Governmental Control of Research in Positive Eugenics

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GOVERNMENTAL CONTROL OF RESEARCH IN POSITIVE EUGENICS

Although the dynamics of public policy formulation rarely permit consideration of other than immediate issues, policymakers must be willing to deal with inchoate matters when confronted with foreseeable consequences of considerable magnitude that can be averted only by prior development of control mechanisms. Eugenics has begun to attract public attention by demonstrating the feasibility of radical societal alteration through genetic manipulation. Evaluation of eugenic programs and of methods to avert their undesirable consequences should be based on a full awareness of the ramifications of the available policy choices.

This article examines the potential societal problems that would accompany the implementation of eugenics programs and considers possible mechanisms for dealing with these problems. Governmental control of research in positive eugenics is identified as a practical means of preempting the undesirable consequences of scientific advances. Since proposed government research controls would infringe upon academic freedom of inquiry, the constitutional issues raised by this clash are framed and analyzed.

I. THE NATURE OF EUGENICS

The purpose of eugenics is the self-direction of human evolution, the method of which is to bring in play those forces which will cause the hereditary endowment of each future generation to be an improvement over the generation which preceded it; in short, to see to it that there is biological race progress instead of race deterioration.¹

From a genteel nineteenth century pseudoscience concerned with preferential human breeding,² eugenics³ has grown to be a viable area of study with a potential impact less reminiscent of Julian Huxley's⁴ academic concerns than of his brother's anti-Utopian fantasies.⁵ The growing number of significant discoveries has shifted the focus of eugenics from a racially based interest in preventing undesirable procreation⁶ to attempts

¹ H. LAUGHLIN, THE LEGAL STATUS OF EUGENICAL STERILIZATION 60 (1930).
³ The term was coined in 1883 by Sir Francis Galton, a cousin of Charles Darwin, from the Greek eu- + -genēs, meaning wellborn. Vukowich, The Dawning of the Brave New World—Legal, Ethical, and Social Issues of Eugenics, 1971 U. ILL. L.F. 189.
⁴ See, e.g., J. HUXLEY, ESSAYS IN POPULAR SCIENCE (1927).
⁵ See, e.g., A. HUXLEY, BRAVE NEW WORLD (1st ed. 1932).
⁶ Elimination of undesirable genetic traits is termed negative eugenics.
to introduce and perpetuate desirable genetic traits through artificial means.\(^7\)

Support for the eugenics movement was at its peak\(^8\) in the early nineteenth century when organizations like the International Eugenics Congress\(^9\) sought to increase awareness of the population problem and suggested remedies to forestall racial degeneration. Until its demise in the 1930's, the movement exerted substantial influence in state legislatures and in Congress. The movement's supporters strongly believed in the continuing importance of premarital syphilis tests, aimed at avoiding the procreation of defective children,\(^10\) and incest prohibitions, a traditional means of preventing debilitating inbreeding.\(^11\) In addition, the movement helped to secure passage of various new statutory provisions, including antimiscegenation laws,\(^12\) designed to preserve racial purity, and sterilization statutes, passed to prevent mental defectives and criminals from further burdening society.\(^13\) More stringent legislative controls were urged

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\(^7\) Introduction and perpetuation of desirable genetic traits is termed positive eugenics.

\(^8\) See, e.g., C. ARMSTRONG, THE SURVIVAL OF THE UNFITTEST 9, 31 (1927). Eminent academicians joined to back many eugenic causes. See also H. JENNINGS, THE BIOLOGICAL BASIS OF HUMAN NATURE 226, 228 (1930) (calling for the scientific manipulation of evolution); H. LAUGHLIN, EUGENICAL STERILIZATION IN THE UNITED STATES (1922) (crusading for eugenic sterilization statutes); and K. LUDMERER, supra note 2, at 7-43 (reporting on Charles Davenport, a contemporary eugenicist who viewed eugenics as a viable science).

\(^9\) See 2 EUGENICS EDUCATION SOCIETY, PROBLEMS IN EUGENICS (1913).

\(^10\) See, e.g., N.Y. DOM. REL. LAW § 13a (McKinney 1964).


\(^12\) These statutes usually prohibited marriage between Caucasians and Negroes. They were found unconstitutional in Loving v. Virginia, 388 U.S. 1 (1967). See, e.g., ch. 123, [1882] W. Va. Acts (repealed 1969).

\(^13\) The prevailing attitude toward eugenic sterilization during the first decades of this century is best epitomized by Justice Holmes' statement in Buck v. Bell, 274 U.S. 200 (1927):

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 upon those who already sap the strength of the state for these lesser sacrifices . . . 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. The principle that sustains compulsory vaccination is broad enough to cover cutting the fallopian tubes. . . . Three generations of imbeciles are enough.

\textit{Id.} at 207.

by others who proposed model eugenics legislation calling for sterilization of blind persons, deaf persons, orphans, and inebriates.\textsuperscript{14} Institutional segregation of social inadequates was also proposed.\textsuperscript{15}

These early efforts were all forms of negative eugenics, the goal of which is to eliminate undesirable genetic traits from society.\textsuperscript{16} In the United States, these measures never received the support which was given them in Nazi Germany, where many believed that racial deficiencies were being eliminated. In recent years, however, there has been a renewed interest in eugenics, although the focus has shifted from social and racial faults to genetic flaws because of increasing concern about the status of the genetic load, the total number of defective genes in the gene pool of the population. Voluntary procedures such as amniocentesis\textsuperscript{17} and therapeutic impregnation\textsuperscript{18} are now emphasized and have become more significant than statutory means in effecting eugenic goals. But the success of negative eugenic programs depends upon a formal consensus, close monitoring, and careful supervision. Without universal application of uniform standards for identifying genetic defects, errors are inevitable and will necessarily impede the development of a "purer" race.

