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Genetics, Eugenics, and Public Policy

George P. Smith II
The Catholic University of America, Columbus School of Law

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I. INTRODUCTION

Substantial scientific evidence indicates man's genetic inheritance acts as a major influence not only upon his behavior but also upon his health.[1] In the United States, for example, it is estimated that one out of every twenty babies is born with a discernible genetic deficiency;[2] of all chronic diseases, between twenty and twenty-five per cent are predominantly genetic in origin.[3] At least half of the hospital beds in America are occupied by patients whose incapacities are known to be of a genetic origin.[4] Because modern medicine can alleviate the symptoms of some genetic diseases through sophisticated treatment, many who are afflicted and who would not have survived in the past now survive. Medicine is unable to cure genetic defects;[5] however, those afflicted with genetic diseases who are kept alive by modern technologies can reproduce and thus may increase the number of defective genes in the gene pool.[6]

Considerable research into techniques for perfecting genetic engineering has been undertaken in an attempt to develop new treatment for

* Visiting Professor of Law, Notre Dame University; Professor of Law, The Catholic University of America, Washington, D.C. B.S., J.D., Indiana University, LL.M. Columbia University. During the summer of 1981, the author was a Visiting Scholar at The Lilly Library, Indiana University, Bloomington, Indiana, where he studied the papers of the late Professor Herman Muller, the Nobel Laureate in Genetics. The research of that summer is utilized herein together with subsequent study undertaken by virtue of the author's Fulbright-Hays award in Australia as the Fulbright Visiting Professor of Law and Medical Jurisprudence at The University of New South Wales, Sydney, Australia, in 1984.

1. *See* S. STANLEY, THE NEW EVOLUTIONARY TIMETABLE (1981); T. DOBZHANSKY, GENETIC DIVERSITY AND HUMAN EQUALITY (1973); Muller, *The Human Future*, in THE HUMANIST FRAME 401 (J. Huxley ed. 1961); Muller, *Human Values in Relation to Evolution*, 127 SCIENCE 625-29 (1958); Muller, *Genetic Principles in Human Populations*, 83 THE SCIENTIFIC MONTHLY 277 (1956); Muller, *The Threads that Weave Evolution*, 3 TRANSACTIONS, N.Y. ACADEMY SCIENCE, 117-25 (Series II 1941); C. DARLINGTON, THE EVOLUTION OF MAN AND SOCIETY (1969).

2. Gorney, *The New Biology and the Future of Man*, 15 UCLA L. REV. 273, 291 (1968).

3. Robinson, *Genetics and Society*, 1971 UTAH L. REV. 487. Approximately 30,000 severely defective infants are born each year and afflicted with grave handicapping conditions that range from spina bifida to anencephaly. Ellis, *Letting Defective Babies Die: Who Decides?*, 7 AM. J. LAW & MED. 393 n.1 (1981).

4. *See supra* note 1 and accompanying text.

5. Waltz & Thigpen, *Genetic Screening and Counseling: The Legal and Ethical Issues*, 68 NW. U.L. REV. 696-98 (1973).

6. *Id.* at 698.

individuals with inherited diseases.[7] Under the rubric of the "New Biology," scientists are investigating and developing many interventions, including gene deletion surgery, splicing and transplantation, cloning *in vitro* or test tube fertilization, embryo implantation, parthenogenesis, amniocentesis, and experimentation with the scope and application of DNA.[8] Genetic engineering uses some of these procedures to reorganize human genes to produce varied, particular characteristcs.[9]

To combat genetic disease, genetic engineering may, and frequently does, rely upon eugenics, the science that deals with improving heredity. Stated simply, a positive eugenics program seeks to develop superior qualities in man through the propagation of his superior genes,[10] and the positive eugenists seek to produce a "new breed" with keener and more creative intelligence.[11] Conversely, a negative eugenics program attempts only to eliminate genetic weaknesses.[12] When seen in application, positive eugenics programs encourage the fit and "proper" individuals to reproduce, while negative eugenics programs discourage those less fit and those with inheritable diseases from procreating.[13] Abortion is one way of implementing a program of negative eugenics after earlier attempts to regulate have failed.[14]

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7. Kass, *The New Biology: What Price Relieving Man's Estate*, 174 SCIENCE 779, 780 (1971). *See also* C. HEINTZE, GENETIC ENGINEERING: MAN AND NATURE IN TRANSITION (1973); R. BLANK, THE POLITICAL IMPLICATIONS OF HUMAN GENETIC TECHNOLOGY *passim* (1983).

8. *Symposium—Reflections on the New Biology*, 15 UCLA L. REV. 267 (1968). Creative, scientific impulses for research and investigation should be neither systemized nor controlled. "Some part of life—perhaps the most important part—must be left to the spontaneous action of individual impulse, for where all is system, there will be mental and spiritual death." B. RUSSELL, THE IMPACT OF SCIENCE ON SOCIETY 89 (1952); *see also* R. BLANK, *supra* note7, 66 *passim* (1983).

9. Waltz & Thigpen, *supra* note 5, at 696; *see also* M. FRANKEL, GENETIC TECHNOLOGY: PROMISES AND PROBLEMS (1973); Fletcher, *Ethics and Recombinant DNA Research*, 51 S. CAL. L. REV. 1311 (1978).

10. *See* Vukowich, *The Dawning of the Brave New World—Legal, Ethical and Social Issues of Eugenics*, 1971 U. ILL. L.F. 189, 222.

11. Frankel, *The Specter of Eugenics*, 57 COMMENTARY 25, 30 (1974).

12. *Id.* To be justifiable, the acceptance or rejection of eugenic policies should be based upon more than one criterion. The following requisites should be a part of every eugenic program: scientific validity (e.g., a demonstration of sufficient genetic variation to allow for selection of the attribute in question); moral acceptability (i.e., a demonstration that the attributes chosen for selection are properly considered socially desirable); and ethical acceptability (i.e., a demonstration that the programs needed to institute a eugenic program do not compromise individual rights and liberties presently sanctioned by both public policy and the law). *See* Lappe, *Why Shouldn't We Have a Eugenic Policy?*, in GENETICS AND THE LAW 421, 425 (A. Milunsky & G. Annas eds. 1976). *See also* Osborn, *Qualitative Aspects of Population Control: Eugenics and Euthenics*, 25 LAW & CONTEMP. PROBS. 406 (1960).

13. Smith, *Through a Test Tube Darkly: Artificial Insemination and the Law*, 67 MICH. L. REV. 127, 147 (1968).

14. T. DOBZHANSKY, MANKIND EVOLVING 245 (1962); M. HALLER, EUGENICS 3 (1963). *See also* Green, *Genetic Technology: Law and Policy for the Brave New World*, 48 IND. L.J. 559 (1973); Dobzhansky, *Comments on Genetic Evolution*, 90 DAEDALUS 451, 470-73 (1961); STUDIES IN GE-

The Yin and the Yang are the two great principles of Chinese Taoism. Yin is the feminine, negative, and passive principle. Yang is the masculine, positive, and active principle. At times they oppose, and at other times they combine. If they are separated, no manifestation of any kind is any longer possible. Man's health depends upon the harmonious interaction of the Yin and the Yang.[15] The purpose of this essay is to explore the extent to which Yin-Yang influences of relationships exist within eugenics as a directive force in the science of genetics, and to test the extent of their influence in modern family planning.

