

## Genetic Modification:

### Do We Have the Right to Create a Superhuman Society?

Abstract: In this paper, I consider the hypothetical legality of human genetic modification by examining both the moral and ethical contributions to the debate as well as relevant prior case law focusing on other issues in the realm of reproductive rights. Specifically, I turn to judgments regarding contraception, abortion, and sterilization: *Griswold v. Connecticut* (1967), *Eisenstadt v. Baird* (1972), *Roe v. Wade* (1973), *Planned Parenthood v. Casey* (1992), *Gonzales v. Carhart* (2007), *Skinner v. Oklahoma* (1942), *Maher v. Roe* (1977), and *Harris v. McRae* (1980). The combination of philosophical reflection and examination of relevant legal history leads me to conclude that while genetic modification cannot be banned outright, it can--and really ought--to be regulated and controlled via measures such as denial of reimbursement/funding for such procedures.

#### I. Introduction

Rapid technological advances in medical research have turned science fiction fantasies of the past into feasible possibilities. In today's world, we have the ability to genetically modify our children—but do we have the right to do so? Adam Moore<sup>1</sup> contends that we do; our rights to privacy and liberty, defended by libertarians and liberals alike, necessitate a heightened judicial scrutiny of regulations and restrictions on these procedures. Unfortunately, the legal system is well behind the scientific world. It was not until 2010 that the U. S. Supreme Court agreed to hear a case on genetically engineered *food*<sup>2</sup>; thus, for now, we are left to our own devices to attempt to find an answer to whether or not we can alter actual human beings. The question is both extremely controversial and complex, raising a host of moral and ethical dilemmas. Public opinion suggests that many citizens are hostile to the idea that we have the right to “play God”; others object on more concrete grounds, citing the dangers of testing and the exorbitant cost of the procedures. On the other hand, banning the process altogether would seem to violate our deeply held rights to privacy and personal liberty. When taking into account all of these

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<sup>1</sup> Adam Moore, "Privacy, Liberty, Property, and the Genetic Modification of Humans," *Journal of Philosophical Research* (2005): 81-94.

<sup>2</sup> *Monsanto v. Geertson Seed Farm, et al.* (09-475)

concerns, the proper solution probably lies somewhere in between a total prohibition and the largely unlimited availability Moore advocates (though I believe it should more closely resemble the latter). In this paper, I will demonstrate the need for this middle ground by examining the moral and ethical arguments on both sides of the issue, as well as looking to prior case law on related issues to determine an appropriate legal status for genetic modification.

## II. Background

Before I begin, however, it is imperative to understand the basic facts and current status of human genetic engineering. The term applies to several different, but related procedures. Perhaps the most widely recognized is cloning, which can be divided into reproductive and therapeutic uses. Reproductive cloning is a form of asexual reproduction in which the nucleus of an egg is replaced with that of a body cell to form a clonal zygote that is then implanted in a woman's womb. Therapeutic cloning uses the same basic procedure, but the embryo is used to generate stem cells rather than implanted in the womb and carried to term. The second main form of genetic engineering is genetic modification or manipulation, which involves changing the genes in a living human cell. Much like cloning, genetic manipulation can be divided into two categories: somatic, which targets the body cells of a person without affecting his or her reproductive cells; and germline (also called inheritable genetic modification), which targets the genes in eggs, sperm, or very early embryos using an in vitro fertilization (IVF) procedure. Germline engineering can be used to prevent future children from inheriting certain diseases and conditions by altering the specific genes that predispose them to these ailments. However, it can also presumably be used to change other characteristics of a child, such as intelligence, sex, and other physical features. A desire to alter a child in this way is often viewed as an inappropriate motive in comparison to disease prevention. Germline engineering is banned in many countries,

but it is currently legal in the United States. There is also an alternative, far less controversial procedure called pre-implantation diagnosis and selection (PDS). PDS also uses an IVF procedure; however, rather than manipulating the genes of unhealthy embryos prior to implantation, it simply selects the healthy ones. The Association of Reproductive Health Professionals (ARHP)<sup>3</sup> summarizes the differences between germline engineering and PDS as follows:

[PDS] is more straightforward than germline genetic manipulation, and does not open the door to an out-of-control techno-eugenic human future. The only situation in which germline engineering would be required over pre-implantation selection is one in which a couple would like to endow their child with genes that neither member of the couple possesses. This is the "enhancement" scenario, which we believe would lead to a dystopic human future if it were allowed. PDS, on the other hand, would have only a minimal effect on the human genome, even if it were widely used, because the procedure selects from the range of existing human traits. But *engineering* the genes by means of germline modification would allow novel forms of human life to be created within one generation.

However, the ARHP points out that PDS also could be used to select certain cosmetic and behavioral traits, rendering it equally objectionable germline engineering in the minds of those for whom this motivation is the main cause for concern.

The controversies and questions regarding ethics and legality that surround these procedures are very similar (and in many cases the same); however, for purposes of this paper I will be focusing on germline engineering.

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<sup>3</sup> "Human Cloning and Genetic Modification" *ARHP - Association of Reproductive Health Professionals*.

### III. Moral and Ethical Considerations

As with many new medical treatments, germline engineering carries significant risks. Unlike non-reproductive procedures, however, the process affects not only the patient who elects to get the treatment, but also, at the very least, the child created through it. If the procedure turns out to produce an unforeseen complication or side effect, the parents are potentially subjecting their child to a lifetime of pain. Furthermore, if the effects of the engineering are irreversible, they will be foisted on to all future generations as well. Ronald Dworkin argues that these potential dangers are not that likely to be significant; moreover, they are not enough to justify a ban on research.<sup>4</sup> His is a fairly utilitarian approach; letting even a small number suffer for the gains of others who will then receive a safer treatment is a principle that many may find morally unacceptable. Dworkin's opinion is nonetheless realistic in the sense that some recipients of every new medical treatment take on these risks so that the procedure may be perfected; however, the key difference in the case of genetic engineering is that those who will most likely bear the negative effects did not consent to being the guinea pigs for society. A counterargument may suggest that the children whose parents elect to try genetic engineering would have suffered from whatever disease they intended to prevent anyway, but that does not change the fact that the effects of genetic engineering could prove even more debilitating. In addition, there is no guarantee that the original disease will be eliminated, so the suffering might only be compounded.

The risks involved seem to increase in gravity when parents choose to use germline treatment for non-disease prevention reasons, wishing to alter the intelligence, sex, or other physical features of their child. Many doubt these changes are worth the potential side effects.

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<sup>4</sup> Ronald Dworkin, "Playing God: Genes, Clones, and Luck" in *Sovereign Virtue: The Theory and Practice of Equality* (2000) 439.

Moreover, as John Attanasio argues, “essential human dignity may also be compromised by the realization that one is the product of genetic fabrication”.<sup>5</sup> In addition, John Robertson observes in his book *Children of Choice*<sup>6</sup>:

Parents might have unrealistic expectations of children who have been subject to efforts to make them superior. This could create an unhealthy psychological environment, engender disappointment if the child is merely normal, or affect the child’s self-esteem and self-concept in unforeseen, harmful ways.

Considering these potential outcomes, many suggest that genetic engineering for such purposes should be banned even if it is available for disease prevention. However, others like Attanasio believe we do not have the right to distinguish between motives and even propose that “the right to form the body and mind [...] is analogous to molding the child through education”.<sup>7</sup> It is also important to note that we do not discriminate against certain reasons in cases of abortion; amniocentesis allows parents to know the genetic makeup of their future child, and they may choose to abort the fetus if they are dissatisfied with the sex (note an exception for residents of Arizona, which recently became the first state to ban abortion for race or sex-selection).<sup>8</sup>

Perhaps we will still conclude that it is irresponsible for the parents to take such a gamble on their child’s life, but then again, we must remember that it is not always the government’s place to prevent individuals from making hazardous decisions, particularly in regard to their personal lives.