It is now possible to ensure longer lives for many genetically defective human beings. Therefore, a large number of people who previously would not have survived childhood are now procreating and passing on an increased number of deleterious genes.\textsuperscript{19} At the same time, overpopulation has led to shortages of resources and facilities.\textsuperscript{20} Many feel that, in order to stop the increasing drain on resources, drastic means are necessary to ensure maximum normalcy so that resources are efficiently allocated. The declining birth rate in recent years\textsuperscript{21} has also fostered greater interest in assuring the normalcy of offspring.\textsuperscript{22} Procedures such as amniocentesis may allow prenatal identification of abnormalities, but rec-

\textsuperscript{14} H. Laughlin, Eugenic Sterilization: 1926, at 65 (1926).
\textsuperscript{15} H. Laughlin, supra note 8, at 339-56.
\textsuperscript{16} See generally G. Taylor, The Biological Time Bomb (1968).
\textsuperscript{17} Amniocentesis is the testing of umbilical fluid for the presence of prenatally detectable defects. The process has resulted in a decline in the number of mongoloid births and could significantly reduce their incidence if used on a wider scale. Friedmann, Prenatal Diagnosis of Genetic Disease, 225 Scientific Am., Nov., 1971, at 34, 38. For an extensive discussion of the procedure and its legal ramifications see Friedman, The Common Law Implications of Aminocentesis: The New "Cure" for GIP [Genetically Imperfect Progeny] Syndromes (publication forthcoming).
\textsuperscript{18} Therapeutic impregnation or artificial insemination (The former term is preferred because of the adverse psychological inferences of "artificial". See Note, 39 U. Cin. L. Rev. 291, 292 (1970)), may be employed as a negative eugenic means through careful selection of donor sperm and voluntary use of the process when a male has a high probability of transmitting a defect.
\textsuperscript{19} See, e.g., Glass, Human Heredity and Ethical Problems, in J. Katz, Experimentation With Human Beings 453 (1972).
\textsuperscript{22} This would appear to be a logical conclusion drawn from an increase in the use of genetic counseling and amniocentesis. See, e.g., Friedman, supra note 17.
ognition of a right to bear normal children or a right to be born normal would require the use of positive eugenic procedures such as cloning or genetic engineering.

Positive eugenics, which seeks to introduce desirable traits into the gene pool, may provide maximum genetic normalcy. But the procedures of positive eugenics pose a much greater threat than those of negative eugenics since the effects of the former are more far-reaching and susceptible to egregious misuse by unethical experimenters. Cloning is widely viewed as the vehicle for an effective program of positive eugenics. The process involves replacing the haploid nucleus of an unfertilized mature egg cell with an adult diploid nucleus from a specialized cell. The cloned human being is genetically identical to his progenitor and, given similar environmental conditions, can be reproduced innumerable times.

Ten years ago, Dr. Seward of Cornell performed a successful cloning using a coconut milk mixture to clone a carrot cell. Not long thereafter, Professor John Gurdon, a biologist at Oxford, used an intestinal cell of a frog to clone an identical offspring. While complex problems must be solved before successful mammalian experiments become a reality, many scientists assume the feasibility of cloning human beings and estimate that a successful cloning of a human may occur within five to twenty-five years.

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27 Beckwith, Science for the People, 196 ANNALS N.Y. ACAD. SCIENCES 236, 237 (1972); Gaylin, We Have the Awful Knowledge to Make Exact Copies of Human Beings, N.Y. Times, Mar. 5, 1972, § 6 (Magazine), at 43.


29 See, e.g., Gaylin, supra note 27, at 43 (human cloning in ten to twenty years); Tunney & Levine, Genetic Engineering, 1 SAT. REV. SCI. 23, 24 (1972) (mammals within five years and humans within ten to twenty-five years). Such confidence is not universally shared among geneticists, as evidenced by attitudes at the 13th International Congress of Genetics:

[T]here was no clear indication in the scores of scientific sessions that
Parthenogenesis, conception without fertilization,\textsuperscript{30} is a process somewhat similar to cloning, but may be less desirable because it passes on only one set of chromosomes.\textsuperscript{31} In this process, a mature egg cell is mechanically or chemically stimulated to produce cell division, thus obviating the need for fertilization.\textsuperscript{32} Unlike cloning, which produces a genetically balanced copy of the donor, parthenogenesis does not yield progeny identical to the donor and may perpetuate previously unexpressed side traits. Although successfully performed in 1939 on a rabbit,\textsuperscript{33} the process has not yet been applied to higher animal forms.

\textit{In vitro}, or "test tube," fertilization, a procedure expected to be perfected soon,\textsuperscript{34} may be used to select the sex of children, through inspection of eggs in a test tube.\textsuperscript{35} With further advances in chromosome analysis, desirable genetic traits may also be recognizable in parental chromosomes. As a supplement to cloning or \textit{in vitro} fertilization, chromosome analysis may enable alteration or replacement of deleterious genes through genetic engineering.\textsuperscript{36} Similarly, therapeutic impregnation can allow informed choice of superior sperm.\textsuperscript{37} Both \textit{in vitro} fertilization and therapeutic impregnation, however, contain an element of chance that cloning, through exact replication, eliminates.

II. Objections to Positive Eugenics

The possibility of cloning hundreds or thousands of reproductions of the same individual portends a number of social, ethical, and medical consequences that advocates of full-scale research often ignore. Some prospective consequences are considered in this section; methods for avoiding detrimental consequences are treated in the subsequent section.

A. Abridgment of Individual Rights

Individual rights subject to abridgment by positive eugenic measures may be asserted by both parents and cloned offspring.\textsuperscript{38} As one author
states: "A state's desire to improve life for man of the future may not be a sufficiently compelling interest to constitutionally deprive man today of some of his fundamental civil liberties."39

Cloning involves perpetuation of desirable traits, but it may also be used as a justification for limiting transmission of undesirable traits. Thus, eugenic cloning could be inherently discriminatory if it places limits on the right of procreation. A fundamental right40 or suspect classification41 is involved, and, therefore, a compelling state interest is necessary to sustain legislated discriminatory effects. In order to show a compelling state interest, a state would have to prove, at a minimum, presence of an irreversible and avertable disaster. Under existing norms and case law,42 this proof burden would be virtually impossible to satisfy. The free exercise of the right to marry43 and the penumbral right of marital privacy,44 as well as the right to procreate, would be infringed by genetic cloning.

The undefined status of cloned offspring may inhibit the assertion of legally recognized rights.45 If the offspring are deemed to be persons within the meaning of the Constitution, they may, nonetheless, encounter difficulty in being assigned full rights.46 In addition, it must be determined whether a "genetically engineered" individual would have a right to withhold his consent to further cloning.47

A cloned individual may have a cause of action for recovery of compensatory damages. Actions for wrongful life have multiplied in recent years,48 and, while no infant has yet won a judgment, there is evidence of judicial retreat from the absolutism that accompanied earlier decisions.49 Certainly the plea of a socially ostracized child, who would have preferred to have all the traits of his parents rather than the selection transmitted through genetic engineering, presents a claim as compelling as that of the bastard who brings an action based upon the stigma of his social classification.50 Finally, the situation of a cloned individual saddled

39 Vukowich, supra note 3, at 226. See also Grad, Legislative Responses to the New Biology: Limits and Possibilities, 15 U.C.L.A. REV. 480 (1968), where the author states, "There is little doubt . . . that compulsory eugenic controls of a 'positive' nature would violate the due process clause . . . as well as the ninth amendment." Id. at 486.