II. THE HISTORICAL PERSPECTIVE

Plato, in his *Republic*, idealized selective breeding as the foundation for the creation and maintenance of a superior Guardian class.[16] In his 1859 treatise, *On the Origin of Species*, Charles Darwin, postulated a theory of evolution based upon the natural selection of the fittest organisms by virtue of their greater reproductive successes in the competitive struggle for existence.[17] Later, in *Descent of Man and Selection in Relation to Sex*, Darwin suggested that man could profit if selective breeding techniques were introduced into his reproductive cycle.[18] It was his cousin, Sir Francis Galton, however, who became recognized as the father of eugenics.[19] As early as 1869, Galton began to acknowledge that each generation had the power and a coordinate responsibility to those who followed to use its natural gifts in a way that would be advantageous to future generations.[20] Eugenics developed as a theory in 1883, and it was later described as a scientific approach designed to give "the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable than they otherwise would have had."[21]

First in Europe, and subsequently in the United States, social reformers and modernists seized upon Darwin's theory of evolution as a

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NETICS—THE SELECTED PAPERS OF H.J. MULLER (1962); CLASSIC PAPERS IN GENETICS (J. Peters ed. 1959); GENETICS, MEDICINE AND MAN (H. Muller, C. Little, L. Snyder eds. 1947); Tooley, *Abortion and Infanticide*, 2 J. PHIL. & PUB. AFF. 37 (1972).

15. A DICTIONARY OF COMPARATIVE RELIGION 657 (S. Barndon, ed. 1970); 2 THE ENCYCLOPEDIA OF PHILOSOPHY 89 (P. Edwards, ed. 1967); DICTIONARY OF PHILOSOPHY AND RELIGION 637 (W. Reese, ed. 1980).

16. PLATO, THE REPUBLIC 166-70 (J. Davies & D. Vaughn trans. 1891).

17. C. DARWIN, THE ORIGIN OF SPECIES (1859).

18. C. DARWIN, THE DESCENT OF MAN 402-03 (1871).

19. Comment, *Eugenic Artificial Insemination: A Cure for Mediocrity?*, 94 HARV. L. REV. 1850, 1852 (1981).

20. F. GALTON, HEREDITY GENIUS 1 (1869).

21. *See* Comment, *supra* note 19, at 1852.

key to understanding the social disorganization of that period.[22] Indeed, this particular period of social evolution was compared with the very evolution of an organism. Social Darwinists were formed as a group that saw the decaying social order as the product of healthy competition where only the fittest survived.[23]

The real honor of being the "father" of modern genetics was bestowed upon Gregor Mendel, an Austrian monk. In the 1860s, Mendel began exhaustive experiments into inheritance factors which were later designated as genes or units of heredity.[24] Mendel discovered, through a process of cross breeding peas, that a pair of determiners or genes was the mechanism through which inherited traits were passed. Thus, if a plant were to inherit a gene for round leaves from each parent, it would have that specific trait. Yet, if a plant inherited one gene for sets of round leaves and another gene for pointed leaves, the plant would exhibit but one of those traits. The gene for the exhibited trait would be considered the dominant gene, while the other would be classified as recessive. Recessive traits would appear only when a plant inherited two recessive genes. Accordingly, a recessive trait could skip a generation, yet appear in a later one. Using this data, Mendel developed a detailed system of ratios which was used to predict the appearance of a trait.[25]

Although Mendel applied and validated his ratios only with peas, the eugenists who followed Mendel applied these ratios to all species to describe evolutionary genetics at a time when knowledge of the field was quite primitive. Almost all of an individual's physical and psychological characteristics were attributed to the presence of a gene for each specific trait in his parent's reproductive or germ cells. There was much agreement that common physical traits such as iris color, hair color, and skin pigmentation were inherited. The eugenists extended this position by maintaining that psychological traits such as sincerity or insincerity and truthfulness or untruthfulness were also inherited.[26]

The noble ideals of positive eugenic programs sought to encourage those with what were perceived as socially beneficial traits to consider basic eugenic principles when choosing a marriage partner and deciding family size. The negative program for eugenic improvement stressed eradicating socially inadequate traits such as feeblemindedness from the

22. Cynkar, *Buck v. Bell: Felt Necessities v. Fundamental Values?*, 81 COLUM. L. REV. 1416, 1420 (1981).

23. *Id.* *See* G. STINE, BIOSOCIAL GENETICS: HUMAN HEREDITY AND SOCIAL ISSUES (1977).

24. *Id.* at 1421. *See also* V. MCKUSICK, MENDELIAN INHERITANCE IN MAN (1978).

25. *Stine, supra* note 23, at 1422-25. *See also* J. FLETCHER, COPING WITH GENETIC DISORDERS 3-32 (1982).

26. *Stine, supra* note 23, at 1422-25.

American stock through legally sanctioned sterilization procedures.[27] While the purposes and ideals of a positive eugenics program captured the interest and imagination of many Americans, such a program never developed.[28]

In 1929, the following groups were determined to be "socially inadequate" and recognized as the target groups for sterilizations: the feebleminded; the insane (which included the psychopathic); the criminalistic (including the delinquent and wayward); epileptics; inebriates (which includes drug habitues); the diseased (e.g., the tubercular, syphilitic, leprous, and all others with chronic, infectious, and legally segregable diseases); the blind and those with seriously impaired vision; the deaf and those with seriously impaired hearing; the deformed (which included the crippled); and dependents taken as orphans, ne'er-do-wells, the homeless, tramps and paupers.[29] The stated goal of a number of the eugenists was to build sufficient institutions so that by 1980, care could be extended to the 1,500 feebleminded per 100,000 of the population which the eugenists maintained would then be living in the United States.[30]

By 1925, twenty-three states had enacted at least one piece of eugenic sterilization legislation. While varying classes of people were declared to be subject to the laws, each law combined various degrees of punitive, eugenic and therapeutic measures to effectuate its intent.[31] The statutes were challenged on constitutional grounds. When a statute of this type was determined to be unconstitutional, the decision was founded on a denial of equal protection of the laws (i.e., invidious discrimination against a class of citizens), a violation of due process or a recognition that the sterilizations were cruel and unusual punishment.[32]

Although by 1931 thirty-two states had passed some type of sterilization legislation, the full popularity of the eugenics movement had begun to decline as early as 1927.[33] Interestingly, during the 1920s, scientific investigations began to show clearly that feeblemindedness was not a direct consequence of Mendelian ratios, but rather the result of very complex causes.[34] Finally, in the 1930s, research in psychology, sociology, and anthropology showed that environmental influences were

27. *Id.* at 1428.

28. *Id. See also* Beckwith, *Social and Political Uses of Genetics in the United States: Past and Present*, 265 ANNALS N.Y. ACAD. SCI. 46 (1976).

29. H. LAUGHLIN, THE LEGAL STATUS OF EUGENICAL STERILIZATIONS 65 (1929).

30. *Id.* at 60. *See also* Lappe, *Moral Obligations and the Fallacies of Genetic Control*, 33 THEOLOGICAL STUD. 411 (1972).

