disproportionate ratios of boys to girls in these countries resulting in large populations of young, teenage males responsible for rising crime and instability); see also Claudia Kalb, *Brave New Babies*, *NEWSWEEK*, Jan. 26, 2004, at 4 (discussing regulations against gender selection due to these same problems).

82. See, e.g., Tim Friend, *Blueprint for Life*, *USA TODAY*, Jan. 27, 2003, at 1D.

83. See, e.g., Maxwell Mehlman, *How Will We Regulate Genetic Enhancement?* 34 *WAKE FOREST L. REV.* 671 (1999).

84. Friend, *supra* note 82.

A. *Self-Regulation*

Several types of genetic enhancement and genetic selection regulations have been suggested by the legal and medical communities.⁸⁵ One commentator, Professor Mehlman, suggests that self-regulation may be a sufficient means of policing genetic enhancement.⁸⁶ Mehlman proposes that by providing society with the option of somatic cell enhancement,⁸⁷ parents-to-be will likely wait until their child is old enough to make his or her own enhancement decision.⁸⁸ Mehlman also points out that religious and cultural motivations will prevent large numbers of people from altering their children's genetic make-up.⁸⁹ Mehlman postulates that humans make rational decisions regarding their children and that these decisions are weighed on a social cost-benefit analysis scale.⁹⁰ The potential social costs associated with genetic enhancement (i.e., inequality, discrimination toward those with disabilities, etc. . .)⁹¹ might outweigh the benefits for many individuals.⁹² Mehlman's analysis presumes a general "common-good" orientation of society in which parents-to-be place concerns for society in general over their desire for successful offspring. However, his analysis fails to take into consideration the possibility of another portion of society who think in a more capitalistic, Darwinian way. Such people may not weigh the decision in the same way and could represent a more significant percent-

85. See Mehlman, *supra* note 83.

86. *Id.* (Mehlman does not address negative genetic selection in this article).

87. "Two kinds of gene therapy are generally distinguished: germline and somatic gene therapy. The distinction is made on the basis of the targeted cell type, either germline cells or somatic cells. Germline cells are gametes, zygotes, and the undifferentiated cells of embryos in the early stages of development. All of these cells have the potential to contribute genetic material to offspring. Somatic cells, the remaining cells of the organism, do not have this potential. In somatic gene therapy the genetic changes introduced are not transmitted to the progeny, while they would be in the case of germline gene therapy." De Jager, *supra* note 22, at 1307-08.

88. See Mehlman, *supra* note 83, at 690.

89. *Id.*

90. *Id.* at 692.

91. *Id.* ("Individual choice can be influenced by social concerns. People act or refrain from acting on the basis of principle, and have been known to do so even at significant personal cost. Conceivably, individuals might eschew genetic enhancement for themselves or their offspring because of their belief in the principle of equality or because of the ethical problem raised by cheating. They might be encouraged to do so by political or religious leaders. If society felt that the threats from genetic enhancement outweighed its benefits, it would be likely to employ social pressures to affect individual decision-making, a sort of 'Just Say No' approach to genetic enhancement.")

92. *Id.*

age of the population than Mehlman suggests.⁹³ This is precisely why some commentators encourage professional, state and federal regulation.⁹⁴

B. *Professional Regulation*

The professional community is another regulatory mechanism whose wheels have already been set in motion. The American Medical Association's Council on Ethical and Judicial Affairs promulgated a policy statement on genetic enhancement in 1988 and updated it in 1996.⁹⁵ These guidelines create a code of ethics to be followed by all doctors in the United States.⁹⁶ The policy statement strongly opposes genetic enhancement with only a few severely restricted exceptions, noting that "genetic manipulation to affect non-disease traits may never be acceptable and perhaps should never be pursued".⁹⁷ The AMA specifically addressed non-therapeutic gene enhancement stating, in pertinent part:

Moreover, genetic manipulation generally should be utilized only for therapeutic purposes. Efforts to enhance "desirable" characteristics through the insertion of a modified or additional gene, or efforts to "improve" complex human traits—the eugenic development of offspring—are contrary not only to the ethical tradition of medicine, but also to the egalitarian values of our society. Because of the potential for abuse, genetic manipulation to affect non-disease traits may never be acceptable and perhaps should never be pursued.⁹⁸