40 See notes 95-107 and accompanying text infra.

41 Id.

42 See note 98 and accompanying text infra.


45 Liston, supra note 38. For example, inheritance rights might be difficult to determine when each parent has permitted several hundred children to be cloned from his or her cells.

46 See Liston, supra note 38.

47 See Ramsey, Genetic Engineering, in Genetic Engineering Symposium, supra note 24, at 15.

48 See note 23 and accompanying text supra.


with an erroneously transmitted negative trait can be likened to that of a deformed child who sues for damages because he was not aborted.51

B. Protection of Society's Rights

Protection of the interests of society as a whole must be considered. Any errors in cloning will be irreversible. The government might be confronted with the problem of arbitrarily classifying the progeny as unsuccessful clones, which are to be killed, or as humanoids, who will be permitted to live at government expense as a reminder of the imperfect operation of cloning techniques.52

Incomplete knowledge can impose even greater burdens against which society may wish to legislate. While acquisition of greater knowledge is an integral part of scientific progress, fundamental errors in early cloning techniques might take decades to discover and, during the time it would take to rid society of genetic disease,53 any genetic progress of previous work would be effectively defeated and the cloned individuals would be ruined. In an earlier day, eugenic sterilization laws were enacted on the basis of incomplete scientific knowledge. The Supreme Court responded by holding a state recidivist sterilization statute unconstitutional in Skinner v. Oklahoma.54 Chief Justice Stone, in a concurring opinion, pointed out that the lack of consensus among members of the scientific community concerning the question of whether criminal tendencies are inherited rendered such a compulsory sterilization law inappropriate and violative of equal protection.55

52 See, e.g., P. RAMSEY, FABRICATED MAN 78 (1971); Gaylin, supra note 27, at 48.
53 Callahan, The Meaning and Significance of Genetic Disease: Philosophical Perspectives, in HUMAN GENETICS SYMPOSIUM, supra note 37, at 85.
54 316 U.S. 535 (1942).
55 Id. at 545. An analogous dilemma was presented by the implementation of statutes requiring blood tests of all newborn infants in order to detect the presence of phenylketonuria (PKU). PKU is a disease that hinders the development and growth of the central nervous system, ultimately causing an early death. The Guthrie test, a urine analysis, had to be abandoned because too many false positives occurred. Misdiagnosis meant that normal babies were put on low phenylalanine diets to correct the supposed defect and consequently suffered subnormal weight gain and reduced linear growth. Blood tests were then substituted for the Guthrie test and, by 1971, forty-one states had mandatory testing provisions. However, because the procedure is still not perfected and the consequences of error are severe—as would be the case with cloning—some states have considered relaxing the requirements, and no new mandatory testing statutes have recently appeared. Swazer, Phenylketonuria: A Case Study in Biomedical Legislation, 48 J. URBAN L. 883, 883-99 (1971).

Related to the problem of incomplete knowledge is the danger that traits deemed desirable for transmission by one generation may be useless or detrimental to a succeeding one. As with eugenic proposals for carefully restricted sperm screening, it is possible that inbreeding will decrease genetic variability and, consequently, the ability to adapt to new environments. For example, while intelligence is generally considered a desirable quality to pass on to one's offspring, increases in intelligence alone may not supply the requisite genetic elements for survival in a subsequent generation. Preventing the procreation of only one racial strain is yet another facet of society's interest in ensuring strong and well-balanced future generations.

Finally, the advocates of full-scale research in positive eugenics must confront the general population's interests in averting the consequences of changing values in cloning decisions. The problem of defining norm

56 Dr. Kurt Hirshorn of Mt. Sinai Medical Center, quoted in N.Y. Times, May 2, 1969, at 40, col. 4.
57 Id.
58 Vukowich, supra note 3, at 202.
59 As one observer notes: "A whole town of Marilyn Monroes and Einsteins would be pretty dull." Dr. Gunther Stent of U.S.C., quoted in Rheinhold, Challenge of Genetics Fades for Scientists, N.Y. Times, Aug. 27, 1973, at 34, col. 1. Furthermore, creativity, as an isolated and defined entity, would lose its essence if most people thought in similar intellectual patterns. A plethora of geniuses might exert an excessively conservative influence on society and retard progress in all but a few narrowly confined areas. See, e.g., Davis, Prospects for Genetic Intervention in Man, 170 Sci. 1279, 1282 (1970).

Another serious factor that must be considered is that a desirable genotype chosen for replication might carry with it undesirable side traits. But even if it becomes possible to completely isolate traits, there still remains the even greater danger of cloned persons rebelling and procreating among themselves. For an interesting application of this idea see Batt, They Shoot Horses, Don't They?: An Essay on the Scotoma of One-Eyed Kings, 15 U.C.L.A. L. Rev. 510 (1968).

60 See Liston, supra note 38. The problem of changing values and vacillatory political ideologies is well illustrated by the writing of H.J. Muller, who, in 1935, said that society should strive toward the attainment of the qualities of men like Lenin and Darwin. In a later book, which was published in a different political climate, Muller changed his models to Einstein, Pasteur, Descartes, and Lincoln. Ramsey, Moral and Religious Implications of Genetic Control, in GENETICS AND THE FUTURE OF MAN 158 (J. Rolansky ed. 1966).

The controversy surrounding Dr. Arthur Jensen's theory that the lower intelligence quotients of black students as compared to white students were genetically caused provides another illustration of the scientific and social difficulties in promoting both social values and scientific freedom. Jensen's claim that 80 percent of intelligence is related to inheritance caused a furor in academic circles and precipitated immediate charges of overbroad conclusions and inadequate procedures. Edson, The Theory that IQ is Largely Determined by the Genes, N.Y. Times, Aug. 31, 1969, § 6 (Magazine), at 10. 46.
motive terms like "disease," "abnormal," and "normal" will be removed from an academic setting and thrust into a context in which human lives will depend on each definition.