31. Cynkar, *supra* note 22, at 1433.

32. *Id.* at 1434.

33. *Id.* at 1454.

34. *Id.* at 1455.

certainly as significant a determiner of human character and intelligence as heredity.[35] Equally as important, the passionate commitment of the original leaders of the eugenics movement was not found to be replaceable in the new converts, once the original leadership ranks were thinned by death or retirement.[36]

III. Implementing a Negative Eugenics Program

To eliminate genetic weaknesses from society, a negative eugenics program requires a determination of genetic composition. Genetic screening and counseling accomplish this objective by identifying carriers of genetic diseases and advising couples whether reproduction is biologically desirable.[37] Screening and counseling may occur at both preconceptual and postconceptual stages.[38] A simple preconceptual screening procedure consists of withdrawing and analyzing a blood sample to determine if an individual possesses recessive traits for genetic disease.[39] Postconceptual screening and counseling procedures are more complicated medically and also pose more complex legal issues. Postconceptual procedures are described below.

A. *Amniocentesis*

A recently developed postconceptual screening procedure, amniocentesis, has emerged as a principal element of negative eugenic programming. The procedure consists of inserting a needle through the abdominal wall of a pregnant woman into the amniotic sac containing the fetus, withdrawing a sample of amniotic fluid, and analyzing it.[40] Because the sac contains cells from different parts of the fetus, analysis of this sample reveals the sex of the fetus and also whether it will be affected by certain genetic disabilities.[41] By permitting a physician to accurately predict the presence of certain genetic defects, amniocentesis surpasses standard genetic counseling procedures that must rely on probabilities.[42]

If amniocentesis reveals a genetically defective fetus, the parents

35. *Id.* at 1456.

36. *Id.* The four-part series by Daniel J. Kevles entitled, "Annals of Eugenics," appearing in the October, 1984, issues of *The New Yorker Magazine* raises to a level of current consciousness the issue of genetic improvement through the development and application of eugenic policies.

37. Davis, *Ethical and Technical Aspects of Genetic Intervention*, 285 New Eng. J. Med. 799 (1977). *See also* Smith, *Manipulating the Genetic Code: Jurisprudential Conundrums*, 64 Geo. L.J. 697 (1976).

38. Waltz & Thigpen, *supra* note 5, at 700.

39. *Id. See also* Kobrin, *Confidentiality of Genetic Information*, 30 UCLA L. Rev. 1283 (1983).

40. Robinson, *Genetics and Society*, 1971 Utah L. Rev. 487, 488 n.2.

41. *Id.*

42. *Id. See* Ransey, *Screening: An Ethicist's View*, in Ethical Issues in Human Genetics

face the difficult choice of whether to abort the fetus. A couple informed of a genetically defective fetus may decide for religious, personal, or ethical reasons that they want to allow the pregnancy to continue. Such a choice raises the issue whether the child could bring a tort action against his parents for wrongful life. Under current law, such a claim would likely fail.[43]

B. *Genetic Screening and Counseling Programs*

Some of those currently involved with negative eugenics have emphasized the need for the application of traditional screening procedures to identify the carriers of certain diseases.[44] Certain leaders of Jewish communities encourage citizens of their communities to participate in screening to identify carriers of the Tay Sachs recessive gene, which can cause a debilitating illness.[45] Federal legislation permits the use of public funds to establish voluntary genetic screening and counseling programs for carriers of sickle cell anemia;[46] some state legislatures have gone further to require genetic screening of school age children for the trait.[47]

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154 (B. Hilton, D. Callahan, M. Harris, P. Condliffe, B. Berkley eds. 1973); Lappe, *Ethical and Social Issues in Screening for Genetic Disease*, 286 N. ENG. J. MED. 1129 (1972).

43. *See* Note, *A Cause of Action for Wrongful Life*, 55 MINN. L. REV. 58 (1970); Annot., 22 A.L.R. 3d 1441 (1968).

44. Rivers, *Grave New World*, SATURDAY REV., April 8, 1972, at 23, 26.

There are four areas in which genetic disease may be classified: single gene effects; chromosomal abnormalities; congenital malformation; and serious constitutional disorders. The incidence of single gene effects—of which the most commonly know are phenlketonuria (P.K.U.), Tay-Sachs disease, and X-linked mental retardation—is 11.2 affected births per 1,000 births. Chromosomal abnormalities—which would include Down's Syndrome and Turner's Syndrome—account for 5.4 per 1,000 births. The incidence of congenital malformation is 14.1 per 1,000 births and the serious constitutional disorders—which include diabetes and epilepsy—occur in 14.8 per 1,000 births. S. HAYES & R. HAYES, MENTAL RETARDATION: LAW, POLICY AND ADMINISTRATION 28-29 (1982).

Usually within the first several weeks of pregnancy, between one-third and one-half of all zygotes abort spontaneously owing to the fact that forty percent of the abortuses have an abnormal chromosome complement. A rather surprising ninety-seven percent of Turner's Syndrome and sixty-five to seventy percent of Down's Syndrome abort by the eighteenth week of pregnancy. Many abnormal fetuses which do not abort spontaneously are identificable through the use of a variety of techniques—with, in all cases, termination of the pregnancy being offered to the prospective parents. S. HAYES & R. HAYES, *id.* G. RODERICK, MAN AND HEREDITY 225 (1968); S. SCHEINFELD, YOUR HEREDITY AND ENVIRONMENT 189 (1965); H. PAPAZIAN, MODERN GENETICS 77 (1967).

45. Walters, *Introduction to Genetic Intervention and Reproduction Technologies*, in CONTEMPORARY ISSUES IN BIOETHICS 567 (T. Beauchamp & L. Walters eds. 1978); Nelson, Swint & Caskey, *An Economic Evaluation of a Genetic Screening Program for Tay-Sachs Disease*, 30 AM. J. HUM. GENETICS 160 (1978).

46. National Sickle Cell Anemia, Cooley's Anemia, Tay-Sachs, and Genetic Diseases Act, 42 U.S.C. § 300b-1-300b-6 (1982). A. CERAMI & E. WASHINGTON, SICKLE CELL ANEMIA (1974). *See also* A. ETZIONI, GENETIC FIX 132 (1973); Reilly, *Government Support of Genetic Services*, 25 SOCIAL BIOLOGY 23 (1978); Culliton, *Cooley's Anemia: Special Treatment for Another Ethnic Disease*, 178 SCIENCE 593 (1972).

47. *See, e.g.*, ILL. REV. STAT. ch. 122, ¶ 27-8.1 (1983) (exception for refusal of physical examination on religious grounds); MASS. GEN. LAWS ANN. ch. 76, § 15A (1983) (mandatory only if

New York provides for premarital testing to identify carriers of the sickle cell gene.[48] Genetic screening programs also may include provisions for counseling.[49] Unfortunately, counseling efforts to date have been sporadic and ineffective.[50] If genetic screening programs are to have any significant impact, more effective counseling techniques must be devised and implemented.[51]

Public acceptance of mandatory genetic screening programs should not be impossible to achieve. Premarital genetic screening would be a simple addition to state statutes that already require premarital testing for maternal rubella titre (although not itself considered to be a genetic defect), blood group, and Rh status.[52] One scholar asserts that statutes requiring genetic screening for the population at large would be a simple and readily acceptable extension of present laws requiring vaccinations and chest X-rays for school children.[53] Moreover, societal problems

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child susceptible); N.Y. EDUC. LAW § 904 (McKinney 1985) (exception for refusal based on religious beliefs). *See also* VA. CODE § 32.1-68 (1985) (voluntary screening program).