Recognizing the "far-reaching implications" of somatic gene therapy, the AMA proposed restricting gene therapy to somatic cells until further research can be done.⁹⁹ In a separate opinion the AMA came down equally hard on "non-disease-related" genetic selection stating that "[i]t would not be ethical to engage in selection on the basis of non-disease-related characteristics or

93. *Id.* at 692 (noting that like the "War on Drugs," self-regulation has the potential to be the most effective way to regulate genetic enhancement).

94. See Am. Med. Ass'n, *Opinions on Social Policy Issues*, CODE OF MEDICAL ETHICS E-2.11 (Iss. Dec. 1988; Updated June 4, 1996).

95. Mehlman, *supra* note 83.

96. *Id.* at 694.

97. Am. Med. Ass'n, *supra* note 94 (explaining that the exceptions are only to be found where three pre-conditions are met: "(1) when the individual is incompetent to choose, (2) when the choice will have a significant impact on the welfare of others, and (3) when leaving the choice up to the individual would be so inefficient that we delegate the decision to a better decision-maker.").

98. *Id.*

99. *Id.*

traits.”¹⁰⁰ These views may be subject to change with advancements in the understanding of genetic technology and also with the creation of state and federal regulation. However, the AMA makes it clear that all therapies should be conducted in the spirit of medicine and alleviating human suffering.¹⁰¹ It is difficult to argue that non-therapeutic enhancements, such as hair, eye color or height, rise to the level of alleviating human suffering.

C. Federal and State Regulation

Beyond these two forms of self-regulation, the federal Food and Drug Administration (FDA) will likely play the largest role in the regulation of gene therapy.¹⁰² If gene therapy can be considered to include articles classified as “drugs, medical devices or biological products,” the FDA should have jurisdiction over these procedures.¹⁰³ This jurisdiction would allow the federal government to establish guidelines for the use of genetic enhancement. The FDA would also study these therapies to determine their safety and efficacy.¹⁰⁴

Thus far no state has enacted legislation banning or restricting the use of negative genetic selection or genetic therapy.¹⁰⁵ Many states have enacted legislation dealing with other aspects of genetic testing, such as: prohibiting insurance carriers from requiring genetic testing for coverage;¹⁰⁶ requiring informed consent before performing genetic testing;¹⁰⁷ and prohibiting discrimination based on genetic test results.¹⁰⁸ It is evident from the sheer volume of new state legislation regarding genetic testing that legislators recognize the need to keep pace with emerging

100. Am. Med. Ass'n, *supra* note 94.

101. *Id.*

102. See Amber Stine, *The Implications of the Due Process Clause on the Future of Human Embryonic Gene Therapy*, 45 ARIZ. L. REV. 507 (2003); 21 U.S.C. 321 (2005); 42 U.S.C. 262 (2005).

103. Stine, *supra* note 102, at 523. See also 21 U.S.C. 321 (2005); 42 U.S.C. 262 (2005).

104. Mehlman, *supra* note 24, at 126.

105. See Legislation Database, Nat'l Human Genome Research Inst., NIH <http://www.genome.gov/PolicyEthics/LegDatabase/pubsearch.cfm> (last visited Apr. 3, 2005).

106. See CAL. INS. CODE §10233.1 (2005).

107. See ORS. REV. STAT. §192.531 (2003); S.D. Codified Laws §34-14-21 (2003).

108. See R.I. Gen. LAWS §(b)(1-2), 53.1(b)(1-2); NEV STAT ANN. LAWS §27-41-53 (2004); La. R.S. §23:368 (West Supp. 2004); UTAH CODE ANN. §26-45-3-104 Supp. 101 (2005); TEX. INS. CODE ANN. §546.101 (2005).