When preferences in cloning experiments are subjected to legislative or administrative influence, perhaps through the immense power wielded by those who fund research programs, serious ethical and social consequences follow.

For what purposes should we alter our genes? To whom should we give this power? To those who have already perverted physics into atomic weapons, chemistry into poison gas, or electronics into guided missiles? If we make men gods, are they to be gods of war?

Concern over abuse by government officials may be unnecessary, however, as human cloning may be impossible to restrict through legislative fiat once the procedure is perfected. Thus, leadership may be thrust upon the scientists who control the cloning process—a group commonly thought to be excessively myopic.

Uniformity of trait selection standards is a necessity, however, if the object of positive eugenics, the creation of a genetically improved race, is to succeed. Because variant aberrations would defeat this purpose, a strict program of mandatory governmental control would be required, a prospect which few would embrace with great enthusiasm. The choice to be made, then, may ultimately be between cloning and its attendant government supervision or control of research that would render the procedure feasible.

III. Control of Research

[W]e... carefully limit the scope of... [science's] researches. ... We don't allow it to deal with any but the most immediate

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62 Sorensen, Sociological and Psychological Factors in Applied Human Genetics, in HUMAN GENETICS SYMPOSIUM, supra note 37, at 298.
63 Green, Mechanisms for Public Policy Decision-Making, in HUMAN GENETICS SYMPOSIUM, supra note 37.

Unfortunately, if we wait until the basic research has progressed to the point at which there is a capability of cloning human beings for beneficial purposes, we shall have lost valuable time for public discussion and debate. ... [In any event the problem of formulating a public policy to deal with cloning will have become, by that time, much more difficult because of vested interests.

Id. at 393. See also Djerar, Probabilities and Practicalities, in Genetic Engineering Symposium, supra note 24, at 25.

64 Hearings on S.J. Res. 145 Before the Subcomm. on Gov't Research of the Senate Comm. on Gov't Operations, 90th Cong., 2d Sess. (1968) [hereinafter cited as Hearings on S.J. Res. 145]. Dr. Arthur Kornberg testified that he saw no immediate legal or ethical problems in genetic research, and that if scientists were to become public figures, their research efforts would become ineffectual. Id. at 50-51. See also Potter, Bioethics for Whom?, 196 ANNALS N.Y. ACAD. SCIENCES 200 (1972). Potter states: "My objection is to the professional attitude that exalts so-called pure research as an end in itself... and at the same time accepts no responsibility for the consequences." Id.
problems of the moment. All other enquiries are most sedulously discouraged. ... Anything for a quiet life. We've gone on controlling ever since [the Nine Years' War]. It hasn't been very good for truth of course. But it's been very good for happiness. One can't have something for nothing. Happiness has got to be paid for.\(^65\)

If policymakers determine that the benefits of positive eugenics are outweighed by the potential negative consequences, they may wish to evaluate several alternative mechanisms for regulating eugenic research. As restraints on research tighten, progress suffers, so it is important that the available options be considered.

A. Available Alternatives

1. Self-Regulation by Scientists—Scientists who advocate self-regulation claim to recognize the possibilities of eugenic abuse, but feel that governmental imposed research controls are not the answer.\(^66\) As Dr. Joshua Lederberg notes: "Many scientists, already battered by neo-romantic criticism, will equate any movement toward the control of science with the Vatican's inquisition of Galileo.\(^67\) They feel that the inevitability of progress\(^68\) must be met with an effort "to see that something is done well, not to prevent its being done a all."\(^69\)

Proponents of self-discipline point out that research in disease prevention might be hindered if genetic research were curtailed; efforts to repair, or to restrict the transmission of, defective genes could be thwarted.\(^70\) Cancer research also involves the same fundamental area of research as genetics.\(^71\)

The enthusiasm expressed by some regarding the desirability of genetic research and the needlessness of external controls\(^72\) has given way to serious reconsideration of the matter by members of the scientific community.\(^73\) In 1973, at the Thirteenth International Congress of Genetics,

\(^{65}\) A. HUXLEY, supra note 5, at 155.
\(^{67}\) Lederberg, The Freedoms and the Control of Science: Notes from the Ivory Tower, 45 S. Cal. L. Rev. 596 (1972).
\(^{68}\) See, e.g., Lubs, Privacy and Genetic Information, in HUMAN GENETICS SYMPOSIUM, supra note 37, at 274; Hirshcorn, Practical and Ethical Problems in Human Genetics, 8 BIRTH DEFECTS: ORIGINAL ARTICLE SERIES 17, 29 (D. Bergsma ed. 1972).
\(^{69}\) Lubs, supra note 68, at 274.
\(^{70}\) Davis, supra note 59, at 1282.
\(^{71}\) Cancer research is one of the few areas not subject to federal budget cuts in scientific research; it continues to receive top allocations. 103 Sci. News 69 (1973); Davis, supra note 59, at 1282.
\(^{72}\) See, e.g., Sorenson, supra note 62, at 298; Hearings on S.J. Res. 145, supra note 64, at 46 (statement of Dr. Arthur Kornberg).
\(^{73}\) Gaylin, supra note 27, at 12. See also Hirshcorn, supra note 68, at 29-30; N.Y. Times, Mar. 4, 1972, at 16, col. 5.

The significant efforts of the Fogarty International Center (see HUMAN GENETICS SYMPOSIUM, supra note 37), and of the Institute of Society, Ethics and the Life Sciences (Hastings-on-Hudson, N.Y.) in exploring more fully the ramifications of genetic research should be noted.
many participants expressed fear of a "genetically controlled society," and called for greater social controls to avoid the appearance of a "new eugenics." Close observers of proiress in scientific research have found that those involved in potentially dangerous genetic advances may not be able to apprehend all the possible consequences of their work.

Two factors may thus vitiate the efficacy of scientific self-regulation in eugenics. First, the disagreements apparent among the researchers will probably preclude the fashioning of effective uniform restraints. Second, because most positive eugenic techniques will be widely known, prevention of abuses may be impossible. Given the need to prevent such abuses and their catastrophic results, another institutional element must be interjected into the regulatory process.

2. Advisory Bodies—The establishment of advisory bodies to monitor the progress of eugenics research would provide another alternative which would still allow scientists to maintain some measure of control over the direction of their work. While no such advisory body presently exists in this country, the need for better communication between the public and the scientific community has been widely recognized. In 1968 and 1971, Senator Mondale introduced resolutions that would have established a commission for a two-year period to "provide for a study and evaluation of the ethical, social, and legal implications of advances in biomedical research and technology." Neither resolution was passed. Opposition, in many cases, was predicated upon the limited utility of a short-tenured group.