Dr. Linus Pauling has suggested that sickle cell anemia carriers be identified by tattooing the forehead of every carrier. Other recessive genes, such as hemophilia and phenylketonuria, could be similarly identified. Dr. Pauling wistfully suggests that such identification would discourage carriers of the same defective gene "from falling in love with another" and, presumably, from procreating. Pauling, *Forward, Symposium—Reflections on the New Biology*," 15 UCLA L. REV. 267, 270 (1968).

Limited neonatal screening for phenylketonuria (PKU)—a single gene effect that produces severe mental retardation in children—was initiated in the United States and Britain during the 1950's. Today, some forty-three states have PKU screening laws; another fourteen test neonatally for a variety of screening problems other than PKU. Among such diseases may be listed: adenosine deaminase deficiency; galactosemia; homocystinuria; sickle cell anemia; tyrosinemia; histidinemia; branches chaisketonuriaa. Reilly, *State Supported Mass Genetic Screening Programs*, in GENETICS AND THE LAW 159, 164 (A. Milunsky & G. Annas eds. 1976).

48. N.Y. DOM. REL. LAW, § 13-aa (McKinney 1979). Other states provide for voluntary premarital testing for sickle cell anemia. *See* CAL. HEALTH & SAFETY CODE §§ 325-27 (West 1978); GA. CODE ANN. § 53-216 (1982).

49. *See* VA. CODE § 32.1-68 (1985). Antley, *Variables in the Outcome of Genetic Counseling*, 23 SOC. BIOLOGY 108 (1976). A genetic counselor "has freedom to persuade, according to his personal convictions, but he does not have freedom to coerce, based upon his inherent power in the counseling milieu. He must accept the counselee as the ultimate decision maker. Different parents have a variety of motives for their ultimate decisions. Thus, the outcome of their deliberations will vary. And we will preserve our genetic heterogeneity." Shaw, *Genetic Counseling*, in HUMAN GENETICS: READINGS ON THE IMPLICATIONS OF GENETIC ENGINEERING 200 (T. Mertons ed. 1975).

50. Waltz & Thigpen, *supra* note 5, at 701-02, nn.28-29. *See also* President's Commission for the Study of Ethical Problems in Medicine and Behavioral Research, Screening and Counseling for Genetic Conditions: A Report on the Ethical, Social and Legal Implications of Genetic Screening, Counseling, and Education Programs (1983); J. FLETCHER, COPING WITH GENETIC DISORDERS 50-74 (1982).

51. Waltz & Thigpen, *supra* note 5, at 701-02, nn.30-31. Confusion as to the significance of possessing the defective gene not only renders screening programs less effective in discouraging reproduction, but the failure to differentiate between the disease and the trait also increase the stigmatization to which carriers are subjected. *Id.*

52. Frankel, *supra* note 11, at 29.

53. *Id.*

such as population control, the cost of supporting the handicapped, and the general welfare of the population favor the trend toward mandatory genetic screening.[54]

Some legal scholars maintain that compulsory genetic screening programs may be unconstitutional.[55] They assert that the taking of a child's blood sample would constitute a physical invasion of the body in violation of the fourth amendment to the Constitution and that a compulsory counseling program would interfere with the fundamental rights to marry and procreate.[56] These critics also contend that a less intrusive voluntary program, together with extensive dissemination of educational material, could accomplish the same objectives.[57] Although genetic screening involves a minor intrusion into an individual's body and may involve a "search" within the meaning of the fourth amendment, the search is not unreasonable and prohibited if executed properly and justified by a legitimate state interest.[58] Similarly, if mere screening and counseling interfere with the right to procreate, such interference may be justified by a compelling state interest which must be preserved. The state's interest in improving the quality of a population's genetic pool in order to minimize suffering, to reduce the number of economically dependent persons, and possibly, to save mankind from extinction arguably justifies the infringement of individuals' civil liberties.[59]

Unfortunately, voluntary programs seldom achieve their goals. People are too preoccupied with the daily vicissitudes of life to be concerned with prospective occurrences of genetic possibilities. Therefore, although a voluntary program concededly is less intrusive, the only way to achieve positive, enduring results is to implement some form of mandatory genetic screening program.[60]

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54. *Id.* While the United States Air Force Academy ended its ban on maintaining cadets at the Academy who were carriers of sickle-cell anemia in 1981, it has been reported that some six or more major American corporations endeavor to screen prospective employees for genetic deficiencies (and particularly their sensitivity to toxic substances). In 1982, nearly five dozen other Fortune 500 firms reported that within five years they, too, expected to follow a similar policy. "Hemophiliacs may not have a right to employment as butchers; still, in some untold fraction of cases the burden of workplace safety could well come to fall less on the company than on the employees—a circumstance that would particularly affect ethnic or racial groups among whom the incidence of, say, thalassemia or the sickle-cell trait is disproportionately high." Kevles, *supra* note 36, at 116, 117.

55. Waltz & Thigpen, *supra* note 5, at 712.

56. *Id.* at 711-12.

57. *Id.*

58. *Cf.* Schmerber v. California, 384 U.S. 757, 772 (1966) (compulsory blood test to determine intoxication of automobile driver not unreasonable search).

59. Vukowich, *supra* note 10, at 208.

60. Pauling, *supra* note 47, at 270-71.

C. *Restrictions on Marriage*

An even more effective means of preventing the birth of genetically defective persons is to prohibit marriage between carriers of the same genetic defect. Both constitutional and social objections have been raised to such restrictions on marriage.[61] Existing laws prohibiting marriage for eugenic reasons and proposals to restrict marriage between carriers of the same genetic defect are attacked as being excessively broad, and critics have suggested that only procreation needs to be regulated to ensure eugenic preservation and responsible parents.[62]

Since procreation traditionally is set within the marriage framework, however, establishing restrictions on marriage is the most practical mechanism for implementing a negative eugenics program. Moreover, married couples prohibited from procreation nonetheless might have children accidentally or intentionally.[63] Whether a state's pursuit of the public's health and welfare would justify an abridgement of the fundamental right of marriage between carriers of the same genetic defect is doubtful. Such restrictions also might prove ineffective at present due to increasing tolerance of free love and common law (or *de facto*) relationships. Thus, it is unlikely that restrictions on marriage would prove to be an acceptable method of eugenic control.

D. *Restrictions on Reproduction*

Modern cases support the proposition that marital and procreative decisions fall within a constitutionally protected zone of privacy.[64] As early as 1941, the United States Supreme Court declared that man possesses the basic civil right to have offspring.[65] More recently, the Court held that the choice of whether to give birth is within a constitutionaly protected zone of privacy.[66] These broad pronouncements, however, do not force the conclusion that all restrictions on reproduction are per se unconstitutional. If a state may prevent a person from marrying more than one person at a time, should it not have the same power to prevent a

61. *See* Vukowich, *supra* note 10, at 215-16.