Genetic engineering does not affect only individual lives, though; it has the potential to enormously impact society as a whole. Unesco’s International Bioethics Committee suggests that

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<sup>5</sup> John B. Attanasio, "The Constitutionality of Regulating Human Genetic Engineering: Where Procreative Liberty and Equal Opportunity Collide" *The University of Chicago Law Review* 53.4 (1986): 1296.

<sup>6</sup> John A. Robertson, *Children of Choice: Freedom and the New Reproductive Technologies* (1996) 165-66.

<sup>7</sup> Attanasio, 1291.

<sup>8</sup> Marcy Darnovsky, "Behind the New Arizona Abortion Ban" *Biopolitical Times*.

we do not have the right to alter the human genome because it is owned in common by humankind.<sup>9</sup> The changes we make today will be passed on to all future generations. However, the same is essentially true of any other medical advances or technological innovations that drastically alter our way of life. These inventions are protected by intellectual property rights, and, as Adam Moore argues, there is no valid reason why genetic engineering technology should be treated any differently. It is an individual creation, not a social discovery, and therefore cannot be automatically deemed public knowledge for the sake of trying to regulate it.

Regardless, the committee is correct in observing that the use of genetic engineering technology will have a substantial impact on future citizens, especially those who do not undergo treatment. The prospect of a quick fix, an easy way to prevent certain debilitating diseases and conditions is thrilling, no doubt. Unfortunately, the demand for funding in the area of genetic engineering could take too much away from the treatment of these diseases, meaning that no further advances will be made, despite a majority of the population still being at risk for the conditions. Furthermore, as instances of genetic engineering become more frequent, the social stigma of hereditary diseases and handicaps will increase, worsening in yet another way the quality of life for those who must still live with them, either because their parents were morally opposed to genetic engineering or, even more likely, because they could not afford the procedure.

One of the main arguments used by liberal thinkers against genetic engineering cites the exorbitant cost of the treatment. Surely it will only widen the already prevalent class disparity in our society. This effect may cause some great discomfort; however, the same problems are the

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<sup>9</sup> Darryl R.J. Macer, "UNESCO Bioethics Committee and International Regulation of Gene Therapy" *Gene Therapy Newsletter* 4 (1994): 4-5.

result of any new technology or cutting-edge medical treatment.<sup>10</sup> Furthermore, as Dworkin points out, our general impulse is to extend availability to the poor, not deny it to the rich.<sup>11</sup>

Nevertheless, genetic engineering, particularly of the enhancement variety, does seem to come dangerously close to violating our deeply held principle of equality of opportunity, even at the theoretical level (we tend to be much more forgiving toward those acts which violate it on only in practice). John Attanasio<sup>12</sup> argues:

Two critical interests in the area of equality of opportunity are education and employment [...] Educational opportunity is a function of wealth, effort, and intelligence. Because [people who have been genetically enhanced] will disproportionately possess these resources, the drug will redistribute educational possibilities. This redistribution will be particularly problematic, since intelligence and effort will (potentially) be tied permanently to wealth.

A seemingly insurmountable lack of economic mobility already appears to plague our overwhelmingly non-engineered society, and an increasing reliance on genetic enhancement would undoubtedly exacerbate this problem. Moreover, we do have programs of affirmative action designed to help minorities traditionally disadvantaged by race or socioeconomic status overcome obstacles in attaining education and employment. It seems unlikely that we would restructure such programs to include non-genetically engineered people, who would not only form a numerical majority of the population (at least for a while), but would also lack the capacity to compete with those designed to be super-intelligent. To force employers and educators to accept non-genetically enhanced applicants over those who are objectively more capable thanks to the treatment is highly unrealistic. Therefore, if genetic engineering eventually

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<sup>10</sup> Moore, 91

<sup>11</sup> Dworkin, 440

<sup>12</sup> Attanasio, 1307

did become prevalent, we would have no way (or possibly even desire) to offer the same opportunities to the non-enhanced. According to influential American philosopher John Rawls, one of the two principles of justice that a rational person not knowing his or her lot in life would choose for society states, “Social and economic inequalities are to be arranged so that they are both: (a) to the greatest benefit of the least advantaged and (b) attached to offices and positions open to all under conditions of fair equality of opportunity.”<sup>13</sup> If we can easily foresee the use of genetic enhancement violating the latter half of this principle, can we in good conscience permit it?