While pioneering efforts like Mondale's represent an overdue recognition of the necessity for such evaluation, truly effective control of the awesome capabilities of positive eugenics must come from permanent bodies. The communication channels established should permit a viable twoway exchange such that the public will be able to voice opposition to

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74 Rheinhold, supra note 29, at 34.
75 Id.
76 Beckwith, supra note 27, at 236.
81 Both bills died in House Committees.
82 S. Rep. 92-517, supra note 80, at 7. See also Hearings on S.J. Res. 145, supra note 64, at 57-58 (testimony of Dr. Lederberg).
scientific advances well before the precipitous point at which attainment becomes a foregone conclusion.

Any advisory body requires extensive cooperation, and many scientists are not yet willing to allow, or to concern themselves with, the public acquisition of current scientific research information. An effective system of data dissemination and informational feedback could be further retarded since no efficient bureaucratic administration exists upon which to model an advisory board. Ideally, it is the advisory body that would provide the most flexible participation by scientists and the least offensive means of control. With rapidly advancing progress in positive eugenics, however, there may not be time for trial periods or evolutionary development.

3. Government Funding Policies—The manipulation of eugenic research through government funding policies provides another means for regulation. In contrast to the effect of legislated prohibitions, under a system of government allocation of research funds the scientific community could still influence administrative policy-making. The federal government already has substantial influence on the research community; 95 percent of federal research funds are allotted to colleges and universities. Since 1966, when the government supplied 59 percent of all medical research funds, the share borne by industry and other sources has steadily decreased. This massive allocation has been accompanied by fears of both outright coercion by government agencies and willing accommodation to agency research preferences. Although funding agencies purport to encourage independent research, “consonant with [the] . . . academic philosophies and institutional objectives” of various colleges and universities, blacklisting practices are notorious, and threats of nonsupport often supplant legislative or quasi-judicial methods in determining funding standards.

The Department of Health, Education and Welfare’s statement of objectives for support of biomedical sciences provides further irony. The Department claims to want to “explore new and unorthodox ideas, and to recognize and support creative talent in young investigators,” but Dr. J. D. Watson, commenting on funding practices in cancer research, has observed quite the opposite:

83 See National Science Foundation, Federal Support to Universities, Colleges and Selected Non-Profit Institutions, Fiscal Year 1971, at iv (1972). Total NSF and HEW grants amount to over $22 billion annually. Id. at 3.
85 Id. These sources include state and local governments.
87 HEW, Grants-in-aid and Other Financial Assistance Programs 164 (1967).
88 Lederberg, supra note 67, at 600.
89 Berliner, Administration and Ethics, in Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations 196 (M. Harris ed. 1971).
90 HEW, Grants-in-Aid and Other Financial Assistance Programs 164 (1967).
All too large a proportion of this [government] contract money will go to senior established people as opposed to younger scientists who have yet to prove themselves. Yet almost every important new discovery comes from someone under 35 and who at the moment of his breakthrough is essentially unknown to the outer world and unlikely to be given a contract by a Government that looks with disaster on the unpredictable.\footnote{Watson, \textit{When Worlds Collide: Research and Know-Nothingism}, N.Y. Times, Mar. 22, 1973, at 43, col. 2.}

Watson's comment highlights another concern about government research-funding policy—the desire for the "fast pay off".\footnote{\textit{Id.} at 43.} Agencies claim that allocations are made on the basis of the proposal's merit alone, constrained only by budgetary limitations. In reality, decisions are often made either by looking for dollar-measurable returns on research investment, or on emotional and political grounds.\footnote{Kaplan, \textit{Emotion Versus Objectivity in the Funding of Biomedical Research}, 196 ANNALS N.Y. ACAD. SCIENCES 274 (1972).} Recent events suggest that "[t]he quest for knowledge for its own sake has taken a rhetorical and monetary backseat to practical science."\footnote{\textit{A Belt Tightening Time for American Science}, 103 SCI. NEWS 68 (1973). The direction of scientific effort has already been significantly altered in areas of pure research. The President's, and consequently the agencies', current emphasis has been on more private funding and concentration on industrial applications. While the popular targets of cancer, heart disease, and sickle cell anemia have sustained no loss in grant allocations, there have been large cutbacks in other areas, as well as the impoundment of National Institute of Health funds. Perhaps most unfortunate are the curtailing of Ph.D. grants and funds for groups like the Fogarty International Center, which is currently engaged in studying ethical and social ramifications of scientific advances. 103 SCI. NEWS 69 (1973).}

In regulating cloning research, the use of agency coercion in lieu of an outright statutory prohibition leaves dangers of clandestine progress alive. Furthermore, if one Administration sanctions research related to cloning, a succeeding Administration with different policies may not assume power until it is too late to abort the development of the procedure. Assuming that these drawbacks will be present in any regulatory alternative short of a ban on cloning research, government funding policy may be the most feasible method available. But whether close governmental supervision of research is preferable to proscription remains to be seen.

Scientific self-restraint, advisory bodies, and funding manipulation may not provide adequate safeguards for the prevention of eugenic advances. If a more final and assured control is desired, the most reliable alternative for regulating eugenic research is direct government control. The constitutional constraints on research-control legislation are considered in the following section.

\textbf{B. The Legislative Control Alternative}

\textit{1. The Government's Interests}—As an alternative to nonlegislated methods of control, statutory proscriptions will be most effective in cur-
tailing eugenics research. In order for the government to intrude into the domain of biomedical research, it must establish an interest in protecting society against the development of cloning. The government's interest must be strong enough to override scientists' claims of unconstitutional deprivations.

The two countervailing interests that will most likely be encountered by the government are that researchers in eugenics will be denied equal protection or that they will be deprived of a fundamental first amendment right in violation of their due process rights. The former claim will be premised upon the notion that scientists involved in cloning research have been unfairly singled out as the object of underinclusive legislation, because effective prevention of potentially dangerous genetic developments would entail coverage of a far broader research spectrum. The latter claim will be based on the idea that scientific research activity is constitutionally protected under the rubric of freedom of thought.

The cloning researchers' claims are examined seriatim.

2. Equal Protection—If legislative control over research is judged to involve invidious discrimination or reliance upon suspect criteria, the government will be required to support the legislation with a compelling public interest. On the other hand, such strict scrutiny by a court would not be necessary if only social or economic interests were at stake, since a presumption of rationality would exist, and those attacking the statute would then have to prove that there was no rational basis for the legislation.