62. *Id.* at 216.

63. *Id.*

64. *See, e.g.*, Eisenstadt v. Baird, 405 U.S. 438, 452-55 (1972) (forbidding—on morality grounds—sale or gift of contraceptives to unmarried persons conflicts with fundamental constitutional rights); Loving v. Virginia, 388 U.S. 12 (1967) (state may not infringe freedom to marry person of another race); Griswold v. Connecticut, 381 U.S. 479, 481-86 (1965) (statute forbidding use of contraceptives violates constitutionally protected right of marital privacy).

65. Skinner v. Oklahoma, 316 U.S. 535, 541 (1941). Concurring in Griswold v. Connecticut, Justice Goldberg commented that a compulsory birth control law unjustifiably would abridge the constitutional rights of marital privacy. 281 U.S. 479, 497 (1965) (Warren, C.J., Brennan, J., concurring).

66. *See* Roe v. Wade, 419 U.S. 113, 153 (1973).

person from having more than one or two children? The right to procreate may not include a right to breed without restrictions.[67] Societal interests may be sufficiently powerful to justify at least some regulation of reproduction.[68]

Some legal precedents uphold the constitutionality of eugenic sterilization. In *Buck v. Bell*,[69] the United States Supreme Court upheld a Virginia statute providing for sterilization of inmates of state-supported institutions who were found to have a hereditary form of insanity or imbecility.[70] And still today, nearly half of the states have some form of compulsory sterilization legislation,[71] and the courts typically uphold the validity of the statutes.[72]

The extension of *Buck* to sterilization of carriers of recessive defective genes could not be accomplished easily. Since its decision in that case, the Court has increasingly recognized the right to marry and have children as a basic or fundamental right, so that a state must show a compelling interest in order to justify any abridgement of the right.[73]

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67. M. Golding & N. Golding, *Ethical and Value Issues in Population Limitation and Distribution in the United States*, 24 VAND. L. REV. 495, 511 (1971).

68. *Id.* at 512. The authors conclude, however, that the unrestricted freedom to procreate should be abridged only for a "good of momentous order." *Id.*

69. 274 U.S. 200 (1927).

70. *Id.* at 207. Justice Holmes, speaking for the Court, stated:

> We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call on those who already sap the strength of the State for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. 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."

Id. See also In re Sterilization of Moore, 289 N.C. 95, 221 S.E.2d 307 (1976).

71. The present eugenic sterilization statutes are: CAL. PENAL CODE § 645 (West 1970); DEL. CODE ANN. tit. 16, § 5701 (1983); IDAHO CODE §§ 39-3901-3910 (1985); ME. REV. STAT. ANN. tit. 34B §§ 7001-17 (Supp. 1985); MINN. STAT. ANN. § 252A.13 (1982); MISS. CODE ANN. §§ 41-45-1-41-45-19 (1981 & Supp. 1985); MONT. CODE ANN. §§ 50-5-501-50-5-505 (1985); N.C. GEN. STAT. §§ 35-36-35-50 (1984); OR. REV. STAT. § 436.205-436.335 (1983); S.C. CODE ANN. §§ 44-47-10-44-47-100 (1985); UTAH CODE ANN. §§ 64-10-1-64-10-16 (1968); VT. STAT. ANN. tit. 18, §§ 8701-16 (1968 & Supp. 1985); VA. CODE §§ 54-325.9-54.325.15 (1982); W. VA. CODE §§ 27-16-1-27-16-5 (1976). It has been estimated that over 70,000 people have been sterilized under such statutes. STATISTICS FROM HUMAN BETTERMENT ASS'N OF AMERICA, SUMMARY OF U.S. STERILIZATION LAWS 2 (1958).

One should distinguish these eugenic sterilization statutes from those sterilization statutes which are wholly voluntary in nature. Among the voluntary statutes are: OR. REV. STAT. § 435.305 (1983); N.M. STAT. ANN. §§ 24-1-14, 24-9-1 (1984); GA. CODE ANN. §§ 84-932 (1985); N.C. GEN. STAT. §§ 90-271-90-275 (1985). These statutes are essentially contraceptive and therapeutic and not eugenic in nature.

72. *See, e.g.*, Oregon v. Cook, 9 Or. App. 224, 230, 495 P.2d 768, 771-72 (1972) (equal protection challenge based on indigency rejected); *In re* Cavitt, 182 Neb. 712-721, 157 N.W.2d 171, 178 (1968), *cert. denied*, 396 U.S. 996 (1970). *See also* Dunn, *Eugenic Sterilization Statutes: A Constitutional Re-evaluation*, 14 J. FAM. L. 280 (1975).

73. Shapiro v. Thompson, 394 U.S. 618, 638 (1969).

Several factors indicate that the state interest in sterilization of carriers of defective genes is not as compelling as it is with regard to mental incompetents. A mental incompetent may be unable to be an adequate parent, and the burden of care therefore would fall upon the state.[74] Moreover, the sterilization of mental incompetents in institutions can benefit them directly in that it "enable[s] those who otherwise must be kept confined to be returned to the world . . . ."[75] In making this statement, the Court assumed that there is a strong likelihood that the child of an intellectually defective mother would inherit the same defect.[76] The Court's assumption is not necessarily correct since the child of two heterozygous individuals has only a one in four chance of exhibiting that defective trait.[77]

The distinguishing features of *Buck v. Bell* indicate that the state can offer compelling justification to warrant mandatory restriction on reproduction. Such justifications include society's interest in the reduction of human suffering and in safeguarding the health and welfare of its citizens through the allocation of economic resources and through population control.[78] In *Buck*, Justice Holmes stressed that "[i]t is better for all the world . . . if society can prevent those who are manifestly unfit from continuing their kind."[79] Perhaps world conditions have become so

74. Oregon v. Cook, 9 Or. App. 224, 230, 495 P.2d 768, 771-72 (1972).

75. Buck v. Bell, 274 U.S. 200, 208 (1927). The Court's rationale acquires additional significance because it became the basis for distinguishing *Buck* in the case of Skinner v. Oklahoma where the Supreme Court invalidated a statute providing for the sterilization of habitual criminals. The Court in *Skinner* concluded that the questioned statute violated the fourteenth amendment's equal protection clause. 316 U.S. 535, 542 (1941).

76. The statute challenged in *Buck* required only that experience demonstrate heredity plays an important role in the transmission of the mental defect. *Buck*, 274 U.S. at 206. The inmate involved, however, was the daughter of a feebleminded mother. *Id.* at 205. *See* Murray, *Marriage Contracts for the Mentally Retarded*, 21 CATH. LAW. 182 (1975).

77. *See* Waltz & Thigpen, *supra* note 5, at 721 n.131.