On the other hand, one might argue that as long as the legal status of non-genetically engineered persons does not differ from those who are enhanced (i.e., they retain equal voting rights, and employment and educational institutions do not bar them as a rule), the use of genetic enhancement procedures would not violate this part of the principle in theory. Furthermore, it is clearly consistent with the first half. An increased number of citizens with extraordinary abilities would only benefit society as a whole. The new inventions, boosted economy, and achievements in the arts that could be the result of contributions by genetically enhanced individuals would be to the advantage of each member of the community, enhanced or not. Therefore, while the relative socioeconomic position of non-genetically enhanced persons has the potential to decline, it could also rise objectively. In that case, one could also argue that to *not* allow the use of genetic enhancements is unjust as well.

Other arguments supporting the right to genetic engineering rely on the supposed impracticality of a total ban. William Gardner contends, “Prohibition of genetic enhancement is likely to fail because compliance with the ban will be undermined by the dynamics of

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<sup>13</sup> John Rawls, *A Theory of Justice* (1971) 83.



competition among parents and among nations.”<sup>14</sup> No international ban currently exists, so parents have the ability to get the treatment regardless of whether or not the United States decides to prohibit it. As use increases, other parents (except those who have religious or ethical objections) will feel pressured to adopt the treatment in order to provide their children with the abilities to meet the world’s increasingly competitive demands. As demand for the enhancement and disease-preventing procedures rise, some doctors will recognize a lucrative opportunity, and a black market is likely to develop. In this scenario, many parents (albeit fewer than if the treatment were legal) will still elect to use genetic engineering, but it will be far less safe due to the complete lack of regulation and funded testing.

Another negative effect of a total ban on positive genetic engineering might be an increased (or at the very least, not decreased) reliance on abortion, sometimes referred to as negative genetic engineering.<sup>15</sup> Many parents cannot emotionally bear or afford to take care of a severely disabled child. Without genetic engineering available to prevent such suffering in the child’s life, these individuals are left to turn to abortion as the only other option to having the child. The number of these tragic situations will not be entirely eliminated (especially for parents who abort due to economic crisis), but it can be greatly reduced by allowing parents to seek germline treatment.

#### IV. The Right to Privacy

While the aforementioned moral and ethical dilemmas are vital to consider, they alone cannot determine the legality of genetic engineering. We must also turn to prior case law, in particular the decisions regarding the legal status of contraception and abortion, as genetic

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<sup>14</sup> William Gardner, "Can Human Genetic Enhancement Be Prohibited?" *The Journal of Medicine and Philosophy* 20 (1995): 69.

<sup>15</sup> Attanasio, 1280

engineering presumably falls into the same category of reproductive liberties found under the fundamental right to privacy. Privacy is a somewhat controversial right even today, as the word “privacy” is not explicitly mentioned anywhere in the Constitution or the Bill of Rights. In fact, it was not truly established until the 1967 case *Griswold v. Connecticut*<sup>16</sup>, a decision that struck down an 1879 law prohibiting the distribution of information as well as the use of contraceptives. In writing for the majority, Justice Douglas argued that this law violated the various “zones of privacy” that could be found in the following parts of the Bill of Rights: the First Amendment’s right of association; the Third Amendment’s prohibition against the quartering of soldiers in private homes during times of peace; the Fourth Amendment’s explicit guarantee of the “right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures”; the Fifth Amendment’s Self-Incrimination Clause, which “enables the citizen to create a zone of privacy which government may not force him to surrender to his detriment”; and the Ninth Amendment’s provision that “The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.” The concurrence by Justice Goldberg (joined by Chief Justice Warren & Justice Brennan) stressed this last element, stating, “To hold that a right so basic and fundamental and so deep-rooted in our society as the right of privacy in marriage may be infringed because that right is not guaranteed in so many words by the first eight amendments to the Constitution is to ignore the Ninth Amendment and to give it no effect whatsoever...”