_Dandridge v. Williams_ provides an appropriate measure of the extent of social and economic welfare. In that case, the Supreme Court upheld, against claims of denial of equal protection, a Maryland statute limiting federal aid to families with dependent children so as to penalize recipients who produced additional offspring. In permitting the state to use rough accommodations and to address itself to some aspects of the fiscal problem without attacking all, the Court stated that, had there been legislative discrimination infringing first amendment rights, the regulation might have overreached constitutional limitations.


See notes 95-96 and accompanying text _supra_. For a general discussion of these equal protection concepts see _Developments in the Law—Equal Protection_, 82 HARV. L. REV. 1065 (1969).

_id._ at 485.

Id. at 486-87. In other words, the state is permitted the underinclusiveness which is prohibited where fundamental rights are involved.

_Id._ at 484.

amendment\textsuperscript{105} interests would preclude the judicial deference to legislative rationality typically accorded purely social aspects of control.\textsuperscript{106} Furthermore, if such fundamental interests are established, strict scrutiny is applied to the legislative enactment despite the absence of invidious discrimination.\textsuperscript{107}

While it might be argued that cloning research presents only social and economic questions, the researchers’ assertion of their fundamental rights would draw the issue into the arena of strict scrutiny and require a showing of a compelling public interest\textsuperscript{108} on the part of those who advocate control, as well as proof of carefully tailored means of implementation.\textsuperscript{109} Thus, the primary issue to be resolved is whether cloning is sufficiently imminent and so dangerous that the potential consequences provide the state with a compelling interest sufficient to override objections based on infringement of individuals’ fundamental constitutional rights. In order to assess the constitutional footing for a specific governmental proscription of research, the extent of permissible health and safety regulations must be examined.

The government’s right to legislate in the public interest has been extended to health-related measures. Once perfected, cloning could pose such serious risks that research regulation will be permitted under the aegis of the protection of public health and welfare. While the concept of the right to a normal child is gaining more popular acceptance,\textsuperscript{110} society may not be ready to accept the logical extension of this notion—armies of perfect, selected progeny, subject to few familial constraints and lacking the individualism inherent in children created by sexual reproduction.

Dangers to society may outweigh the importance of protecting research freedoms. If traits for transmission by cloning are chosen in order to reduce genetic stability or necessary survival mechanisms, the health of the entire population would be at stake. Accidents resulting from a constantly changing cloning process could threaten general welfare and safety. The inability to control the use of cloning by unscrupulous experimenters\textsuperscript{111} or politicians reinforces the dangers. In addition, the harm to potential


\textsuperscript{106}397 U.S. at 486-87.

\textsuperscript{107}See, e.g., Shapiro v. Thompson, 394 U.S. 618, 633 (1969), where a one-year residency requirement for welfare benefit eligibility was held to be a denial of equal protection not offset by a sufficient compelling state interest. See also Developments in the Law—Equal Protection, supra note 99, at 1129-32. If a fundamental interest is established, strict scrutiny of the legislative enactment applies, despite the absence of invidious discrimination. Id. at 1132.


\textsuperscript{110}See notes 22-23 and accompanying text supra.

\textsuperscript{111}See, e.g., Gaylin, supra note 27, at 44.

In pure research... a goal may be pursued with no advance knowledge of its utility... In these circumstances, the experimentalist is often tempted to do what can be done—merely for the excitement of doing it.

\textit{Id.}
life resulting from misdirected applications might be serious enough to require government action. Thus, the government may base its regulatory scheme on protection of future generations from the dehumanizing effects of cloning.\textsuperscript{112}

In \textit{Roe v. Wade},\textsuperscript{113} the Supreme Court cautioned that the safeguarding of health, medical standards, and potential life\textsuperscript{114} could stand as sufficiently important interests to outweigh countervailing individual rights.\textsuperscript{115} In rejecting a claim of deprivation of first amendment religious freedom, the Court, in \textit{Prince v. Massachusetts},\textsuperscript{116} supported the interest of the state in protecting children's welfare under a statute prohibiting child labor. In so doing, the Court observed: "The right to practice religion freely does not include liberty to expose the community or the child to communicable diseases or the latter to ill health or death."\textsuperscript{117} With reference to cloning research, the importance of the academic freedoms being asserted\textsuperscript{118} must be balanced against the potential detrimental effects on society.

In \textit{Jacobson v. Massachusetts},\textsuperscript{119} the Supreme Court held that compulsory vaccination laws were reasonable regulations established to protect public health and safety, and therefore not in derogation of due process rights.\textsuperscript{120} If legislative prohibition of cloning research is the only feasible means available to prevent cloning, such a prohibition should be constitutionally permissible. \textit{Jacobson} was later extended to justify the use of eugenic sterilization in \textit{Buck v. Bell},\textsuperscript{121} and thus may be seen as sanctioning even more extreme social control measures if the government interest is compelling. Given the dangers of cloning research to the general welfare and the prospect of society's inability to cope with its own future, a compelling state interest can be effectively established for research control.

Once it is established that the state may use its police power to regulate an activity, the question of which level of government should administer the controls remains. The matter could be subject to the plenary power of Congress,\textsuperscript{122} or it may be an appropriate concern for regulation by the police power of the states.

Since the expansive view of Congress' power to regulate interstate commerce was expressed by Chief Justice Marshall in \textit{Gibbons v. Ogden},\textsuperscript{123}
the use of the Commerce Clause as a source of national authority has been extended to such a degree that it may well permit federal legislation to curtail research. In *NLRB v. Jones and Laughlin Steel Corp.*,\(^{124}\) an economic effect having a "close and substantial relationship" to interstate commerce was held to sustain application of the National Labor Relations Act\(^{125}\) to an essentially intrastate business.\(^{126}\) Since research activities have not only national, but also international consequences, the *Jones and Laughlin* test and the need for uniformity of research controls should make federal action appropriate.