technologies.¹⁰⁹ The enacted statutes reflect a need to protect the privacy rights of citizens from the technology that is currently available – testing of adults for recognized genetic diseases.¹¹⁰ Once gene therapy and negative genetic selection (for non-medical-related characteristics) is more accessible to the general public, Congress and state government will have to begin taking those procedures into consideration when forming legislation. Regulations may move beyond informed consent and prohibitions on discrimination and towards restrictions, limitations, and even prohibitions on certain procedures.¹¹¹

VI. GENETIC SELECTION, ENHANCEMENT, AND THE COURT

“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 . . . [t]hree generations of imbeciles are enough.”¹¹²

Although the Supreme Court was referring to compulsory sterilization in this quote from the 1927 *Buck* decision, the Court drew a polarizing line between those whom they saw as being fit for society and those whom they believed to be a burden to society.¹¹³ This type of discrimination is precisely what opponents of genetic enhancement and genetic selection claim will occur if the technology goes unregulated.¹¹⁴ Opponents argue that people with disabilities, certain late onset diseases, and even women will face incredible discrimination if citizens are free to essentially breed ‘their kind’ out of society.¹¹⁵

Many supporters of these technologies argue that genetic enhancement of offspring and negative genetic selection, are part

109. National Human Genome Research Institute, National Institutes of Health, Genetic Discrimination, <http://www.genome.gov/10002077> (last visited Mar. 8, 2006) (noting that “many lawmakers, scientists and health advocacy groups believe that there is a need for federal legislation to prevent genetic discrimination.”).

110. *Id.*

111. Mehlman, *supra* note 83, at 705-07.

112. *Buck v. Bell*, 274 U.S. 200, 207 (1927).

113. *Id.*

114. *See* Mehlman, *supra* note 83, at 687-88 (noting that “unequal access to genetic enhancement will divide society into the enhanced and the unenhanced. Germ cell enhancement will perpetuate enhancements form generation to generation, creating a hereditary aristocracy or “genobility.” Added to their wealth, a prerequisite to being able to afford genetic enhancement, will be the advantages conferred by the enhancements themselves. The result will be a group of privileged individuals and families whose position in society will be virtually unassailable.”).

115. *Cf.* Adams, *supra* note 27, at 60-62; Mehlman, *supra* note 83, at 687-88.

of the procreative freedom found in current jurisprudence.¹¹⁶ However, this argument may go too far if it can be said that a state has a compelling interest in promoting genetic diversity or that a prohibition on non-therapeutic gene enhancement does not impose a substantial burden on the right to privacy.¹¹⁷ A balance must be struck between these two positions. Citizens' procreative liberty must be upheld while these technologies are vigilantly regulated due to the possible harms they cause to society.¹¹⁸ Some level of restriction only seems natural when dealing with technology that has such far-reaching implications.¹¹⁹ State and possibly federal limitations will undoubtedly be placed on decisions to genetically enhance a fetus or to selectively abort a fetus for non-medical genetic reasons. Consequently, many of those restrictions will be challenged and our courts will likely use the reproductive rights case law previously discussed to decide these cases.¹²⁰ Using the case law discussed in Part IV, this section will analyze these hypothetical restrictions and arguments in favor of and against these technologies.

A. *Negative Genetic Selection*

Under *Griswold*,¹²¹ *Eisenstadt*,¹²² *Roe*,¹²³ and *Casey*,¹²⁴ a woman's right to have an abortion is deemed to be her right alone, at least up until the point of viability. State imposed limitations on that right must not create an undue burden on her decision.¹²⁵ Twenty-four hour waiting periods, parental notification and mandatory reading materials all have been held not to be unduly burdensome and thus valid.¹²⁶ Interestingly, negative genetic selection raises the question of whether a state can require a woman to divulge the reasoning behind her desire to obtain an abortion. The Court has never evaluated a woman's reasons for aborting her fetus. The decision-making process has thus far

116. See ROBERTSON, *supra* note 7; Stine, *supra* note 102, at 529 (arguing only that a prohibition on therapeutic gene therapy creates a substantial obstacle to the right to procreate).

117. Stine, *supra* note 102, at 529.

118. *Id.*

119. See *id.*

120. See *id.*

121. 381 U.S. 479 (1965).

122. 405 U.S. 438 (1972).