Following *Griswold*, the decision in *Eisenstadt v. Baird* (1972)<sup>17</sup> striking down a Massachusetts law that prohibited the dissemination of contraceptives to unmarried couples clarified that the right to privacy in reproductive choices of this sort applies to all individuals. As

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<sup>16</sup> *Griswold v. Connecticut*, 381 U.S. 479 (1965)

<sup>17</sup> *Eisenstadt v. Baird*, 405 U.S. 438 (1972)

Justice Brennan stated in the plurality opinion, “If the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”

The right to reproductive autonomy was expanded even further a year later in the famous case *Roe v. Wade* (1973)<sup>18</sup>, which struck down a Texan law prohibiting all abortions except those necessary to save the mother’s life. Justice Blackmun delivered the majority opinion, concluding:

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

Roe did permit some state regulations and restrictions on later stage abortions—and more were deemed permissible in the subsequent case *Planned Parenthood of Southeastern Pennsylvania v. Casey*<sup>19</sup>, which I will discuss in greater detail in the next section—however, the decision was nevertheless a strong confirmation of the basic right to making the decision about whether or not to have a child. Logic suggests that the decision about what kind of child to have, using which methods and technologies, should also be included under the right to privacy that permits such reproductive autonomy.

## V. Regulations and Restrictions

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<sup>18</sup> *Roe v. Wade*, 410 U.S. 113 (1973)

<sup>19</sup> *Planned Parenthood of Southeastern Pennsylvania v. Casey*, 505 U.S. 833 (1992)

The right to privacy may be fundamental, but it is not absolute. Even strict judicial scrutiny allows certain state interests to override this right, particularly in respect to cases regarding abortion. The exceptions to the right of reproductive autonomy in the following decisions suggests that while genetic engineering would be nearly impossible to prohibit entirely without violating the fundamental right to privacy, the government does possess the power to regulate it.

*Roe v. Wade*<sup>20</sup> provided the initial and most extensive rights concerning abortion. The decision prohibited state interference during the first trimester of pregnancy, leaving the decision to the mother and physician; during the second trimester, the State's interest in the mother's life allowed it to regulate—but not ban—abortions in ways “reasonably related to maternal health”; and “subsequent to viability,” or when the fetus could potentially survive outside the womb (then thought to be the third trimester), the State's interest in the “potentiality of human life” permitted (but did not require) it to regulate or proscribe abortions except when necessary to preserve the life or health of the mother. Because genetic engineering occurs at the earliest stages of embryonic development, the *Roe* framework probably would allow for only minimal regulations of the procedure, most likely under the state interest of preserving the health of the mother, who would be carrying an altered fetus for nine months.

However, the *Roe* framework was replaced in *Planned Parenthood of Southeastern Pennsylvania v. Casey*.<sup>21</sup> Although the majority opinion began by stating, “the essential holding of *Roe v. Wade* should be retained and once again reaffirmed,” it also emphasized “the State's power to restrict abortions after fetal viability” (which, due to advances in medicine, was adjusted to approximately twenty-eight weeks) and the “principle that the State has legitimate

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<sup>20</sup> *Roe v. Wade*, 410 U.S. 113 (1973)

<sup>21</sup> *Planned Parenthood of Southeastern Pennsylvania v. Casey*, 505 U.S. 833 (1992)

interests from the outset of the pregnancy in protecting the health of the woman and the life of the fetus that may become a child.” *Casey* upheld rules and regulations that required doctors to inform the woman of philosophic and social arguments against abortion. It also allowed states to require that a woman give her written informed consent after a twenty-four hour waiting period before the procedure. Presumably, the same restrictions could easily be placed on genetic engineering without creating an undue burden on the parents seeking the treatment; thus, I believe *Casey* provides an appropriate standard for determining the government’s power to regulate new reproductive technologies.