78. Vukowich, *supra* note 10, at 208. A persuasive economic argument can be made for forced sterilization of mentally defectives. A 1971 study undertaken by the United States government concerned 190 public institutions for the mentally retarded and disclosed 15,370 patients were admitted for treatment during the 1971 calendar year. This is the equivalent of 7.5 patients per 100,000 people in the overall population and represents an average daily resident patient population of 181,058. Even though this figure shows a slight decline from the peak year of 1968, during the same four-year period, the annual cost of institutional care per patient rose from $3,472.00 to $5,537.00. Stated otherwise, the costs rose from $9.00 per day to $15.00 per day which is a 66% increase. UNITED STATES BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES 82, 83 (1974). *See also* Landam, *The History of Human Sterilization in the United States: Theory, Statute and Adjudication*, 23 ILL. L. REV. 463 (1929); Baron, *Voluntary Sterilization of the Mentally Retarded*, in GENETICS AND THE LAW 267 (A. Milunsky & G. Annas eds. 1976); Rothman, *Sterilizing the Poor*, 14 SOCIETY 36 (1977).

79. 274 U.S. at 207. Unrestricted genetic transmission forces a heavy burden upon society. The Juke and Kallikak family histories reveal clearly this point. Max Juke resided in Ulster County, New York. He had two sons who married two of six sisters of a local feebleminded family. One other sister left the area; the other three married mental defectives. From these five sisters, 2,094

complex and resources so valuable that society now has a compelling interest in restricting reproduction by those who, although not "manifestly unfit" themselves, perpetuate human suffering by giving birth to genetically defective offspring.

IV. THE NEW BIOLOGY AND A PROGRAM TO POSITIVE EUGENICS

A. *Artificial Insemination*

Artificial insemination, referred to as AID or heterologous insemination, is the process of inseminating a woman with the sperm of a donor. Although AID was developed to provide a child to a married couple that could not reproduce due to a physical impediment of the husband, the method today is also used in positive eugenics programs.[80] Sperm banks have been established to maintain semen of "distinguished" persons even beyond their lifetimes.[81] Positive eugenists advocate use of

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direct descendants and 726 consortium descendants were traced by 1915 into fourteen states. All of them were feebleminded and the cost to society from their welfare payments, illicit enterprises, jail terms, and prostitution brothels was $2,516,685.00. J. WALLIN, MENTAL DEFICIENCY 43-44 (1956). Martin Kallikak, Sr., fostered a son, Martin Jr., by a feebleminded girl during the Revolutionary War. Martin Jr. married a feebleminded girl and they, in turn, had seven children: five of whom were similarly afflicted. From these progeny sprung 480 descendants, 143 feebleminded, 46 normals, and 291 of unknown mental stature. When Martin Sr. returned from the War, he married a normal woman and started a line culminating in 496 descendants—all of whom were normal. *Id.* at 44-45. Environmental deprivation has been recognized by some as an important, if not the determining, factor in the Kallikak "saga."

Various estimates have been made relative to the lifetime costs of various genetic diseases—often with rather astonishing results. For example, it has been calculated that the lifetime costs of maintaining a seriously defective individual is $250,000.00; this assumes, of course, institutionalization. Conservative estimates place the number of new cases of Down's syndrome in the United States at 5,000 each year—or, one in every 700 live births. Using the $250,000.000 figure for the cost of maintenance, the lifetime committed expenditure for new cases of Down's syndrome standing alone comes to at least $1.25 billion yearly which is, admittedly, a staggering figure for but one disease entity.

Another way of calculating the toll of genetic disease is to estimate the future life years cost. One widely cited estimate indicates that some 36 million future life years are lost in the United States by birth defects—putting the figure for recognized genetic disease (80% of birth defects being genetic in whole or in part) at 29 million future life years lost, or several times as much as from heart disease, cancer and stroke. U.S. DEP'T OF HEALTH, EDUCATION & WELFARE, WHAT ARE THE FACTS ABOUT GENETIC DISEASE? (Public Health Service, N.I.H., DHEW Pub. No. (NIH) 75-370) (1978). *See also* M. FRANKEL, GENETIC TECHNOLOGY: PROMISES AND PROBLEMS 46-77 (1973); R. VEATCH, DEATH, DYING AND THE BIOLOGICAL REVOLUTION (1976); G. HARDIN, NATURE AND MAN'S FATE (1959).

80. Smith, *Through a Test Tube Darkly: Artificial Insemination and the Law*, 67 MICH. L. REV. 127 at 148 (1968). It is generally agreed that it is best for any AID baby not to know of its origins. The donor should not be told if his donation of semen resulted in a successful impregnation and birth. Attalah, *Report from a Test Tube Baby*, N.Y. TIMES MAG., April 18, 1976, 16-17, 51.

81. Smith, *supra* note 80, at 145-46. In 1979, the Repository for Germinal Choice became operational in Escondido, California, and is designed to make available the sperm of Nobel Prize winners and other "creative, intelligent people." *Playboy Interview: William Shockley*, PLAYBOY Aug. 1980, at 69. *See also* Broad, *A Bank for Nobel Sperm*, 207 SCIENCE 1326 (1980).

superior sperm banks to develop the population's genetic strength and to assure the survival of the human race.[82] The ultimate goal of positive eugenics is to assure *eutelegenesis*, mass insemination with superior sperm.[83]

The word "eutelegenesis" was first proposed by Marion Piddington in 1916 "as a means of populating Australia and creating a race combining high moral worth with sound physical development," and was used subsequently by early American eugenists.[84] The use of AID practices to implement a positive eugenics program should encounter little resistance because these practices infringe upon individual rights only minimally, neither restricting nor prohibiting marriage or reproduction.[85] Of course, there are varying ethical and moral issues associated with this practice by unmarried women.[86]

B. In Vitro *Fertilization and Embryo Implants*

In 1974, Dr. Douglas Bevis of Leeds University announced that out of thirty attempts to conceive human embryos *in vitro*, or in test tubes, and then implant them *in utero*, or into the wombs of women, he had achieved three implants that resulted in the births of three babies.[87] The three mothers had been infertile because of diseased, blocked, or missing Fallopian tubes. Dr. Bevis removed ova from each woman, fertilized the ova in the test tubes with sperm from the women's respective husbands, and then implanted the fertilized eggs into the women's wombs.[88] Because he was unwilling to fully document his research, Dr. Bevis's announcement was doubted considerably.[89] Dr. Patrick Steptoe, a British gynecologist, and Dr. Robert Edwards, a Cambridge University physiologist, documented the laboratory conception of a test tube baby and its birth in 1978.[90]

In Australia, Dr. Carl Wood of Monash University and the Queen Victoria Medical Centre in Melbourne has gained worldwide credit for perfecting and advancing *in vitro* fertilization techniques, and for utiliz-

82. Smith, *supra* note 80, at 145-46.

83. *Id. See also* S. PICKENS, EUGENICS AND THE PROGRESSIVE (1968); Medawar, *The Genetic Improvement of Man*, 4 AUSTRALASIAN ANNALS OF MED. 317 (1969).

84. Brewer, *Eutelegenesis*, 27 EUGENICS REV. 121, 123, 126 (1935). *See also* Smith, *The Razor's Edge of Human Bonding: Artificial Fathers and Surrogate Mothers,*, 4 W. N. ENG. L. REV. 639 (1983).