123. 410 U.S. 438 (1972).

124. 505 U.S. 833 (1992).

125. *Casey*, 505 U.S. 833.

126. *Id.*

been left to the woman. Should a woman have as much right to abort a fetus for a genetic reason as she does for any other reason?

As previously discussed, procreative liberty is not an absolute right.¹²⁷ Therefore it would seem to follow that there is room for states to impose restrictions on negative genetic selection. Professor Robertson offers a balancing test for determining what protection negative genetic selection should receive.¹²⁸ First, he differentiates between the types of "characteristics" found in the fetus through genetic testing: material and preferential.¹²⁹ Robertson considers characteristics that are "central or material to a reproductive decision" to be of the medical disability/disease-type.¹³⁰ All other characteristics fall into the "preference" category.¹³¹ Robertson asserts that if a woman's decision is based on the finding of a gene that is "central or material to a reproductive decision," she would be afforded full protection under the law.¹³² If the choice to abort is based on a "preference characteristic," Robertson asserts that a state, after weighing the "probability of the harms or untoward effects," may foreclose the woman's right to abortion.¹³³ The harms referred to include: "destruction of embryos and fetuses, harm to offspring, instrumentalizing or commodifying human life, discrimination on the basis of gender or disability, and easing the way to nonmedical enhancement."¹³⁴ If a court determined that preventing these harms was a compelling state interest, a statute foreclosing a woman's right to choose may be upheld.¹³⁵

Robertson, however, neglects to address how a state or court would determine which characteristics are "central or material to a reproductive decision," and which are "preferential."¹³⁶ Today, a test that came back positive for cystic fibrosis could be considered a "central" characteristic. But, with increasing medical advances it could shift to a "preferential" characteristic. Conversely, a fetus testing positive for athletic ability could be

127. *See supra* Part IV.

128. Robertson, *supra* note 20, at 428.

129. *Id.*

130. *Id.*

131. *Id.* at 429.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Casey*, 505 U.S. 833.

136. Robertson, *supra* note 20, at 428.

considered "preferential" today, but "central" tomorrow. Where exactly does one draw the line?

Additionally, the state of late onset disorders, which, may be predicted by a certain combination of genes, are in limbo.¹³⁷ Tests exist to locate the gene or genetic mutations that make people more susceptible to these disorders.¹³⁸ Robertson seems to suggest that late onset medical disorders, such as Alzheimer's, polycystic kidney disease, heart disease and bipolar disorder may fall into the "material or central" characteristic category.¹³⁹ Robertson escapes having to make this distinction by stating that if parents consider this information to be important their decision to abort falls within the scope of procreative liberty and cannot be restricted by a substantial obstacle imposed in a state regulation.¹⁴⁰ Without further distinction, Robertson's balancing test appears more like a value judgment than a clear legal standard.

Moreover, Robertson's argument is troublesome because it relies on the assumption that the state has some presumed right to know why a woman chooses to have an abortion.¹⁴¹ This is a giant leap from current abortion case law. Under current law the actual decision-making process to have an abortion is protected against such state invasion. An Illinois district court found that using genetic tests to make this decision must be protected, holding that "Constitutional choices that include the right to abort a fetus within the first trimester must also include the right to submit to a procedure designed to give information about that fetus which can then lead to a decision to abort."¹⁴² Therefore, without a dramatic overturning of *Roe* and *Casey*, it is unlikely that a

137. *Id.* at 428-33.

138. *Id.*

139. *Id.* at 433, 434.

140. *Id.* at 434-44.

141. *Id.* at 428 (although Robertson claims that the decision whether a characteristic is central versus preferential is to be made by the parents, he lays out a test that would require a court to actually know the reason a woman is choosing to abort, "The scope of the prebirth liberty right to select or control offspring characteristics thus depends on two inquiries. The first is whether the characteristic in question is one that is central or material to a reproductive decision - whether the characteristic determines whether reproduction will occur. If so, the law must give this choice the same respect and weight it gives to other decisions about whether or not to reproduce. If not, if the characteristic is only a preference as to offspring characteristics, but not one that determines whether reproduction will occur, then it may not be part of procreative liberty and may not deserve the respect accorded procreative choices generally.").