The most recent Supreme Court abortion case, *Gonzales v. Carhart* (2007)<sup>22</sup>, upheld the Partial-Birth Abortion Ban Act, a federal law prohibiting a particular method for late-term abortions. If the government wanted to ban genetic engineering altogether, some might propose that this case could potentially be used in support. The government would need to argue that genetic engineering poses a significant medical danger, and that alternative methods are available (PDS could be used here). However, I do not find this case to be very applicable, as the potential medical side effects of genetic engineering are generally not considered serious enough to justify a total ban, and no real alternative exists for couples who have *no* chance of producing a healthy child biologically related to both the mother and father (PDS requires at least a minimum chance of healthy sperm and eggs). *Gonzales v. Carhart* also would not allow the government to distinguish between motives for using genetic engineering (enhancement vs. disease prevention) because the procedure is essentially the same.

The other main case that some might suggest could provide support for a ban involves not abortion, but eugenics. Genetic engineering is frequently compared to the eugenics movement of the early twentieth century, in which states would require those deemed mentally

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<sup>22</sup> *Gonzales v. Carhart*, 550 U.S. 124 (2007)

defective to be sterilized. In striking down a law requiring sterilization as punishment for “habitual criminals” in *Skinner v. Oklahoma* (1942)<sup>23</sup>, Justice Douglas’s opinion touched upon concerns similar to those raised by genetic engineering, stating, “The power to sterilize, if exercised, may have subtle, far reaching and devastating effects. In evil or reckless hands it can cause races or types which are inimical to the dominant group to wither and disappear.”

Like the eugenics movement, one of the goals of genetic engineering is to advance society by eradicating undesirable traits and conditions that plague the human race. However, genetic modification differs vastly from the law overturned in *Skinner* because it is a voluntary, not compulsory procedure. *Skinner* simply suggests that the government may not require parents who are expected to produce an unhealthy child to undergo genetic engineering against their wishes. Note that the First Amendment’s guarantee of religious freedom would also likely prohibit any compulsory genetic engineering laws. Although the State’s interest in preserving the life of a child can override his or her parents’ refusal of medical treatment on religious grounds, fetal rights are weaker than those of a born child; moreover, the treatment directly affects the mother in this case, invoking her right to personal autonomy.

## VI. Funding

While the government can neither prohibit nor compel parents to use genetic enhancement, they can control use somewhat through funding. A state that concludes genetic enhancement will benefit society has the ability to encourage use of the procedure by providing funding for it; doing so would also eliminate the aforementioned ethical dilemma that stems from potential class disparity. However, I do not believe many states are likely to do so. As described earlier, the appropriate legal status of genetic engineering is most comparable to that of abortion;

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<sup>23</sup> *Skinner v. Oklahoma* 316 U.S. 535 (1942)

both should be protected by, but not absolute under the fundamental right to privacy. Because abortion is so morally controversial, the Supreme Court has consistently upheld bans on funding (*Maher v. Roe* (1977)<sup>24</sup>, *Harris v. McRae* (1980)<sup>25</sup>). Genetic engineering poses many ethical and moral concerns similar to those raised by abortion; therefore, the government is likely, and constitutionally permitted, to ban funding for this procedure, too.

## VII. Conclusion

Human genetic engineering is likely to remain highly controversial due to the abundance of moral and ethical concerns surrounding it. However, banning the procedure altogether (or, alternatively, compelling it) would be a violation of the rights to privacy and reproductive autonomy established in cases such as *Griswold*, *Roe*, and *Casey*. The government can and should nonetheless regulate genetic engineering to minimize the potentially harmful effects on individual citizens and society as a whole. Moreover, it has the power to discourage use of genetic modification by denying citizens any reimbursement of the costs. The fate of the human genome, then, will not change overnight. The government's ability to control use along with the public's moral uneasiness secures a gradual adoption of genetic engineering even with the establishment of a legal right to use it; thus, we will remain looking ahead to a brave new world until tomorrow.

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<sup>24</sup> *Maher v. Roe*, 432 US 464 (1977)

<sup>25</sup> *Harris v. McRae*, 448 US 297 (1980)

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