85. Vukowich, *supra* note 10, at 230-31.

86. Smith, *Sexuality, Privacy and the New Biology*, 67 MARQ. L. REV. 263 (1984).

87. Rovrik, *The Embryo Sweepstakes*, N.Y. TIMES MAG., Sept. 15, 1974, at 17.

88. *Id.*

89. *Id.*

90. TIME, July 24, 1978, at 47.

ing frozen embryos to combat infertility.[91] The use of frozen embryos raises a number of moral, ethical, and religious issues which are beyond the scope and purpose of this essay.[92] The use of *in vitro* fertilization and embryo transplants in humans will increase until other means of conquering infertility are discovered or made available.

If a woman is infertile due to a blocked or missing Fallopian tube, an ovum may be taken from one of her ovaries, fertilized in a test tube with her husband's sperm (or a donor's sperm if her husband is infertile) and implanted in her uterus. If a woman cannot produce normal egg cells, a donor's egg, already fertilized by the husband's sperm through artifical insemination or fertilized *in vitro* with the husband's sperm, could be implanted into her uterus.[93] A woman who cannot carry a baby to term because of a physical disability could enter into a contract with a surrogate or host mother to do so,[94] and an egg fertilizer either *in vitro* or *in vivo* could be implanted into the host mother. A healthy career woman, such as a professional athlete, for example, may also seek the services of a surrogate mother if she does not wish to miss valuable time from her professional interests to carry a baby for the full term.[95]

Successful *in vitro* fertilization also may lead to the development of *in vitro* gestation or complete development of a fetus outside the womb.[96] Married couples could also rely on *in vitro* fertilization techniques to

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91. *See* TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES (W. Walters & P. Singer eds. 1982); Edwards & Steptoe, *Current Statutes of In Vitro Fertilization and Implantation of Human Embryos*, THE LANCET, Dec. 3, 1983, at 1265; Biggers, *In Vitro Fertilization and Embryo Transfer in Human Beings*, 304 NEW ENG. J. MED. 336 (1981).

92. MAKING BABIES: THE TEST TUBE AND CHRISTIAN ETHICS (A Nichols & T. Hogan eds. 1984); *Symposium, In Vitro Fertilization: The Major Issues*, 9 J. MED. ETHICS 192 (1983). *See also* Annas & Elias, *In Vitro Fertilization and Embryo Transfer: Medico Legal Aspects of a New Technique to Create a Family*, 17 FAM. L.Q. 199 (1983); Walters, *Human In Vitro Fertilization: A Review of the Ethical Literature*, 9 HASTINGS CENTER REP. 23 (1979). *See also* H. & J. RIFKIN, WHO SHOULD PLAY GOD? (1977).

93. Gaylin, *We Have the Awful Knowledge to Make Exact Copies of Human Beings*, N.Y. TIMES MAG., Mar. 5, 1972, 11, at 48; Rorvik, *supra* note 87, at 50. *See also* R. MCKINNEL, CLONING: NUCLEAR TRANSPLANTATION IN AMPHIBIA (1978). Ova transplanting might be undertaken for eugenic reasons similar to those prompting the use of AID. If it is the wife instead of the husband whose germ cells are infertile or carry the threat of transmitting some serious X-linked genetic condition, she can be implanted with eggs from a healthy donor. The results and the parentage problems would then be analogous to those in cases of artificial insemination—with one important difference: instead of the child of a couple not being the husband's genetically, the child in the ova transplant cases would *not* be the wife's. P. REILLY, GENETICS, LAW AND SOCIAL POLICY 217 (1977).

94. *See* Gaylin, *supra* note 93, at 48; *cf.* Rorvik, *supra* note 85, at 50 (eggs from one cow can be implanted in the womb of another).

95. Gaylin, *supra* note 93, at 48. *See also* R. SCOTT, THE BODY AS PROPERTY, ch. 8 (1981).

96. *Id. See also* Smith, *Australia's Frozen Orphan Embryos: A Medical, Legal and Ethical Dilemma*, 24 J. FAM. L. 27 (1985).

have a child not even genetically their own. An unmarried person desiring a child might wish to utilize these methods as well. Since an unmarried individual would need a donor's egg or sperm to effectuate the procedure, positive eugenics concepts could be used to create children with a stronger genetic heritage.[97] As in the case of AID programs, the incorporation of positive eugenics concepts would infringe on individual rights minimally because they neither restrict nor prohibit marriage or reproduction, as eugenics programs do generally.

C. *Asexual Reproduction: Cloning and Parthenogenesis*

The word "cloning" which derives from a Greek root meaning cutting, is generally defined as asexual propagation and is commonly used to develop new varieties of plants.[98] In 1966, a team of Oxford University biologists, headed by Dr. John Gurdon, announced that they had grown seven frogs from the intestinal cells of tadpoles.[99] What had been routine in the garden, now existed for one group of animals: a new organism was produced from a single parent.

Several steps would be required to clone a human. First, the nucleus of a donor's egg cell would be destroyed. Second, a nucleus from any convenient cell of the person to be cloned would be inserted into the enucleated egg by microsurgical techniques which scientists today have yet to develop. Third, the new cell, placed in a nutrient medium, would begin to divide, and fourth, implantation of the embryo into the uterus would follow in approximately four to six days.[100] The cloned individual would be the identical twin of the person who contributed the body cell.[101] The establishment of banks of tissue cultures would permit the cloning of deceased persons.

Parthenogenesis, commonly referred to as virgin birth, is another form of asexual reproduction.[102] The French-American biologist, Jacques Leob, achieved parthenogenesis in sea urchins in 1899.[103] More recently, scientists have reported laboratory parthenogenic experiments for

97. D. RORVIK, BRAVE NEW BABY 109 (1971).

98. G. TAYLOR, THE BIOLOGICAL TIME BOMB 23-25 (1968). *See* Smith, *Intimations of Immortality: Clones, Cryons and the Law*, 6 U.N.S. WALES L. REV. 119 (1983).

99. G. LEACH, THE BIOCRATS 94 (1970).

100. J. Watson, *Potential Consequences of Experimentation with Human Eggs*, Jan. 28, 1971 (Papers 1, 3, 4, Harv. Univ. Biological Labs). *See also* R. COWPER, CLONE (1972); Walters, *Cloning, Ectogenesis, and Hybrids: Things to Come*, in TEST-TUBE BABIES: A GUIDE TO MORAL QUESTIONS, PRESENT TECHNIQUES AND FUTURE POSSIBILITIES 110 (W. Walters & P. Singer eds. 1982).

101. Lederberg, *Experimental Genetics and Human Evolution*, 100 AM. NATURALIST 549, 562 (1966); Watson, *Moving Toward the Clonal Man*, ATLANTIC MONTHLY at 50, 51 (May, 1971).