142. *Lifches v. Hartigan*, 735 F. Supp. 1361, 1377 (N.D. Ill. 1990).

state would be permitted to compel women or doctors to state a reason for obtaining or providing an abortion.¹⁴³

While this view is in accordance with the argument that any decision to abort should be protected, negative genetic selections raise substantial ethical and moral questions. Is it right for our society to condone abortion for these reasons? Is it right for parents to say life as a person with a disability, or as a female, or as someone who may develop cancer sometime in the future is not worth living?

Many opponents of negative genetic selection warn against allowing it in any situation for these exact reasons. Even as far back as the *Skinner* case, the Court warned against eliminating certain “kinds” of people from society. The Court said that “[I]n evil or reckless hands it [, sterilization,] can cause races or types which are inimical to the dominant group to wither and disappear.”¹⁴⁴

This same fear is alive and well for many opponents of negative genetic selection.¹⁴⁵ In discussing the United State’s policy against negative eugenics,¹⁴⁶ one scholar noted that “[m]andating prenatal [genetic screening] would reverse this policy consensus by once again coercing vulnerable populations to forego reproduction and to abort when no therapy for an inheritable disease exists or none is affordable.”¹⁴⁷ Economics play a large role in opponent’s arguments against genetic screening which leads to negative genetic selection.¹⁴⁸ The costs associated with each gene test or series of tests varies, “rang[ing] from hundreds to thousands of dollars.”¹⁴⁹ Obviously, lower classes of society, many of whom go without health insurance and rely on free clinic healthcare, will not be able to afford genetic screening.¹⁵⁰ If negative selection and genetic enhancement are to become part of the regular reproductive experience, lower classes will be

143. *See id.*

144. *Skinner*, 316 U.S. at 541.

145. Adams, *supra* note 27, at 27.

146. Meant in this context to describe the United States’ policy of sterilizing mental patients pre-1940s in an effort to breed out mental disorders from the population. *Id.*

147. *Id.*

148. *See Casey*, *supra* note 6, at 108.

149. *Id.*

150. *See id.*

excluded, leaving them to bear more children with genetic diseases.¹⁵¹

B. *Genetic Enhancement*

Genetic enhancement presents an entirely different set of ethical and legal considerations. Unlike negative genetic selection it is less clear that genetic enhancement falls under the umbrella of procreative liberty. As Robertson states, “[t]o fall within procreative liberty, a couple would have to claim that they want only offspring with the greatest possible chance to excel, be successful, and have a happy life, and thus that they would not reproduce unless they could engage in the enhancement activities.”¹⁵² Robertson then makes a contradictory statement, “if enhancement efforts were deemed to fall outside of accepted and understood reproductive experience, they would not receive the same presumptive protection of procreative liberty.”¹⁵³ This statement seems nonsensical within the context of genetic enhancement because nothing about genetic enhancement is deemed to be within the reproductive experience — at least not yet. It is possible to imagine a day in the near future when genetic enhancement for medical purposes may be considered within the reproductive experience if enough of society can utilize the technology. On the contrary, it is more difficult to imagine a day when non-therapeutic enhancements become so commonplace that parents would choose abortion over having a child that was not genetically enhanced. Therefore, the analysis of the right to genetically enhance one’s fetus should break into two separate discussions — therapeutic enhancements and non-therapeutic enhancements.

Proponents of genetic enhancement argue that the right of a person to genetically alter their fetus is akin to their right to rear their children.¹⁵⁴ Parents make decisions everyday to improve their children’s chances of success in life. From choosing which pre-school a child attends to gifting breast implants to a graduating high school senior, parents in today’s society are willing to make drastic and even controversial decisions to improve the life

151. *See id.*

152. Robertson, *supra* note 20, at 436.

153. *Id.*

154. The right to rear children is established by the case law laid out in Part IV of this article.

of their child.¹⁵⁵ As Professor Robertson states, “[i]f states cannot show that enhancement activities harm the child, then prebirth enhancement through genetic intervention may receive protection as an aspect of this right to rear, even if it were not independently protected as part of procreative liberty.”¹⁵⁶