A similar, noncommercial treatment of the Article I\(^{127}\) powers of Congress occurs in cases arising under the Civil Rights Act.\(^{128}\) In order to preclude judicial review of congressional exercise of commerce powers, only a rational basis for finding interstate commerce and reasonable means of implementation were required.\(^{129}\) If it is assumed that anti-cloning legislation remained the only feasible means of preventing perfection of the procedure and that controls would be carefully limited to avoid encroachment upon other areas of research, the reasonable and necessary means requirement would be satisfied. In order to ensure protection for all citizens, regulation would have to be uniformly conceived and applied. Thus, it would appear that a strong case for federal control exists under Congress’ Article I power.\(^{130}\) The fact that controls on research in the United States would be futile without an international agreement prohibiting such research also supports the use of federal control.\(^{131}\)

3. Academic Freedom as a Countervailing Right—

To impose any straitjacket upon the intellectual leaders in our colleges and universities would imperil the future of our nation. . . . Scholarship cannot flourish in an atmosphere of suspicion and distrust. Teachers and students must always remain free to inquire, to study and to evaluate, to gain new maturity and understanding; otherwise our civilization will stagnate and die.\(^{132}\)

Proposals to control the direction or progress of scientific advances immediately elicit fears of governmental repression and anti-intellectual-

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124 301 U.S. 1 (1937).
126 301 U.S. 1 (1937).
130 See also Perez v. United States, 402 U.S. 146 (1971) (permitting Congress to attack a class of activities in which some intrastate activity is involved).
131 An obstacle to effective proscription may exist in documents like the International Declaration of Human Rights, G.A. Res. 1, U.N. Doc. A/810, at 71 (1948), which provides for freedom of thought (Art. 18) and the right to "seek, receive, and impart information" (Art. 19). This document does not have the binding effect of conventional international law, however, and consequently may permit agreements to the contrary.
ism. But prevention of the development of a process that could wreak havoc on society is not to be equated with the Tennessee evolution law or ideologically grounded suppression. Indeed, many are confident that genetics research will survive the adverse exposure and attacks now being leveled at it. The question remains, however, whether cloning research must survive too.

The right asserted against governmental control of research is derived as a corollary to the freedom to teach and learn. While there is little case law dealing solely with freedom of research, recognition of the vital role of research has been expressed by many academic policymakers, including the American Association of University Professors.

With reference to academic freedom in general, many questions remain about the existence of any cognizable interest.

When we speak here of the scholar's rights we do not refer to legally established guarantees for the law provides few of the particular safeguards he needs, and in the nature of the case it must probably remain so.

More recent discussions concur with this judgment, but it still may be possible to generate judicial support for recognition of such a legal right or fundamental interest when a court is confronted with an overt research proscription in a specified area.

The first amendment arguably shelters research from government encroachment. Justice Douglas, in *Griswold v. Connecticut* and later,

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133 *See I. Lerner, Heredity Evolution and Society* (1968), for a discussion of Lysenkoism. Lysenko was a Russian geneticist whose theories, later found to be erroneous, were adopted by the Soviet state. Opposing findings were considered heretical and suppressed.

134 In *Scopes v. State*, 154 Tenn. 105, 289 S.W. 363 (1927), a school teacher was fined for teaching, contrary to statute, the Darwinian theory of evolution.

135 *Davis, supra* note 59, at 1287.

136 See notes 141-148 and accompanying text infra.


140 *See* notes 141-145 and accompanying text infra.

141 381 U.S. 479 (1965).
concurring in *Eisenstadt v. Baird* and *Roe v. Wade* included "freedom of inquiry, freedom of thought, and freedom to teach... indeed, the freedom of the entire university community" in his concept of first amendment protected speech. In terms repeated in a later opinion, Justice Douglas opined: "The state may not, consistently with the spirit of the First Amendment, contract the spectrum of available knowledge." On its face, then, there would appear to exist a legal basis supporting the position taken by proponents of unlimited research.

In a more limited context, academic freedom was brought under the protection of the first amendment in several cases involving loyalty oaths required of teachers and professors. While the Supreme Court initially upheld a state's right to control the shaping of its students' minds, the Court later began to hold invalid, primarily on due process grounds, many such loyalty based provisions. When it was alleged that the freedom to teach or learn was at stake, the Court said it would "be on the alert" against legislative intrusions. One of the first explicit statements of first amendment coverage came in *Keyishian v. Board of Regents*, a case in which the Court warned that the legitimate governmental interests involved had to be tailored as narrowly as possible to avoid encroaching upon academic freedom. The Court observed that academic freedom "is therefore a special concern of the First Amendment, which does not tolerate laws that cast a pall of orthodoxy over the classroom."

A further application of due process guarantees can be found in cases involving state attempts to limit the content of course materials. The controversial *Scopes* case upheld curriculum control by the state as a nec-

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142 405 U.S. 438 (1972). Contraceptive devices were dispensed after a lecture; Massachusetts law prohibiting their use by nonmarrieds was held to be beyond the competency of the state.
143 410 U.S. 113 (1973).
144 381 U.S. at 482.
145 Id. at 482; *Eisenstadt v. Baird*, 405 U.S. 438, 464 (1972) (concurring opinion).
In addition to arguing that "available knowledge" has been proscribed, one can draw an analogy between the dispensation of information and the use of contraceptives (as in *Griswold and Eisenstadt*), and research to make available information on cloning and possible research directed at discovering uses for the procedure.
146 Adler v. Board of Education, 342 U.S. 485 (1952). Justice Douglas registered a strong dissent, wishing to extend freedom of thought and expression to all within society. Id. at 508.
147 Barenblatt v. United States, 360 U.S. 109 (1959) (Court upheld conviction for refusal to testify on Communist affiliations before a House committee.); *Sweezy v. New Hampshire*, 354 U.S. 234 (1957) (A refusal to answer questions of the Attorney General concerning Communist affiliations was held not to constitute contempt.); *Wieman v. Updegraff*, 344 U.S. 183 (1952) (An arbitrary and discriminatory exclusion under an Oklahoma loyalty law "chilled" free spirit of teachers and was held to be invalid.).
149 385 U.S. 589 (1967). *Adler* was distinguished in this case, but may have been effectively overruled.
150 Id. at 603.
ecessary incident to public welfare protection. But, in *Meyer v. Nebraska*\(^{152}\) and *Pierce v. Society of Sisters*,\(^{153}\) the Supreme Court, while recognizing the existence of state interests in the regulation of curricula, limited such regulation to purposes bearing a reasonable relation to valid state concerns. Later, the Court invalidated content proscriptions premised "upon reasons that violate the First Amendment," in holding constitutional a state law prohibiting the teaching of non-Biblical evolution theories in its classrooms.\(^{154}\)