102. Comment, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. CAL. L. REV. 476 (1974).

103. G. TAYLOR, *supra* note 98, at 29.

frogs and mice.[104] If this process is perfected for humans, a woman one day may produce the necessary egg cell for conception, jolt the egg by pulling an electric switch or administering a drug, thereby enabling it to split, and then have it implanted in her womb for gestation and ultimate birth—all without physical contact with man or with his sperm.[105]

Not enough is known about human cloning or parthenogenesis to raise concern about whether it should be undertaken.[106] Present medical ethics require that a researcher be reasonably confident about the outcome of his research, that he undertake research for reasonably humanitarian purposes, and that he obtain the informed consent of the research subjects.[107] These factors do not determine whether cloning is proper. If the rate of pollution of the human gene pool continues to increase through uncontrolled sexual reproduction, however, efforts to produce healthier people may be required to compensate for the increase in the number of people afflicted with genetic diseases.[108] In that event, one could make a strong ethical argument to justify cloning of healthy individuals on the ground that it could achieve the greatest good for the greatest number of people.[109]

Legislation that embodies positive eugenics concepts and permits only individuals with superior genetic endowments to clone would raise a serious constitutional issue. Such a statute would require safeguards against the large scale cloning of particular types of individuals. To do otherwise would decrease the genetic variation that is so vitally necessary to natural selection and would even threaten man with his own extinction.[110] By discriminating between those with superior genetic traits and all others, however, legislation of this nature would be subject to equal protection challenges. Under standard equal protection analysis, if a court determined that the statutes affected a fundamental right, the state would need to show that the legislation served a compelling state interest.[111] The right to procreate has been declared a fundamental right,[112] but the denial of cloning methods to individuals who are capable of reproducing in the normal manner may not be a sufficient infringement of

104. *Id.* at 30.

105. D. RORVIK, *supra* note 97, at 95.

106. *Id.* at 94. *See also* Ingle, *The Ethics of Biomedical Interventions*, 13 PERSPECTIVES IN BIOLOGY & MED. 364 (1970).

107. Lederberg, *Genetic Engineering or the Amelioration of Genetic Defect*, 34 PHAROS 9, 12 (1971).

108. *Id.* at 12.

109. Fletcher, *Ethical Aspects of Genetic Controls*, 285 NEW ENG. J. MED. 776, 779 (1971).

110. *Id.*

111. Comment, *supra* note 102, at 561.

112. *Id.* at 550, 556.

this fundamental right to trigger the compelling interest requirement.[113] If it were not such an infringement, the state would be required to show only a rational relation between the legislation and a legitimate state interest.[114] A court might determine that the state's interest in the propagation of superior traits is constitutionally impermissible because it violates the Constitution's nobility clause[115] or the thirteenth amendment's prohibition of involuntary servitude.[116] If a court determined that the state has a legitimate interest in the propagation of superior traits, it would probably go on to find that the legislation is rationally related to that purpose.

Persons who carry genes for recessive traits might succeed in claiming that permitting only genetically superior people to clone infringes upon their right to procreate—with that claim triggering strict judicial scrutiny of the cloning law and requiring the state to show a compelling interest for its action.[117] Under this type of judicial scrutiny, at least two constitutional attacks on the statute itself could be made in addition to challenging the state's purpose. It is doubtful whether scientific evidence could provide a rational basis for classification of individuals based on genetic traits.[118] Moreover, the state may be able to achieve its objective through a less intrusive program: its interest in the propagation of superior traits through a positive eugenics program is probably less compelling that its interest in the diminution of inferior traits through a negative eugenics program.[119]

V. CONCLUSION

It would appear that eugenics enjoys clearly a definite Yin-Yang relationship with genetics; for it does not only have a negative force, but the threatening potentiality of its unrestrained application is of minor

113. Skinner v. Oklahoma, 316 U.S. 535, 541 (1942).

114. Lederberg, *supra* note 101, at 550-52.

115. *Id.* at 556. *See* Shapiro v. Thompson, 399 U.S. 618, 638 n.20.

116. Skinner v. Oklahoma, 316 U.S. at 581-82; U.S. CONST., art. I, § 9, cl. 8; U.S. CONST. amend, XIII.

117. Skinner v. Oklahoma, 316 U.S. at 556.

118. *Id.* at 579. *See also* R. BLANK, *supra* note 7, at 93-109, 117-22.

119. Vukowich, *supra* note 10, at 189, 222. If the challenged legislation incorporated negative, rather than positive, eugenic concepts so that it only restricted carriers of recessive debilitating defects from cloning, the constitutional problems would be minimized. The legitimacy of the state interest could not be challenged on the ground that it creates an elite group and therefore violates the nobility clause of the United States Constitution. A court could find readily that such a statute is rationally related to a legitimate state interest— specifically, diminishing the propagation of inferior traits. Scientific evidence more readily can provide a rational basis for the classification of those carrying debilitating effects than for those possessing superior genetic traits. Whether the state's interest in a negative eugenics program is sufficiently compelling to sustain the validity of the statute under a strict scrutiny test, however, is uncertain. *Id.* at 198-201, 208.

consequence when the positive sequence of its potential contributions is both appreciated and utilized. The dynamic vectors of force seen in the application of modern eugenics through efforts of genetic advancement and "engineering" must be restrained and placed in equilibrium in order to alleviate fears of unbridled slippery slopes of scientific advancement pursued blindly.[120] Viewed as not only an aid to the tragedy of infertility in family planning, but as a tool for enhancing the health of the future members of society, vital research and experimentation must continue apace in eugenics and genetics. To attempt to sever one from the other assures an impotent, as opposed to a virile, response to both the challenge and the mystery of amazing development of the new reproductive biology.[121]

Controlled breeding through genetic manipulation is not far behind the legalization of artificial insemination. Once public acceptance of AID is achieved, rapid progress will be made in achieving similar recognition of other new reproductive techniques. The law will then be in a better posture to chart a course of action and keep pace with science instead of remaining behind in grappling with the scientific, legal, ethical, and social issues in the Brave New World. Although assertions are made that eugenic control is not only dangerous and foolhardy but destructive of the integrity of the basic family unit as well as violative of the human right to determine the size of the family unit, the unalterable fact is that population forecasts indicate that the world will soon be overpopulated if appropriate actions are not explored and undertaken. Genetic planning and screening as well as eugenic programming are more rational and humane alternatives to regulation of the population than premature death, famine and war.[122]

If we approach mastery of the genetic code with a careful resolve to minimize human suffering and maximize the social good (or the maintenance of health and prevention of disease), we will approach the future with assurance that, as Daedalus, we will in fact arrive safely and meet our goal. If we set out with reckless abandon and are driven by blind instinct, we will surely be corrupted and, as Icarus, fall.[123]

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120. *See* Nossal, *The Impact of Genetic Engineering on Modern Medicine*, QUADRANT, Nov. 1983, at 22. Smith, *Uncertainties on the Spiral Staircase*, 41 THE PHAROS 10 (1978).

121. McGarity & Bayer, *Federal Regulation of Emerging Genetic Technologies*, 36 VAND. L. REV. 461 (1983); Comment, *Governmental Control of Research in Positive Eugenics*, 7 MICH. J. LAW REF. 615 (1974).

122. Smith, *Quality of Life, Sanctity of Creation: Palliative or Apotheosis?*, 63 NEB. L. REV. 709 (1984).

123. G. SMITH, GENETICS, ETHICS AND THE LAW 164, 165 (1981). *See generally* Smith, *Intrusions of a Parvenu: Science, Religion and the New Biology*, 3 PACE U.L. REV. 63 (1982).