A more attenuated argument from the abortion line of cases equates a ban on therapeutic gene therapy to a “substantial obstacle to individual liberty.”¹⁵⁷ Although the “undue burden” standard set forth in *Casey* dealt with a woman’s ability to obtain an abortion, one author on the subject makes a compelling argument that forcing a woman to choose between bearing and raising a child with a disability is an undue burden on her right to procreate.¹⁵⁸ The author is careful to specify that this argument only applies to gene therapy “correcting a serious genetic abnormality.”¹⁵⁹

Less technologically refined non-therapeutic enhancements face tougher scrutiny.¹⁶⁰ Under Robertson’s theory and the theory discussed above, the ability to make non-therapeutic enhancements is not viewed as being a determining factor for parents when deciding to have a child.¹⁶¹ Thus, they would not fall within the protected liberty interests involving procreation.

A more compelling argument against non-therapeutic enhancements is that a ban on such therapy would be rationally related to the state’s interest in maintaining social equality.¹⁶² The costs to society associated with these types of enhancements are high:

Genetic enhancement of the few threatens the belief in equality of opportunity in three crucial ways. First, it increases actual inequalities between the enhanced and the “unadvantaged.” Second, it gives the enhanced opportunities that others do not have, and that, in the case of germ cell enhancement, may be passed on to succeeding generations.

155. See Sandra G. Boodman, *For Teenage Girls, Adult Plastic Surgery*, WASHINGTON POST, Oct. 26, 2004, A01 available at <http://www.washingtonpost.com/ac2/wp-dyn/A62540-2004Oct25?language=printer>.

156. Robertson, *supra* note 20, at 436-37.

157. Stine, *supra* note 102, at 529.

158. *Id.*

159. *Id.*

160. See Robertson, *supra* note 20; Stine, *supra* note 102, at 529.

161. Robertson, *supra* note 20; Stine, *supra* note 102, at 529 (“While those parents seeking to use embryonic gene therapy for purely genetic enhancement reasons might be discouraged from choosing to have a child, such discouragement would not constitute a substantial obstacle on the decision to procreate.”).

162. See Mehlman, *supra* note 83.

Third, it freezes up the crucial safety valve of upward mobility. The enhanced would tend to monopolize desirable occupations and fill high status social roles. The unadvantaged no longer would be able to count on traditional methods of social advancement, such as education and intermarriage, to improve their social standing.¹⁶³

As Professor Mehlman illustrates, these costs threaten some of the basic principals upon which the United State's was founded. With genetic enhancement only available to a few, all would not be created equal.¹⁶⁴ Some commentators fear that the most sought after genetic characteristics in our society are "whiteness and maleness."¹⁶⁵ Adding non-disabled, highly intelligent and physically adept to the list of the "enhanced population," one can easily conclude that some of our minority populations will indeed face an insurmountable hill in competing socially.¹⁶⁶

VI. CONCLUSION

How effectively can the United States deal with these new technologies when the issue of abortion still remains largely unresolved? The improved sciences of genetic testing and enhancement will force society to face the legal, moral and ethical dilemmas presented by this advanced science. Although these technologies may be born out of a desire to improve human life, their very effects may render them undesirable to much of society. Whatever the result, this science is indefatigably tied to procreation and therefore to a woman's right to choose. Any court that takes up a state restriction on negative genetic selection or genetic enhancement must consider the procreative liberty jurisprudence and must err on the side of protecting a woman's right to choose while balancing the ethical issues presented. Equality is a fundamental cornerstone of our society. Altering the genetic make-up of some of our citizens will undoubtedly characteristically change that equality. The social implications of this control over who will outperform on aptitude tests, who will possess the social ideals of beauty, to even who will be afflicted with disease present possibly the most significant questions today.

163. *Id.* at 78.

164. *Id.* at 687 (explaining that non-therapeutic genetic enhancement goes against our very own Declaration of Independence).

165. Adams, *supra* note 27, at 61.

166. *Id.*