With regard to cloning research, it might be possible to extend the protection of the fourteenth amendment to those scientists affected by proposed controls. If the aforementioned cases can be construed to encompass research activities or if a strong link between research and teaching or learning were established,\(^{155}\) a cognizable interest could be asserted against legislation allegedly bearing no reasonable relation to the purpose of a "moral" or "healthful" education. Once established, however, this right may still be subject to countervailing interests sufficient to outweigh the relative importance of academic freedom to society a large.\(^{156}\) For example, in *American Communications Association, CIO v. Douds*,\(^{157}\) the Supreme Court rejected prior mechanical tests of the limits of free speech,\(^{158}\) and adopted a balancing test.\(^{159}\) The first amendment, according to the Court, is "dependent upon the power of constitutional government to survive..."\(^{160}\) and does not "comprehend the right to speak on any subject at any time."\(^{161}\) The crucial factor, then, is whether the views "clearly and imminently" threaten to yield "conduct against which the public has a right to protect itself."\(^{162}\)

One can extend the expression of "views" to encompass the pursuit of

\(^{152}\) 262 U.S. 390 (1923) (A prohibition against teaching foreign languages to children under eighth grade held to be invalid).

\(^{153}\) 268 U.S. 510 (1925) (State law requiring all children to attend public school was held unconstitutional as unreasonable requirement to ensure good education.).

\(^{154}\) Epperson v. Arkansas, 393 U.S. 97 (1968). The law was held to be an "establishment of religion."

\(^{155}\) See note 56 and accompanying text supra.

\(^{156}\) See notes 98-107 and accompanying text supra.


\(^{158}\) Schenck v. United States, 249 U.S. 47 (1919) (clear and present danger test).

\(^{159}\) 339 U.S. at 399.

When the particular conduct is regulated in the interest of public order, and the regulation results in an indirect, conditional, partial abridgment of speech, the duty of the courts is to determine which of these two conflicting interests demands the greater protection under the particular circumstances presented.

*Id.*

\(^{160}\) *Id.* at 394. See also United Public Workers v. Mitchell, 330 U.S. 75 (1947), where the Court, in a Hatch Act prosecution, said that the "rights of the First Amendment in some instances are subject to the elemental need for order without which the guarantees of civil rights to others would be a mockery. *Id.* at 95.

\(^{161}\) 339 U.S. at 394.

\(^{162}\) *Id.* at 395.
research, and the carefully guarded rights found in Griswold may succumb, not to a probability, but to a mere possibility of scientific abuse. We thus return to a determination of whether human cloning is an imminent danger, and if so, whether perfection of the technique poses a serious threat to the nation.  

IV. THE DYNAMICS OF AN EFFECTIVE CHOICE

As a consequence of the foregoing analysis, it is likely that freedom of research will be asserted as a protected activity under the first amendment or as a fundamental right enjoying similar protection. Should this occur, judicial scrutiny of any research control legislation will consist of a balancing process going beyond the frequent deference to legislatures' prior resolutions of competing interests.

But it will be the legislature which must initially confront the opposing views, and weigh what are, to many, precious constitutional rights, against the accuracy of projections of harm from positive eugenics. Incursions into the domain of previously guarded academic rights can be readily justified once the final weighing of interests has occurred; retrospective rationalization of a decision is far easier than the process of arriving at the determination in the first place.

The task of lawmakers will be to choose the less onerous alternative. The choice is between protection of the individual rights of the researcher and the student and protection of society against the consequences of potentially harmful scientific advances.

Whatever the final determination, it will be crucial to have ensured that all relevant interests were represented in the decision-making pro-

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163 The issue of the extension of fourteenth amendment rights to private institutions under state control is not settled. The application of state action to a public restaurant, in Burton v. Wilmington Parking Authority, 365 U.S. 715 (1961), and to a company town, in Marsh v. Alabama, 326 U.S. 501 (1946), would lead one to believe that research freedoms would without doubt exist. In this regard see Developments in the Law—Academic Freedom, supra note 139, at 1056 (pointing to necessary connections between state government and private schools); Developments in the Law—Equal Protection, supra note 99, at 1183 (positing that education has become an interest comparable to voting and criminal process).

However, no state action was found in Moose Lodge No. 107 v. Irvis, 407 U.S. 163 (1972) (A private club licensed by state liquor board refused to serve Negro guest.). The status of state action remains unsettled, although it would appear that the trend is toward not extending the concept.

164 See note 157 and accompanying text supra.

165 See notes 98-107 and accompanying text supra. Of course, if no federally protected right is found, then only a reasonable basis for the legislation is necessary to sustain it against constitutional challenge. See, e.g., Dandridge v. Williams, 397 U.S. 471, 485 (1970).

166 See, e.g., Freund, supra note 24, at 19. This is an issue that transcends scientific freedom, the freedom to inquire and to know, since it can determine for future generations the very capacity and the will to know, no less than the possession of other traits of thought and feeling that we regard as the essence of the human.

Id.

167 See notes 133-155 and accompanying text supra.
cess. Thus, a balanced and constantly functioning source of information must be made available to the decision-makers, even after measures are enacted. Most people outside the academic community do not view research freedom as important as matters which more directly affect them, such as tax expenditure questions. When mistrust of scientists is coupled with what appears to be a menacing probability, objectivity at the legislative level will be all the more important.

Also deserving careful attention is the notion expressed in the equal protection cases that all measures be tailored as narrowly as possible in achieving the desired end. If research proscription is chosen, the specific goals must be set forth at the outset; areas closely related to eugenics should be carefully scrutinized so as to avoid unnecessary legislative encroachments. Communication with those involved in other areas of research could be used to assist in the modification of existing policies. It is, therefore, prerequisite to any program of control that an efficient, receptive, and broadly based policy- and decision-making body be established on a permanent basis. Without continuous, informed reevaluation, the result could be autocracy and legislated fear.

Divergent views will continue to exist regarding the necessity to curtail research, but few would welcome sole scientific control of the use and limits of cloning. The mandatory control required to assure uniform results and application is viewed by some groups as but a small extension of already significant police power controls and by others as an alarming intrusion. Most importantly, then, the law must react before it is placed in the position of having to accept rather than to choose.

—I. Scott Bass

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169 Tunney & Levine, supra note 29, at 23.

If people become sufficiently frightened—if they feel the need to be rescued from a menace they do not understand—they are more likely to delegate freedoms and less likely to respond with reason.

Id.

170 See notes 100-110 and accompanying text supra.
171 See generally Sorenson, supra note 62.